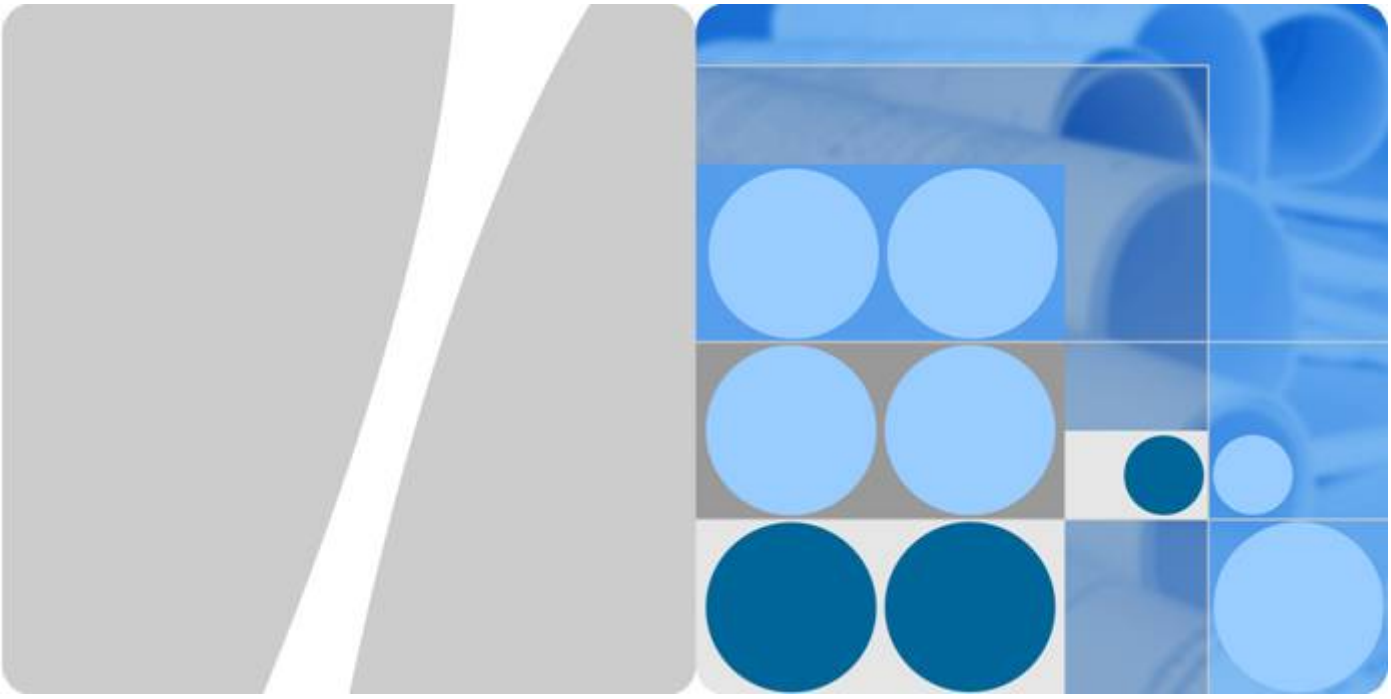

Huawei AR120&AR150&AR160&AR200&AR500&AR510&AR1200&AR2200&AR3200&AR3600 series Enterprise Routers

Hardware Description

Issue 05

Date 2016-06-15

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About This Document

Intended Audience

This document describes hardware components of the AR120&AR150&AR160&AR200&AR510&AR1200&AR2200&AR3200&AR3600, including the chassis, power modules, fan modules, cards, cables, and optical modules. You can find useful information about hardware components from this document.

This document is intended for:

- Network planning engineers
- Hardware installation engineers
- Commissioning engineers
- Onsite maintenance engineers
- System maintenance engineers

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

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Symbol	Description
NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all changes made to previous issues.

Issue 05 (2016-06-15)

This issue has the following updates:

The following content is added:

- **1.1 Components Available in V200R007C02**
- **2.7.5 AR509GW-L-D-H**

Issue 04 (2016-04-25)

This issue has the following updates:

The following content is added:

- **2.5.23 AR161G-U**

Issue 03 (2016-02-05)

This issue has the following updates:

The following content is added:

- **2.7.4 AR509G-Lc**

The following content is modified:

- **2.8.5 AR513W-V3M8**

Issue 02 (2015-12-18)

This issue has the following updates:

The following content is modified:

- **2.7.2 AR503GW-LcM7**

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Issue 01 (2015-11-13)

Initial commercial release.

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1.21 Components Available in V200R001C00

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1.1 Components Available in V200R007C02

NOTE

The components marked * are the new components added to V200R007C02.

Chassis

Table 1-1 describes the chassis models available in V200R007C02.

Table 1-1 Chassis models available in V200R007C02

Series	Chassis Model	Description
AR120	AR121	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR129	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR121W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR129W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR121GW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR129GW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.

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Series	Chassis Model	Description
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR161FW	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, and other interfaces including HDMI, headset, and microphone interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n, ZigBee, and Bluetooth.

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Series	Chassis Model	Description
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
	AR161	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces.
	AR161G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces.
	AR169G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169-P-M9	Provides fixed interfaces, supports Bluetooth and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including Bluetooth antenna, HDMI, VGA, RS485/232, headset, and microphone interfaces.
	AR169BF	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR161W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169W-P-M9	Provides fixed interfaces, supports Bluetooth, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including 802.11b/g/n antenna, Bluetooth antenna, HDMI, VGA, RS485/232, headset, microphone, and SATA interfaces.
	AR169RW-P-M9	Provides fixed interfaces, supports Bluetooth, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including 802.11b/g/n antenna, Bluetooth antenna, ZigBee antenna, HDMI, VGA, RS485/232, headset, microphone, and SATA interfaces.
	AR161FV-1P	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one E1 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR161FGW-La	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR161G-U	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, it has WCDMA 3G antenna interfaces.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.

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Series	Chassis Model	Description
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR500	AR503GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.

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Series	Chassis Model	Description
	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
	AR503GW-LcM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS/BDS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS/BDS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR509GW-L-D-H*	Provides fixed interfaces, supports WLAN access and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, 802.11b/g/n/ac AP and LTE antenna interfaces.
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR511GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.

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Series	Chassis Model	Description
	AR511GW-L-B3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and receiving of digital TV signals, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one GE WAN interface, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, 802.11a/b/g/n AP, and DTMB.
	AR513W-V3M8	Provides fixed interfaces, supports WLAN access and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one eSATA interface, one audio interface, two HDMI interfaces, one VGA interface, one DI/DO interface, one RS485 interface, and two GE WAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11a/b/g/n AP.
	AR511CGW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, TDD, and 802.11a/b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220V	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR1220W	Has fixed interfaces, built-in AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220VW	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220L	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces are two GE WAN interfaces.
	AR1220F	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include one GE combo WAN interface, one GE WAN interfaces, and eight FE LAN interfaces.
	AR1220E	Has fixed GE electrical interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.

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Series	Chassis Model	Description
	AR1220EV	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.
	AR1220EVW	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.
	AR1220C	Has fixed interfaces and a built-in AC power module. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical WAN interfaces, one GE optical WAN interface, and eight GE LAN interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, built-in DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR2202-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2220E	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2204-51GE-P	Has fixed interfaces, two built-in AC power modules, and fan modules, and supports the PoE function. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include forty-eight GE LAN electrical interfaces, two GE WAN electrical interfaces, one GE combo WAN interface, and two PoE power jacks.
	AR2204-27GE-P	Has fixed interfaces, two built-in AC power modules, and fan modules, and supports the PoE function. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include twenty-four GE LAN electrical interfaces, two GE WAN electrical interfaces, one GE combo WAN interface, and two PoE power jacks.
	AR2204-27GE	Has fixed interfaces, a built-in AC power module, and fan modules. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include twenty-four GE LAN electrical interfaces, two GE WAN electrical interfaces, and one GE combo WAN interface.

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Series	Chassis Model	Description
	AR2204E	Has fixed interfaces, two built-in AC power modules, and fan modules. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE electrical interfaces and one GE combo WAN interface.
	AR2240C	Has an SRU, power modules, and built-in fan modules. It has four SIC slots, two WSIC slots, and two XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
AR3200	AR3260	Has SRUs, power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.
AR3600	AR3670	Has SRUX5 control units, power modules, and fan modules. It has two SIC slots and seven WSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-2 describes the cards available in V200R007C02.

Table 1-2 Cards available in V200R007C02

Card Type	Card Name	Description
SRU	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
	SRUX5	Service and router unit X5
	SRU40C	Service and router unit 40C
	SRU100E	Service and router unit 100E

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Card Type	Card Name	Description
	SRU200E	Service and router unit 200E
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24ES2GP	24-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	2X10GL	2-port 10GE optical ports interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card

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Card Type	Card Name	Description
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M packet over SDH/SONET optical interface card
	1STM4	1-port 622M packet over SDH/SONET optical interface card
	4STM1	4-port 155M packet over SDH/SONET optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card
	1LTE-LV	WCDMA LTE interface card
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card

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Card Type	Card Name	Description
	4G.SHDSL	1-port -4 pair G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
	1GBIS4W	1-port 4 pair G.SHDSL WAN interface card-WSIC
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.2 Components Available in V200R007C01

NOTE

The components marked * are the new components added to V200R007C01.

Chassis

Table 1-3 describes the chassis models available in V200R007C01.

Table 1-3 Chassis models available in V200R007C01

Series	Chassis Model	Description
AR120	AR121	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)

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Series	Chassis Model	Description
	AR129	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR121W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR129W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR121GW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR129GW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FW	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, and other interfaces including HDMI, headset, and microphone interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n, ZigBee, and Bluetooth.
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
	AR161	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces.
	AR161G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.

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Series	Chassis Model	Description
	AR169	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces.
	AR169G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169-P-M9	Provides fixed interfaces, supports Bluetooth and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including Bluetooth antenna, HDMI, VGA, RS485/232, headset, and microphone interfaces.
	AR169BF	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169W-P-M9	Provides fixed interfaces, supports Bluetooth, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including 802.11b/g/n antenna, Bluetooth antenna, HDMI, VGA, RS485/232, headset, microphone, and SATA interfaces.
	AR169RW-P-M9	Provides fixed interfaces, supports Bluetooth, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including 802.11b/g/n antenna, Bluetooth antenna, ZigBee antenna, HDMI, VGA, RS485/232, headset, microphone, and SATA interfaces.
	AR161FV-1P	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one E1 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FGW-La	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR161G-U*	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, it has WCDMA 3G antenna interfaces.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR500	AR503GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
	AR503GW-LcM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS/BDS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS/BDS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.

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Series	Chassis Model	Description
	AR511GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR511GW-L-B3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and receiving of digital TV signals, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one GE WAN interface, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, 802.11a/b/g/n AP, and DTMB.
	AR513W-V3M8	Provides fixed interfaces, supports WLAN access and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one eSATA interface, one audio interface, two HDMI interfaces, one VGA interface, one DI/DO interface, one RS485 interface, and two GE WAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11a/b/g/n AP.
	AR511CGW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, TDD, and 802.11a/b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR1220V	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220W	Has fixed interfaces, built-in AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220VW	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220L	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces are two GE WAN interfaces.
	AR1220F	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include one GE combo WAN interface, one GE WAN interfaces, and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR1220E	Has fixed GE electrical interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.
	AR1220EV	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.
	AR1220EVW	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.
	AR1220C	Has fixed interfaces and a built-in AC power module. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical WAN interfaces, one GE optical WAN interface, and eight GE LAN interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, built-in DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR2201-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2220E	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2204-51GE-P	Has fixed interfaces, two built-in AC power modules, and fan modules, and supports the PoE function. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include forty-eight GE LAN electrical interfaces, two GE WAN electrical interfaces, one GE combo WAN interface, and two PoE power jacks.
	AR2204-27GE-P	Has fixed interfaces, two built-in AC power modules, and fan modules, and supports the PoE function. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include twenty-four GE LAN electrical interfaces, two GE WAN electrical interfaces, one GE combo WAN interface, and two PoE power jacks.

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Series	Chassis Model	Description
	AR2204-27GE	Has fixed interfaces, a built-in AC power module, and fan modules. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include twenty-four GE LAN electrical interfaces, two GE WAN electrical interfaces, and one GE combo WAN interface.
	AR2204E	Has fixed interfaces, two built-in AC power modules, and fan modules. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE electrical interfaces and one GE combo WAN interface.
	AR2240C	Has an SRU, power modules, and built-in fan modules. It has four SIC slots, two WSIC slots, and two XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
AR3200	AR3260	Has SRUs, power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.
AR3600	AR3670	Has SRUX5 control units, power modules, and fan modules. It has two SIC slots and seven WSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-4 describes the cards available in V200R007C01.

Table 1-4 Cards available in V200R007C01

Card Type	Card Name	Description
SRU	SRU40	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80

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Card Type	Card Name	Description
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
	SRUX5	Service and router unit X5
	SRU40C	Service and router unit 40C
	SRU100E	Service and router unit 100E
	SRU200E	Service and router unit 200E
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24ES2GP	24-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	**2FE**	2-port FE WAN interface card
	2X10GL	2-port 10GE optical ports interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card

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Card Type	Card Name	Description
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M packet over SDH/SONET optical interface card
	1STM4	1-port 622M packet over SDH/SONET optical interface card
	4STM1	4-port 155M packet over SDH/SONET optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card
	1LTE-LV	WCDMA LTE interface card
	4GECS	4-port GE combo WAN interface card

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Card Type	Card Name	Description
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port -4 pair G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
	1GBIS4W	1-port 4 pair G.SHDSL WAN interface card-WSIC
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.3 Components Available in V200R007C00

NOTE

The components marked * are the new components added to V200R007C00.

Chassis

Table 1-5 describes the chassis models available in V200R007C00.

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Table 1-5 Chassis models available in V200R007C00

Series	Chassis Model	Description
AR120	AR121	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR129	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR121W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR129W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR121GW-L*	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and support LTE FDD and 802.11b/g/n.
	AR129GW-L*	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and support LTE FDD and 802.11b/g/n.

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Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FW	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, and other interfaces including HDMI, headset, and microphone interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n, ZigBee, and Bluetooth.
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
	AR161	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces.
	AR161G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.

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Series	Chassis Model	Description
	AR169	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces.
	AR169G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169-P-M9	Provides fixed interfaces, supports Bluetooth and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including Bluetooth antenna, HDMI, VGA, RS485/232, headset, and microphone interfaces.
	AR169BF	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169W-P-M9*	Provides fixed interfaces, supports Bluetooth, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including 802.11b/g/n antenna, Bluetooth antenna, HDMI, VGA, RS485/232, headset, microphone, and SATA interfaces.
	AR169RW-P-M9*	Provides fixed interfaces, supports Bluetooth, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including 802.11b/g/n antenna, Bluetooth antenna, ZigBee antenna, HDMI, VGA, RS485/232, headset, microphone, and SATA interfaces.
	AR161FV-1P*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one E1 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FGW-La*	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR500	AR503GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
	AR503GW-LcM7*	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS/BDS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS/BDS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.

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Series	Chassis Model	Description
	AR511GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR511GW-L-B3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and receiving of digital TV signals, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one GE WAN interface, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, 802.11a/b/g/n AP, and DTMB.
	AR513W-V3M8	Provides fixed interfaces, supports WLAN access and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one eSATA interface, one audio interface, two HDMI interfaces, one VGA interface, one DI/DO interface, one RS485 interface, and two GE WAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11a/b/g/n AP.
	AR511CGW-LAV2M3*	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, TDD, and 802.11a/b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR1220V	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220W	Has fixed interfaces, built-in AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220VW	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE WAN interfaces and eight FE LAN interfaces.
	AR1220L	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces are two GE WAN interfaces.
	AR1220F	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include one GE combo WAN interface, one GE WAN interfaces, and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR1220E	Has fixed GE electrical interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.
	AR1220EV	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.
	AR1220EVW	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE combo WAN interfaces and eight GE LAN interfaces.
	AR1220C*	Has fixed interfaces and a built-in AC power module. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical WAN interfaces, one GE optical WAN interface, and eight GE LAN interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, built-in DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR2201-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2220E	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2204-51GE-P*	Has fixed interfaces, two built-in AC power modules, and fan modules, and supports the PoE function. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include forty-eight GE LAN electrical interfaces, two GE WAN electrical interfaces, one GE combo WAN interface, and two PoE power jacks.
	AR2204-27GE-P*	Has fixed interfaces, two built-in AC power modules, and fan modules, and supports the PoE function. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include twenty-four GE LAN electrical interfaces, two GE WAN electrical interfaces, one GE combo WAN interface, and two PoE power jacks.

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Series	Chassis Model	Description
	AR2204-27GE*	Has fixed interfaces, a built-in AC power module, and fan modules. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include twenty-four GE LAN electrical interfaces, two GE WAN electrical interfaces, and one GE combo WAN interface.
	AR2204E*	Has fixed interfaces, two built-in AC power modules, and fan modules. It has four SIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include two GE electrical interfaces and one GE combo WAN interface.
	AR2240C*	Has an SRU, power modules, and built-in fan modules. It has four SIC slots, two WSIC slots, and two XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
AR3200	AR3260	Has SRUs, power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.
AR3600	AR3670	Has SRUX5 control units, power modules, and fan modules. It has two SIC slots and seven WSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-6 describes the cards available in V200R007C00.

Table 1-6 Cards available in V200R007C00

Card Type	Card Name	Description
SRU	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80

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Card Type	Card Name	Description
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
	SRUX5	Service and router unit X5
	SRU40C*	Service and router unit 40C
	SRU100E*	Service and router unit 100E
	SRU200E*	Service and router unit 200E
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24ES2GP*	24-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	**2FE**	2-port FE WAN interface card
	2X10GL*	2-port 10GE optical ports interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card

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Card Type	Card Name	Description
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M packet over SDH/SONET optical interface card
	1STM4	1-port 622M packet over SDH/SONET optical interface card
	4STM1	4-port 155M packet over SDH/SONET optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card
	1LTE-LV*	WCDMA LTE interface card
	4GECS	4-port GE combo WAN interface card

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Card Type	Card Name	Description
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port -4 pair G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
	1GBIS4W	1-port 4 pair G.SHDSL WAN interface card-WSIC
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.4 Components Available in V200R006C17

NOTE

The components marked * are the new components added to V200R006C17.

Chassis

Table 1-7 describes the chassis models available in V200R006C17.

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Table 1-7 Chassis models available in V200R006C17

Series	Chassis Model	Description
AR120	AR121	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR129	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR121W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR129W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.

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Series	Chassis Model	Description
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).

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Series	Chassis Model	Description
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FW	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, and other interfaces including HDMI, headset, and microphone interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n AP, ZigBee, and Bluetooth.
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
	AR161	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces.
	AR161G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR169G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169-P-M9	Provides fixed interfaces, supports Bluetooth and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including Bluetooth antenna, HDMI, VGA, RS485/232, headset, and microphone interfaces.
	AR169BF	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR500	AR503GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD, TDD and 802.11a/b/g/n AP.
	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
	AR509G-Lc*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
	AR503GW-LcM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS/BDS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS/BDS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD, TDD and 802.11a/b/g/n AP.

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Series	Chassis Model	Description
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR511GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR511GW-L-B3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and receiving of digital TV signals, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one GE WAN interface, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, 802.11a/b/g/n AP, and DTMB.
	AR513W-V3M8	Provides fixed interfaces, supports WLAN access and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one eSATA interface, one audio interface, two HDMI interfaces, one VGA interface, one DI/DO interface, one RS485 interface, and two GE WAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11a/b/g/n AP.

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Series	Chassis Model	Description
	AR511CGW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, TDD, and 802.11a/b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, built-in AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220E	Has fixed GE electrical interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220EV	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220EVW	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, built-in DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR2220E	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs, power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.
AR3600	AR3670	Has SRUX5 control units, power modules, and fan modules. It has two SIC slots and seven WSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-8 describes the cards available in V200R006C17.

Table 1-8 Cards available in V200R006C17

Card Type	Card Name	Description
SRU	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
	SRUX5	Service and router unit X5
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card

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Card Type	Card Name	Description
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M packet over SDH/SONET optical interface card
	1STM4	1-port 622M packet over SDH/SONET optical interface card
	4STM1	4-port 155M packet over SDH/SONET optical interface card

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Card Type	Card Name	Description
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port -4 pair G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
	1GBIS4W	1-port 4 pair G.SHDSL WAN interface card-WSIC
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC

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Card Type	Card Name	Description
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.5 Components Available in V200R006C16

NOTE

The components marked ^ are updated in V200R006C16.

Chassis

Table 1-9 describes the chassis models available in V200R006C16.

Table 1-9 Chassis models available in V200R006C16

Series	Chassis Model	Description
AR120	AR121	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR129	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR121W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR129W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.

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Series	Chassis Model	Description
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FW	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, and other interfaces including HDMI, headset, and microphone interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n AP, ZigBee, and Bluetooth.
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
	AR161	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR161G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces.
	AR169G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169-P-M9	Provides fixed interfaces, supports Bluetooth and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including Bluetooth antenna, HDMI, VGA, RS485/232, headset, and microphone interfaces.
	AR169BF	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR500	AR503GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD, TDD and 802.11a/b/g/n AP.
	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.

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Series	Chassis Model	Description
	AR503GW-LcM7^	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS/BDS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS/BDS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD, TDD and 802.11a/b/g/n AP.
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR511GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR511GW-L-B3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and receiving of digital TV signals, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one GE WAN interface, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, 802.11a/b/g/n AP, and DTMB.

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Series	Chassis Model	Description
	AR513W-V3M8	Provides fixed interfaces, supports WLAN access and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one eSATA interface, one audio interface, two HDMI interfaces, one VGA interface, one DI/DO interface, one RS485 interface, and two GE WAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11a/b/g/n AP.
	AR511CGW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, TDD, and 802.11a/b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, built-in AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220L	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220E	Has fixed GE electrical interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220EV	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220EVW	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, built-in DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR2202-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2220E	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs, power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.
AR3600	AR3670	Has SRUX5 control units, power modules, and fan modules. It has two SIC slots and seven WSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-10 describes the cards available in V200R006C16.

Table 1-10 Cards available in V200R006C16

Card Type	Card Name	Description
SRU	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200

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Card Type	Card Name	Description
	SRU400	Service and router unit 400
	SRUX5	Service and router unit X5
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card

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Card Type	Card Name	Description
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M packet over SDH/SONET optical interface card
	1STM4	1-port 622M packet over SDH/SONET optical interface card
	4STM1	4-port 155M packet over SDH/SONET optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port -4 pair G.SHDSL WAN interface card

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Card Type	Card Name	Description
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
	1GBIS4W	1-port 4 pair G.SHDSL WAN interface card-WSIC
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.6 Components Available in V200R006C15

NOTE

The components marked * are the new components added to V200R006C15.

Chassis

Table 1-11 describes the chassis models available in V200R006C15.

Table 1-11 Chassis models available in V200R006C15

Series	Chassis Model	Description
AR120	AR121	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)

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Series	Chassis Model	Description
	AR129	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR121W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR129W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FW	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, and other interfaces including HDMI, headset, and microphone interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n AP, ZigBee, and Bluetooth.
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
	AR161	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces.
	AR161G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces.
	AR169G-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.

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Series	Chassis Model	Description
	AR169-P-M9	Provides fixed interfaces, supports Bluetooth and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including Bluetooth antenna, HDMI, VGA, RS485/232, headset, and microphone interfaces.
	AR169BF	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
AR500	AR503GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
	AR503GW-LcM7*	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS/BDS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS/BDS interface, one SATA interface, one GE WAN interface, and one RS232 interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.
	AR511GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n AP.

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Series	Chassis Model	Description
	AR511GW-L-B3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and receiving of digital TV signals, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one GE WAN interface, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, 802.11a/b/g/n AP, and DTMB.
	AR513W-V3M8	Provides fixed interfaces, supports WLAN access and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one eSATA interface, one audio interface, two HDMI interfaces, one VGA interface, one DI/DO interface, one RS485 interface, and two GE WAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11a/b/g/n AP.
	AR511CGW-LAV2M3*	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, TDD, and 802.11a/b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, built-in AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220VW	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220E	Has fixed GE electrical interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220EV	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220EVW	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.

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Series	Chassis Model	Description
	AR2220 DC model	Has fixed interfaces, built-in DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2220E	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs, power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.
AR3600	AR3670	Has SRUX5 control units, power modules, and fan modules. It has two SIC slots and seven WSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-12 describes the cards available in V200R006C15.

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Table 1-12 Cards available in V200R006C15

Card Type	Card Name	Description
SRU	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
	SRUX5	Service and router unit X5
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	**2FE**	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card

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Card Type	Card Name	Description
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M packet over SDH/SONET optical interface card
	1STM4	1-port 622M packet over SDH/SONET optical interface card
	4STM1	4-port 155M packet over SDH/SONET optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card

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Card Type	Card Name	Description
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port -4 pair G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
	1GBIS4W	1-port 4 pair G.SHDSL WAN interface card-WSIC
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.7 Components Available in V200R006C10

NOTE

The components marked * are the new components added to V200R006C10.

Chassis

Table 1-13 describes the chassis models available in V200R006C10.

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Table 1-13 Chassis models available in V200R006C10

Series	Chassis Model	Description
AR120	AR121*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR129*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. (LAN interface FE0 cannot be configured as a WAN interface.)
	AR121W*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR129W*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.

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Series	Chassis Model	Description
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).

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Series	Chassis Model	Description
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FW*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.

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Series	Chassis Model	Description
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11b/g/n.
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, and other interfaces including HDMI, headset, and microphone interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n, ZigBee, and Bluetooth.
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
	AR161*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces.
	AR161G-L*	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR169G-L*	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD.
	AR169-P-M9*	Provides fixed interfaces, supports Bluetooth and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE WAN interface, four GE LAN interfaces, and other interfaces including Bluetooth antenna, HDMI, VGA, RS485/232, headset, and microphone interfaces.
	AR169BF*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161W*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169W*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR500	AR509G-L-D-H*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n.
	AR511GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports LTE FDD and 802.11a/b/g/n.
	AR511GW-L-B3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and receiving of digital TV signals, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GPS interface, one GE WAN interface, one audio interface, and two video interfaces. Besides, the router has antenna interfaces and supports LTE FDD, 802.11a/b/g/n, and DTMB.

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Series	Chassis Model	Description
	AR513W-V3M8	Provides fixed interfaces, supports WLAN access and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one eSATA interface, one audio interface, two HDMI interfaces, one VGA interface, one DI/DO interface, one RS485 interface, and two GE WAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11a/b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, built-in AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F	Has fixed interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220E*	Has fixed GE electrical interfaces, built-in AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220EV*	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220EVW*	Has fixed GE electrical interfaces, built-in AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, built-in AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, built-in DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR2220E*	Has fixed interfaces, built-in AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs, power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.
AR3600	AR3670*	Has SRUX5 control units, power modules, and fan modules. It has two SIC slots and seven WSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-14 describes the cards available in V200R006C10.

Table 1-14 Cards available in V200R006C10

Card Type	Card Name	Description
SRU	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
	SRUX5*	Service and router unit X5
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card

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Card Type	Card Name	Description
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M packet over SDH/SONET optical interface card
	1STM4	1-port 622M packet over SDH/SONET optical interface card
	4STM1*	4-port 155M packet over SDH/SONET optical interface card

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Card Type	Card Name	Description
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	1LTEC*	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	**1ADSL-A/M**	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port -4 pair G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
	1GBIS4W*	1-port 4 pair G.SHDSL WAN interface card-WSIC
Voice interface card	**4FXS1FXO**	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC

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Card Type	Card Name	Description
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.8 Components Available in V200R005C32

NOTE

The components marked * are the new components added to V200R005C32.

Chassis

Table 1-15 describes the chassis models available in V200R005C32.

Table 1-15 Chassis models available in V200R005C32

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, one HDMI video interface, one earphone interface, and one microphone interface. Besides, the router has antenna interfaces and support 802.11b/g/n, ZigBee, and Bluetooth.

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Series	Chassis Model	Description
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include two GE WAN interfaces, one AUDIO interface, and two VIDEO interfaces. Besides, the router has antenna interfaces and support LTE FDD, 802.11a/b/g/n, and GPS.
	AR511GW-LM7	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface and SATA interface. Besides, the router has antenna interfaces and support LTE FDD, 802.11a/b/g/n, and GPS.

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Series	Chassis Model	Description
	AR511GW-L-B3*	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and receiving of digital TV signals, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface, DTMB interface, one AUDIO interface, and two VIDEO interfaces. Besides, the router has antenna interfaces and support LTE FDD, 802.11a/b/g/n, and GPS.
	AR513W-V3M8*	Provides fixed interfaces, supports WLAN access and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include eSATA interface, one Audio interface, two HDMI interfaces, one VGA interface, one DI/DO interface, one RS485 interface, and two GE WAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11a/b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-16 describes the cards available in V200R005C32.

Table 1-16 Cards available in V200R005C32

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC

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Card Type	Card Name	Description
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M POS optical interface card
	1STM4	1-port 622M POS optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card

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Card Type	Card Name	Description
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.9 Components Available in V200R005C31

NOTE

The components marked * are the new components added to V200R005C31.

Chassis

Table 1-17 describes the chassis models available in V200R005C31.

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Table 1-17 Chassis models available in V200R005C31

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169FVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169FGVW-L	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR169FGW-L	Provides fixed interfaces, supports LTE uplink connection, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR161FW-P-M5	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, one HDMI video interface, one earphone interface, and one microphone interface. Besides, the router has antenna interfaces and support 802.11b/g/n, Zigbee, and Bluetooth.
	AR161F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR510	AR511GW-LAV2M3	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include two GE WAN interfaces, one AUDIO interface, and two VIDEO interfaces. Besides, the router has antenna interfaces and support LTE FDD, 802.11a/b/g/n, and GPS.
	AR511GW-LM7*	Provides fixed interfaces, supports LTE uplink connection, WLAN access, GPS positioning, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include one GE WAN interface and SATA interface. Besides, the router has antenna interfaces and support LTE FDD, 802.11a/b/g/n, and GPS.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR2204	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-18 describes the cards available in V200R005C31.

Table 1-18 Cards available in V200R005C31

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card

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Card Type	Card Name	Description
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M POS optical interface card
	1STM4	1-port 622M POS optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card

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Card Type	Card Name	Description
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	**1ADSL-A/M**	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	**4FXS1FXO**	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.10 Components Available in V200R005C30

NOTE

The components marked * are the new components added to V200R005C30.

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Chassis

Table 1-19 describes the chassis models available in V200R005C30.

Table 1-19 Chassis models available in V200R005C30

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.

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Series	Chassis Model	Description
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169FVW*	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR169FGVW-L*	Provides fixed interfaces, supports LTE uplink connection, voice function, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR169FGW-L*	Provides fixed interfaces, supports LTE uplink connection, and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR161FW-P-M5*	Provides fixed interfaces, supports WLAN access and PoE, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface, four GE LAN interfaces, one HDMI video interface, one earphone interface, and one microphone interface. Besides, the router has antenna interfaces and support 802.11b/g/n, Zigbee, and Bluetooth.
	AR161F*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR510	AR511GW-LAV2M3*	Provides fixed interfaces, supports LTE uplink connection, WLAN access, and GPS positioning, and does not support interface expansion. It is powered by an external DC power source. The fixed interfaces include two GE WAN interfaces, one AUDIO interface, and two VIDEO interfaces. Besides, the router has antenna interfaces and support LTE FDD, 802.11a/b/g/n, and GPS.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220F	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-20 describes the cards available in V200R005C30.

Table 1-20 Cards available in V200R005C30

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC

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Card Type	Card Name	Description
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M POS optical interface card
	1STM4	1-port 622M POS optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card

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Card Type	Card Name	Description
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.11 Components Available in V200R005C21

Chassis

Table 1-21 describes the chassis models available in V200R005C21.

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Table 1-21 Chassis models available in V200R005C21

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR162F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FW	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-22 describes the cards available in V200R005C21.

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Table 1-22 Cards available in V200R005C21

Card Type	Card Name	Description
Control unit	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	**2FE**	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card

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Card Type	Card Name	Description
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M POS optical interface card
	1STM4	1-port 622M POS optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card

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Card Type	Card Name	Description
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.12 Components Available in V200R005C20

NOTE

The components marked * are the new components added to V200R005C20.

Chassis

Table 1-23 describes the chassis models available in V200R005C20.

Table 1-23 Chassis models available in V200R005C20

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR161FG-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
	AR162F*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one SA WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR161FW*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-24 describes the cards available in V200R005C20.

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Table 1-24 Cards available in V200R005C20

Card Type	Card Name	Description
Control unit	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200	Service and router unit 200
	SRU400	Service and router unit 400
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	**2FE**	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card

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Card Type	Card Name	Description
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M POS optical interface card
	1STM4	1-port 622M POS optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	4GECS	4-port GE combo WAN interface card
	8SA	8-port synchronous/asynchronous WAN interface card
	6E&M*	6-port E&M-RJ45 analog trunk interface card
xDSL/xPON interface card	**1ADSL-A/M**	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card

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Card Type	Card Name	Description
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

1.13 Components Available in V200R005C10

NOTE

The components marked * are the new components added to V200R005C10.

Chassis

Table 1-25 describes the chassis models available in V200R005C10.

Table 1-25 Chassis models available in V200R005C10

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.
	AR156W*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR160	AR168F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.

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Series	Chassis Model	Description
	AR161FG-L*	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with Long Term Evolution Frequency Division Duplex (LTE FDD).
	AR161FGW-L*	Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one GE combo WAN interface and four GE LAN interfaces. Besides, the router has antenna interfaces and provides wireless access service in compliance with LTE FDD. The router can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.

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Series	Chassis Model	Description
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220F*	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR2202-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-26 describes the cards available in V200R005C10.

Table 1-26 Cards available in V200R005C10

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
	SRU200*	Service and router unit 200
	SRU400*	Service and router unit 400
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card

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Card Type	Card Name	Description
	9ES2	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	**2FE**	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M POS optical interface card
	1STM4	1-port 622M POS optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card

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Card Type	Card Name	Description
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO	3G CDMA2000 EVDO interface card
	1LTE-L	WCDMA LTE interface card
	4GECS*	4-port GE combo WAN interface card
	8SA*	8-port synchronous/asynchronous WAN interface card
xDSL/xPON interface card	**1ADSL-A/M**	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	**4FXS1FXO**	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1	1-port voice E1 interface card

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1.14 Components Available in V200R005C00

NOTE

- The components marked * are the new components added to V200R005C00.
- The components marked ^ are updated in V200R005C00.

Chassis

Table 1-27 describes the chassis models available in V200R005C00.

Table 1-27 Chassis models available in V200R005C00

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-C*	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with CDMA2000.

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Series	Chassis Model	Description
AR160	AR168F*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
	AR169F*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one VDSL2 WAN interface, one GE combo WAN interface, and four GE LAN interfaces.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B/J WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.

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Series	Chassis Model	Description
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.
	AR2202-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR2204	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-28 describes the cards available in V200R005C00.

Table 1-28 Cards available in V200R005C00

Card Type	Card Name	Description
Control unit	**SRU40**	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
	9ES2*	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2G-S*	4-port 1000BASE-RJ45 L2 Ethernet interface card
	4ES2GP-S*	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card
WAN interface card	**2FE**	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card

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Card Type	Card Name	Description
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M POS optical interface card
	1STM4	1-port 622M POS optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
	1E3/CE3/T3/CT3*	1-port channelized/unchannelized E3/T3 WAN interface card
	3G-EVDO*	3G CDMA2000 EVDO interface card

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Card Type	Card Name	Description
	1LTE-L*	WCDMA LTE interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B/J*	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card
	1VE1*	1-port voice E1 interface card

1.15 Components Available in V200R003C01

Chassis

Table 1-29 describes the chassis models available in V200R003C01.

Table 1-29 Chassis models available in V200R003C01

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR157VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.

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Series	Chassis Model	Description
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR207VW	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR2202-48FE	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-30 describes the cards available in V200R003C01.

Table 1-30 Cards available in V200R003C01

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU60	Service and router unit 60
	SRU80	Service and router unit 80
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S	4-port 1000BASE-SFP L2 Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card

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Card Type	Card Name	Description
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1	1-port 155M POS optical interface card
	1STM4	1-port 622M POS optical interface card
	8E1/T1-M	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA	4-port E1 inverse multiplexing for ATM interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card

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Card Type	Card Name	Description
	1ADSL-B	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card

1.16 Components Available in V200R003C00

NOTE

The components marked * are the new components added to V200R003C00.

Chassis

Table 1-31 describes the chassis models available in V200R003C00.

Table 1-31 Chassis models available in V200R003C00

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B WAN interface and four FE LAN interfaces.
	AR158E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
	AR151W-P*	Provides fixed interfaces, supports wireless local area network (WLAN) access and power over Ethernet (PoE), and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, four FE LAN interfaces, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR151G-HSPA+7*	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR157W*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.

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Series	Chassis Model	Description
	AR157VW*	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR157G-HSPA+7*	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR158EVW*	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface, four FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.

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Series	Chassis Model	Description
	AR207V-P	Provides fixed interfaces, supports voice and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
	AR201VW-P*	Provides fixed interfaces, supports voice, WLAN access, and PoE functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
	AR207VW*	Provides fixed interfaces, supports voice function and WLAN access, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2201-48FE*	Has fixed interfaces, internal AC power modules and fan modules. It can connect to a redundant power supply (RPS) to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces are forty-eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR2202-48FE*	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has reserved card slots for interface expansion. The fixed interfaces include one SA WAN interface, one E1 WAN interface, and forty-eight FE LAN interfaces.
	AR2204*	Has fixed interfaces, internal AC power modules and fan modules. It can connect to an RPS to implement power redundancy and has four SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-32 describes the cards available in V200R003C00.

Table 1-32 Cards available in V200R003C00

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU80	Service and router unit 80
	SRU60*	Service and router unit 60
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	4GE-2S*	4-port 1000BASE-SFP L2 Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card

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Card Type	Card Name	Description
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
	1STM1*	1-port 155M POS optical interface card
	1STM4*	1-port 622M POS optical interface card
	8E1/T1-M*	8-port channelized E1/T1/PRI/VE1 multifunctional interface card
	4E1/T1-M*	4-port channelized E1/T1/PRI/VE1 multifunctional interface card
	8E1/T1-F*	8-port fractional channelized E1/T1 WAN interface card
	4E1/T1-F*	4-port fractional channelized E1/T1 WAN interface card
	4E1-IMA*	4-port E1 inverse multiplexing for ATM interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card

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Card Type	Card Name	Description
	1ADSL-B	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS	32-port FXS voice interface card
	16FXS	16-port FXS voice interface card
	4FXO	4-port FXO voice interface card

1.17 Components Available in V200R002C02

NOTE

The components marked * are the new components added to V200R002C02.

Chassis

Table 1-33 describes the chassis models available in V200R002C02.

Table 1-33 Chassis models available in V200R002C02

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.

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Series	Chassis Model	Description
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
	AR156*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B WAN interface and four FE LAN interfaces.
	AR158E*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and four FE LAN interfaces.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B WAN interface and eight FE LAN interfaces.
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.

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Series	Chassis Model	Description
	AR207V-P	Provides fixed interfaces, supports voice and power over Ethernet (PoE) functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model*	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220L	Has fixed interfaces, internal AC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-34 describes the cards available in V200R002C02.

Table 1-34 Cards available in V200R002C02

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU80	Service and router unit 80
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card

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Card Type	Card Name	Description
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7	3G WCDMA HSPA+7 interface card
	4GEW-T	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S	4-port 1000BASE-SFP L3 Ethernet WAN interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC

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Card Type	Card Name	Description
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module
	32FXS*	32-port FXS voice interface card
	16FXS*	16-port FXS voice interface card
	4FXO*	4-port FXO voice interface card

1.18 Components Available in V200R002C01

NOTE

The components marked * are the new components added to V200R002C01.

Chassis

Table 1-35 describes the chassis models available in V200R002C01.

Table 1-35 Chassis models available in V200R002C01

Series	Chassis Model	Description
AR150	AR151	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
AR200	AR201	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.
	AR206	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR207	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P	Provides fixed interfaces, supports voice and power over Ethernet (PoE) functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
	AR207G-HSPA+7*	Provides fixed interfaces, supports 3G uplink connection, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces. Besides, the router has antenna interfaces and provides 3G service in compliance with WCDMA HSPA+7.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220L*	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-36 describes the cards available in V200R002C01.

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Table 1-36 Cards available in V200R002C01

Card Type	Card Name	Description
Control unit	**SRU40**	Service and router unit 40
	SRU80	Service and router unit 80
Ethernet LAN interface card	**8FE1GE**	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
WAN interface card	**2FE**	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
	3G-HSPA+7*	3G WCDMA HSPA+7 interface card
	4GEW-T*	4-port 1000BASE-RJ45 L3 Ethernet WAN interface card
	4GEW-S*	4-port 1000BASE-SFP L3 Ethernet WAN interface card
xDSL/xPON interface card	**1ADSL-A/M**	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B	1-port ADSL2+ ANNEX B WAN interface card

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Card Type	Card Name	Description
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON	1-port EPON/GPON interface card
	VDSL2*	1-port VDSL2 over POTS WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module

1.19 Components Available in V200R002C00

NOTE

The components marked * are the new components added to V200R002C00.

Chassis

Table 1-37 describes the chassis models available in V200R002C00.

Table 1-37 Chassis models available in V200R002C00

Series	Chassis Model	Description
AR150	AR151*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and four FE LAN interfaces.
	AR157*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and four FE LAN interfaces.
AR200	AR201*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one FE WAN interface and eight FE LAN interfaces.

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Series	Chassis Model	Description
	AR206*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-B WAN interface and eight FE LAN interfaces.
	AR207*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface and eight FE LAN interfaces.
	AR207V*	Provides fixed interfaces, supports the voice function, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, and one FXO interface.
	AR207V-P*	Provides fixed interfaces, supports voice and power over Ethernet (PoE) functions, and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one ADSL-A/M WAN interface, eight FE LAN interfaces, four FXS interfaces, one FXO interface, and one PoE interface.
	AR208E*	Provides fixed interfaces and does not support interface expansion. It is powered by a power adapter. The fixed interfaces include one G.SHDSL WAN interface and eight FE LAN interfaces.
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
	AR1220VW	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
	AR2220 DC model	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-38 describes the cards available in V200R002C00.

Table 1-38 Cards available in V200R002C00

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU80	Service and router unit 80
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card

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Card Type	Card Name	Description
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-SIC
	2E1T1-M-W*	2-port channelized E1/T1/PRI/VE1 multifunctional interface card-WSIC
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F	2-port fractional channelized E1/T1 WAN interface card
	2SA	2-port synchronous/asynchronous WAN interface card
	1GEC	1-port GE combo WAN interface card
	8AS	8-port asynchronous WAN interface card
	1BST	1-port ISDN S/T WAN card
	1CPOS-155M	1-port channelized POS interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
	1PON*	1-port EPON/GPON interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST	2-port ISDN S/T voice interface card-SIC
	2BST-W*	2-port ISDN S/T voice interface card-WSIC
	16/32/64/128-channel DSP module	16/32/64/128-channel DSP module

1.20 Components Available in V200R001C01

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NOTE

The components marked * are the new components added to V200R001C01.

Chassis

Table 1-39 describes the chassis models available in V200R001C01.

Table 1-39 Chassis models available in V200R001C01

Series	Chassis Model	Description
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and power over Ethernet (PoE) functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220W*	Has fixed interfaces, internal AC power modules and fan modules, and supports the WLAN access and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220VW*	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice, WLAN access, and PoE functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220 DC model*	Has fixed interfaces, internal DC power modules and fan modules. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.

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Series	Chassis Model	Description
	AR2220 DC model*	Has fixed interfaces, internal DC power modules and fan modules. It has four SIC slots and two WSIC slots, in which different types of cards can be installed to increase the number of interfaces.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-40 describes the cards available in V200R001C01.

Table 1-40 Cards available in V200R001C01

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU80	Service and router unit 80
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card
	1SA	1-port synchronous/asynchronous WAN interface card
	1E1T1-F*	1-port fractional channelized E1/T1 WAN interface card
	2E1T1-F*	2-port fractional channelized E1/T1 WAN interface card
	2SA*	2-port synchronous/asynchronous WAN interface card

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Card Type	Card Name	Description
	1GEC*	1-port GE combo WAN interface card
	8AS*	8-port asynchronous WAN interface card
	1BST*	1-port ISDN S/T WAN card
	1CPOS-155M*	1-port channelized POS interface card
xDSL/xPON interface card	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
Voice interface card	4FXS1FXO	4-port FXS and 1-port FXO voice interface card
	2BST*	2-port ISDN S/T voice interface card
	16/32/64/128-channel DSP module*	16/32/64/128-channel DSP module

1.21 Components Available in V200R001C00

Chassis

Table 1-41 describes the chassis models available in V200R001C00.

Table 1-41 Chassis models available in V200R001C00

Series	Chassis Model	Description
AR1200	AR1220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has two service interface card (SIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR1220V	Has fixed interfaces, internal AC power modules and fan modules, and supports the voice and power over Ethernet (PoE) functions. It has two SIC slots, in which different types of cards can be installed to increase the number of interfaces.

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Series	Chassis Model	Description
AR2200	AR2220 AC model	Has fixed interfaces, internal AC power modules and fan modules. It has four SIC slots and two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces.
	AR2240	Has an SRU (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and two extended service interface card (XSIC) slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules to improve system reliability.
AR3200	AR3260	Has SRUs (control unit), power modules, and fan modules. It has four SIC slots, two WSIC slots, and four XSIC slots, in which different types of cards can be installed to increase the number of interfaces. It can be configured with double power modules and double SRUs to improve system reliability.

Cards

Table 1-42 describes the cards available in V200R001C00.

Table 1-42 Cards available in V200R001C00

Card Type	Card Name	Description
Control unit	SRU40	Service and router unit 40
	SRU80	Service and router unit 80
Ethernet LAN interface card	8FE1GE	8-port 100BASE-RJ45 and 1-port 1000BASE-RJ45 L2/L3 Ethernet interface card
	24GE	24-port 1000BASE-RJ45 L2/L3 Ethernet interface card
WAN interface card	2FE	2-port FE WAN interface card
	1E1T1-M	1-port channelized E1/T1/PRI/VE1 multifunctional interface card
	2E1T1-M	2-port channelized E1/T1/PRI/VE1 multifunctional interface card

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Card Type	Card Name	Description
	1SA	1-port synchronous/asynchronous WAN interface card
xDSL/xPON interface card	**1ADSL-A/M**	1-port ADSL2+ ANNEX A/M WAN interface card
	1ADSL-B	1-port ADSL2+ ANNEX B WAN interface card
	4G.SHDSL	1-port 4G.SHDSL WAN interface card
Voice interface card	**4FXS1FXO**	4-port FXS and 1-port FXO voice interface card

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2 Chassis

About This Chapter

2.1 Chassis Models
2.2 Naming Conventions
2.3 AR120 Series
2.4 AR150 Series
2.5 AR160 Series
2.6 AR200 Series
2.7 AR500 Series
2.8 AR510 Series
2.9 AR1200 Series
2.10 AR2200 Series
2.11 AR3200 Series
2.12 AR3600 Series

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2.1 Chassis Models

Huawei AR enterprise routers (AR routers for short) include AR120, AR150, AR160, AR200, AR500, AR510, AR1200, AR2200, AR3200 and AR3600 series routers. You can select different models according to your network requirements.

NOTE

- In this document, AR1220E series routers indicates AR1220E, AR1220EV, and AR1220EVW.
- In this document, AR2204E series routers indicates AR2204-51GE-P, AR2204-27GE-P, AR2204-27GE, and AR2204E.

2.2 Naming Conventions

AR120/AR150/AR160/AR200 Series

Figure 2-1 shows naming conventions of the AR120/AR150/AR160/AR200 series routers. Table 2-1 describes the meaning of each letter or digit.

Figure 2-1 AR120/AR150/AR160/AR200 series routers naming conventions

Table 2-1 AR120/AR150/AR160/AR200 series routers naming conventions

Field	Meaning	Description
A	Product name	AR: application and access routers
B	Hardware platform type. The value can be 1 or 2.	● 1: four LAN interfaces ● 2: eight LAN interfaces
C	Combines with B to indicate different router series using the same hardware platform.	The following router series are available: ● 12/15: 4*FE LAN interface series ● 16: 4*GE LAN interface series ● 20: 8*FE LAN interface series

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Field	Meaning	Description
D	Type of major fixed uplink interfaces on the router	● 1: FE or GE ● 2: SA ● 6: ADSL-B/J ● 7: ADSL-A/M ● 8: G.SHDSL ● 9: VDSL over POTS
E	(Optional) Other interface types supported by the router	● E: enhanced major uplink interface (dual-uplink or two-wire/four-wire DSL enhanced) ● F: uplink GE combo interface ● G: uplink wireless interface (GPRS, 3G, or LTE) ● V: voice interface ● W: Wi-Fi interface
F	(Optional) Extended information about the router **NOTE** This field starts with "-" and specifies supplementary interface descriptions or other possible configurations.	● HSPA+7: WCDMA HSPA+7 3G standard ● C: CDMA2000 3G standard ● D: DC model ● P: PoE supported ● Mn: information about the multi-service open platform – M9: Serial Advanced Technology Attachment (SATA) hard disk supported ● L: FDD-LTE, a European standard

AR500/AR510 Series

Figure 2-2 shows naming conventions of the AR500/AR510 series routers. **Table 2-2** describes the meaning of each letter or digit.

Figure 2-2 AR500/AR510 series routers naming conventions

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Table 2-2 AR500/AR510 series routers naming conventions

Field	Meaning	Description
A	Product name	AR: application and access routers
B	Hardware platform type	5: industrial integrated routing and switching platform
C	Combines with B to indicate different router series using the same hardware platform.	● 50: industrial Internet of Things (IoT) access gateway series ● 51: mobile Internet industrial router series
D	Type of major fixed uplink interfaces on the router	● 1: uplink LTE/3G interface ● 3: uplink GE electrical interface
E	(Optional) Other interface types supported by the router	● G: uplink wireless interface (LTE, 3G, or GPRS) ● W: Wi-Fi interface
F	(Optional) Extended information about the router **NOTE** This field starts with "-" and specifies supplementary interface descriptions or other possible configurations.	● L: complies with FDD-LTE, a European standard. ● Lc: complies with TDD-LTE, a China standard. ● A: supports audio input/output. ● V (1 to n): supports video output (n is an Arabic number.) – V2 indicates that the router supports two video outputs – V3 indicates that the router supports three video outputs ● Mn: supports multiple-service open platform. n is an Arabic number indicating the specifications of the multiple-service open platform. The larger the number, the larger capability the platform has. The M3 series, M7 series and M8 series are available now. – M3: does not support external hard disks. – M7: supports external 2.5 inch hard disks. – M8: supports external 3.5 inch hard disks.

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NOTE

The AR511GW-L-B3 is a customized model; therefore, its product name does not follow the above-mentioned naming conventions.

AR1200/AR2200/AR3200/AR3600 Series

Figure 2-3 shows naming conventions of the AR1200/AR2200/AR3200/AR3600 series routers. Table 2-3 describes the meaning of each letter or digit.

Figure 2-3 AR1200/AR2200/AR3200/AR3600 series routers naming conventions

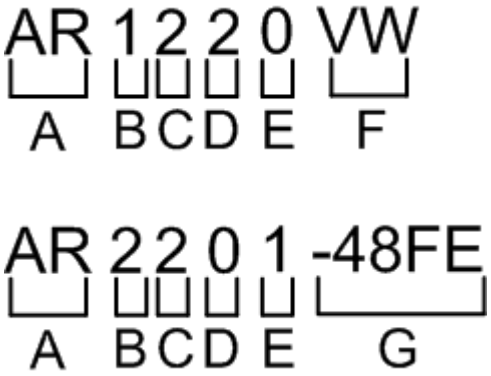

Table 2-3 AR1200/AR2200/AR3200/AR3600 series routers naming conventions

Field	Meaning	Description
A	Product name	AR: application and access routers
B	Hardware platform series code	Currently, three router series are available: 1, 2 and 3. A larger value indicates higher performance.
C	Hardware platform type	● 2: traditional router ● 6: router with the X86 open platform

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Field	Meaning	Description
D	Maximum number of slots supported by the router	● AR1200 series: D indicates the maximum number of service interface card (SIC) slots supported. ● AR2200/AR3200/AR3600 series: – Traditional router: D indicates the maximum number of extended service interface card (XSIC) slots supported. – Router with the X86 open platform: D indicates the maximum number of wide service interface card (WSIC) slots supported. **NOTE** ● D can be 0, indicating the cost-effective router model with fixed uplink interfaces or reduced number of slots. E represents the number of fixed uplink interfaces or reduced number of slots. ● For details about SIC, WSIC, and XSIC, see **Card Dimensions**.
E	Fixed uplink interfaces on the router	● 1: FE/GE ● 2: E1/SA ● 4: four SIC slots **NOTE** If E is 0, the router has no fixed uplink interface.
F	(Optional) Series of the router and other interface types supported by the router	● F: F series ● L: L series ● E: E series ● C: C series ● V: fixed voice interface ● W: fixed Wi-Fi interface
G	(Optional) Extended information about the router **NOTE** This field starts with "-" and specifies supplementary interface descriptions or other possible configurations.	● A: AC model (AC is the default configuration, and this field can be omitted in AC models.) ● D: DC model ● 48FE: 48 fixed 100M switching ports

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2.3 AR120 Series

2.3.1 AR121

Version Mapping

Table 2-4 lists the mapping between the AR121 series routers and software versions.

Table 2-4 Matching between AR121 series routers and software versions

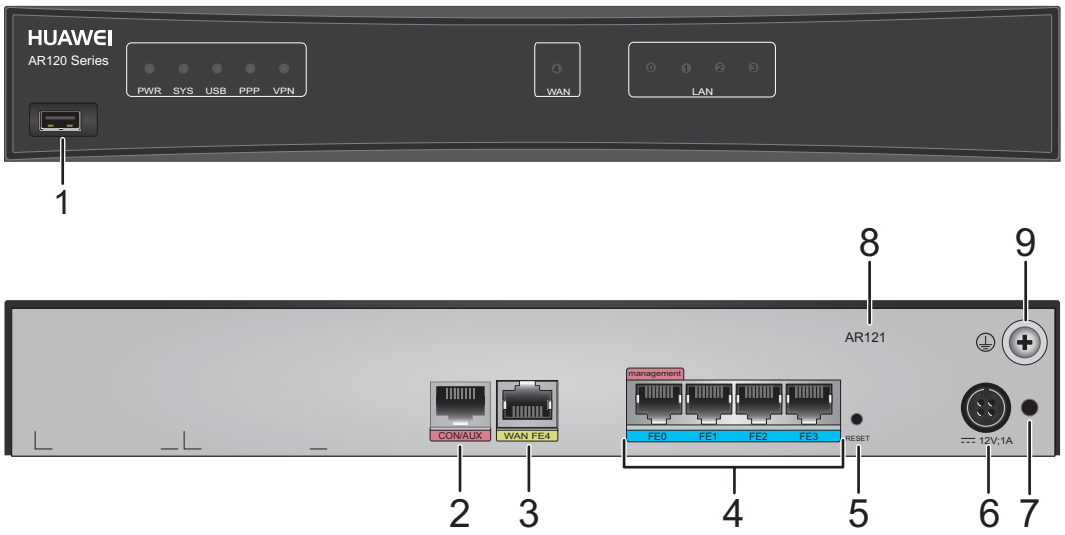
Router Model	Software Version
AR121	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-4 shows the appearance of the AR121 router.

Figure 2-4 AR121 appearance



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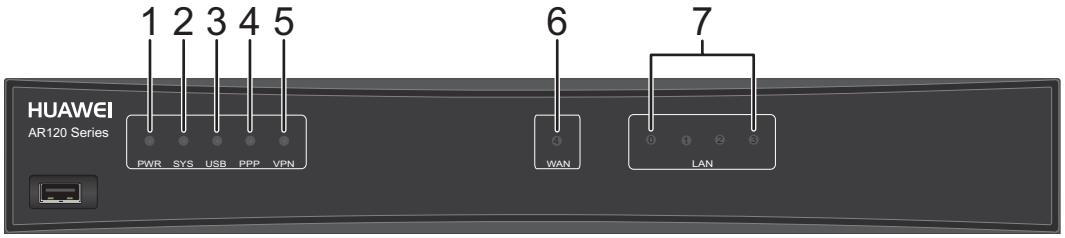
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR121 does not support AUX login.
3	WAN interface: **FE electrical interface**	4	LAN interfaces: four **FE electrical interfaces** **NOTE** FE0 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-5 shows the indicators on the AR121 series routers.

Figure 2-5 Indicators on the AR121



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN (FE4)	Green	Steady on: A link has been established on the WAN interface. Blinking: Data is being transmitted or received on the WAN interface. Off: No link is established on the WAN interface.
7	LAN (FE0-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

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CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-5** lists the CON/AUX interface attributes.

Table 2-5 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-6** lists attributes of an FE electrical interface.

Table 2-6 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-7** lists attributes of a USB interface.

Table 2-7 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR121 has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-6** shows its appearance.

Figure 2-6 24 W power adapter appearance

Table 2-8 provides the functions of the 24 W power adapter.

Table 2-8 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.

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Function	Description
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-9 provides the specifications of the 24 W power adapter.

Table 2-9 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR121 does not have a fan. That is, it adopts nature heat dissipation.

Technical Specifications

Table 2-10 lists technical specifications of the AR121 series routers.

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Table 2-10 AR121 series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	9.3 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: four FE electrical interfaces
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.3.2 AR129

Version Mapping

Table 2-11 lists the mapping between the AR129 series routers and software versions.

Table 2-11 Matching between AR129 series routers and software versions

Router Model	Software Version
AR129	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-7 shows the appearance of the AR129 router.

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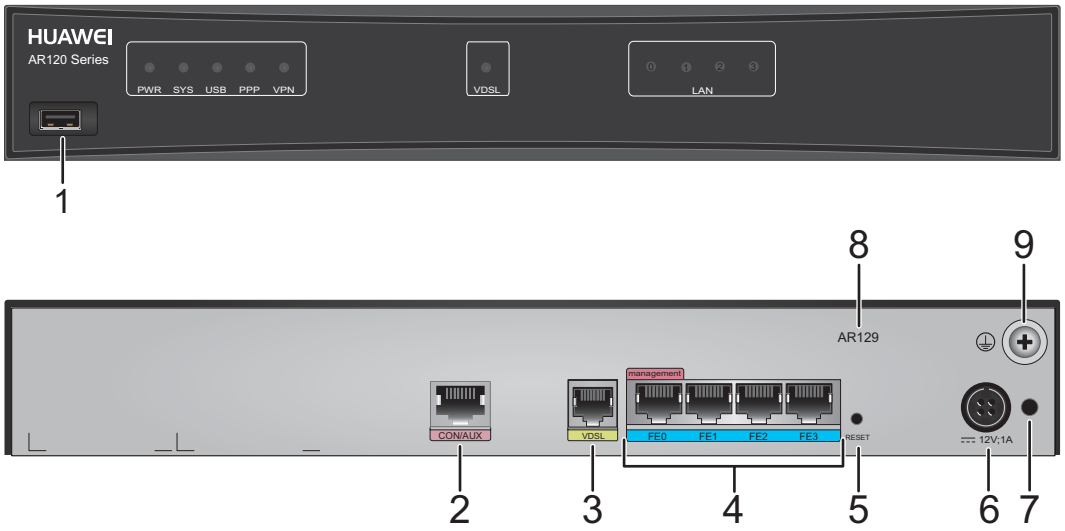
Figure 2-7 AR129 appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR129 does not support AUX login.
3	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: four **FE electrical interfaces** **NOTE** FE0 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

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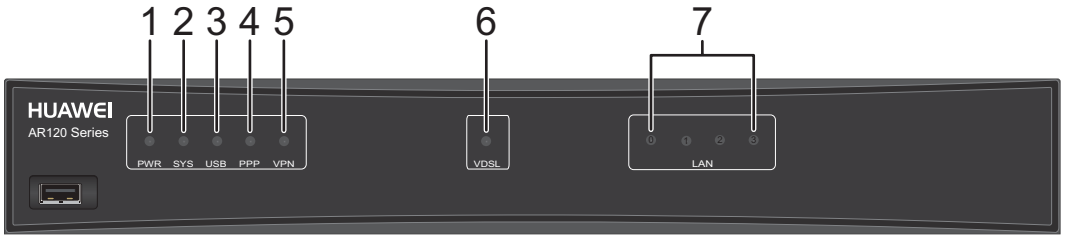
Indicator Description

Figure 2-8 shows the indicators on the AR129 series routers.

Figure 2-8 Indicators on the AR129



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.

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Number	Indicator	Color	Description
6	VDSL	Green	Steady on: A link has been established on the VDSL interface. Off: No link is established on the VDSL interface.
7	LAN (FE0-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-12** lists the CON/AUX interface attributes.

Table 2-12 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-13** lists attributes of an FE electrical interface.

Table 2-13 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-14** lists attributes of a USB interface.

Table 2-14 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-15** lists attributes of a VDSL interface.

Table 2-15 VDSL interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR129 has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-9** shows its appearance.

Figure 2-9 24 W power adapter appearance

Table 2-16 provides the functions of the 24 W power adapter.

Table 2-16 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-17 provides the specifications of the 24 W power adapter.

Table 2-17 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR129 does not have a fan. That is, it adopts nature heat dissipation.

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Technical Specifications

Table 2-18 lists technical specifications of the AR129 router.

Table 2-18 AR129 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	9.7 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None

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Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one VDSL interface LAN interfaces: four FE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.3.3 AR121W

Version Mapping

Table 2-19 describes the matching relationship between the AR121W series routers and software versions.

Table 2-19 Matching between AR121W series routers and software versions

Router Model	Software Version
AR121W	V200R006C10 and later versions

Appearance and Structure

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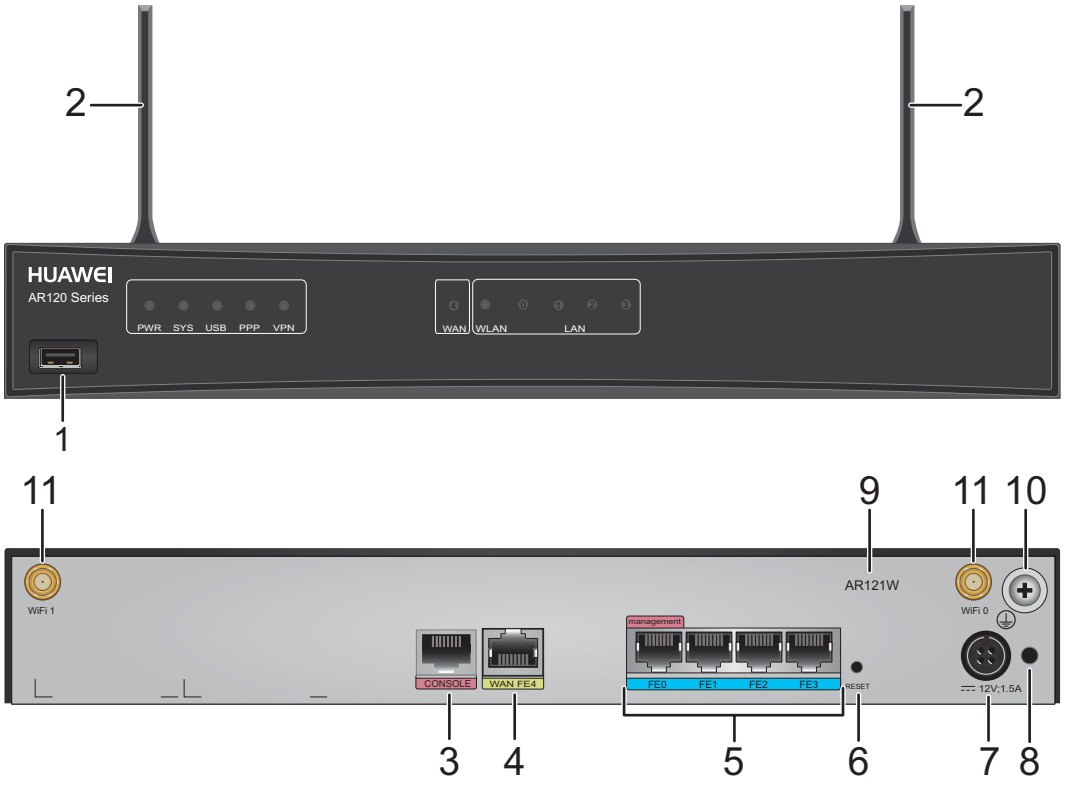
Appearance

Figure 2-10 shows the appearance of the AR121W router.

Figure 2-10 AR121W appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CONSOLE interface**	4	WAN interface: **FE electrical interface**
5	LAN interfaces: four **FE electrical interfaces** **NOTE** FE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.

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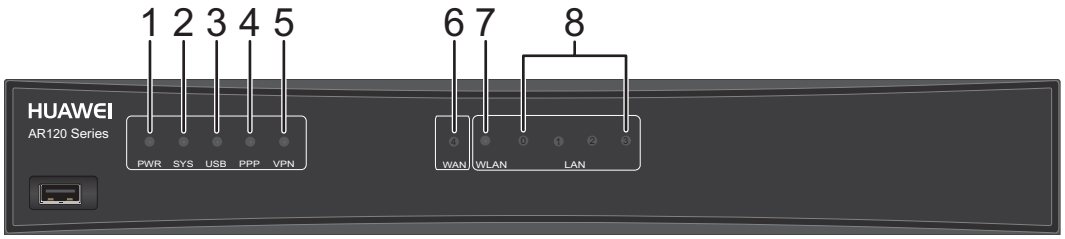
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	Two **Wi-Fi antenna interfaces**	-	-

Indicator Description

Figure 2-11 shows the AR121W indicator.

Figure 2-11 Indicators on the AR121W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN (FE4)	Green	Steady on: A link has been established on the WAN interface. Blinking: Data is being transmitted or received on the WAN interface. Off: No link is established on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN (FE0-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-20** lists attributes of a console interface.

Table 2-20 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)

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Attribute	Description
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-21** lists attributes of an FE electrical interface.

Table 2-21 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-22** lists attributes of a USB interface.

Table 2-22 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

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Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-23** lists attributes of a Wi-Fi antenna interface.

Table 2-23 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR121W has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-12** shows its appearance.

Figure 2-12 24 W power adapter appearance

Table 2-24 provides the functions of the 24 W power adapter.

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Table 2-24 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-25 provides the specifications of the 24 W power adapter.

Table 2-25 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

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Heat Dissipation

The AR121W series routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-26 lists technical specifications of the AR121W series routers.

Table 2-26 AR121W series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	11.32 W

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Item	Specification
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: four FE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.3.4 AR129W

Version Mapping

Table 2-27 describes the matching relationship between the AR129W series routers and software versions.

Table 2-27 Matching between AR129W series routers and software versions

Router Model	Software Version
AR129W	V200R006C10 and later versions

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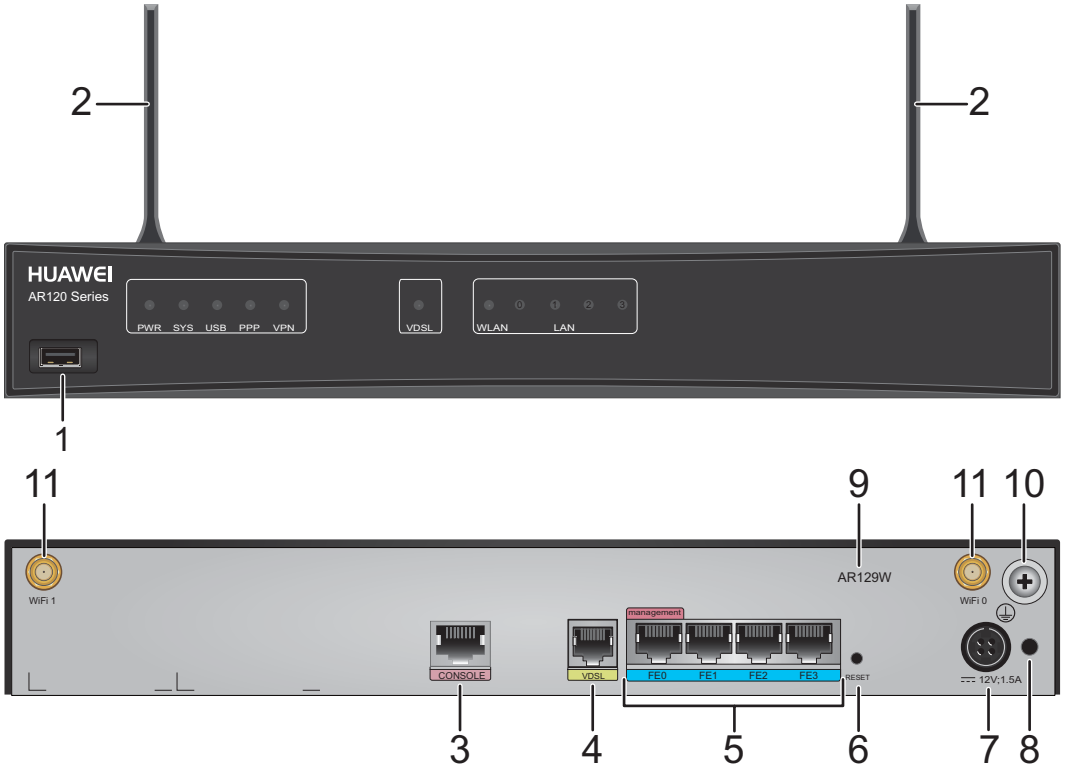
Appearance and Structure

Appearance

Figure 2-13 shows the appearance of the AR129W router.

Figure 2-13 AR129W appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CONSOLE interface**	4	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.

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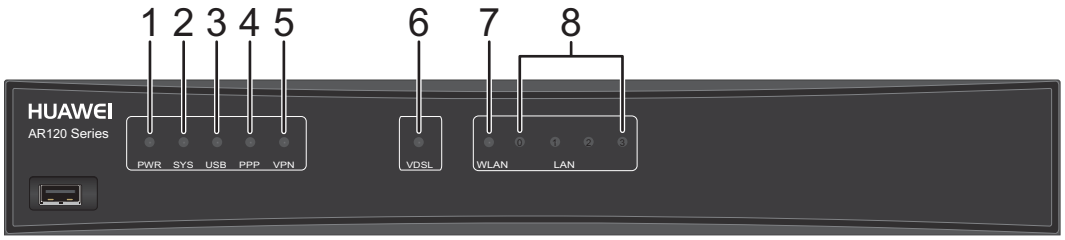
5	LAN interfaces: four **FE electrical interfaces** **NOTE** FE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	Two **Wi-Fi antenna interfaces**	-	-

Indicator Description

Figure 2-14 shows the AR129W indicator.

Figure 2-14 Indicators on the AR129W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.

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Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	VDSL	Green	Steady on: A link has been established on the VDSL interface. Off: No link is established on the VDSL interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN (FE0-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-28** lists attributes of a console interface.

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Table 2-28 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-29** lists attributes of an FE electrical interface.

Table 2-29 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-30** lists attributes of a USB interface.

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Table 2-30 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-31** lists attributes of a VDSL interface.

Table 2-31 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-32** lists attributes of a Wi-Fi antenna interface.

Table 2-32 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA

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Attribute	Description
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR129W has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-15** shows its appearance.

Figure 2-15 24 W power adapter appearance

Table 2-33 provides the functions of the 24 W power adapter.

Table 2-33 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-34 provides the specifications of the 24 W power adapter.

Table 2-34 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR129W series routers have no fans and use natural heat dissipation.

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Technical Specifications

Table 2-35 lists technical specifications of the AR129W series routers.

Table 2-35 AR129W series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	11.5 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

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Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one VDSL interface LAN interfaces: four FE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.3.5 AR121GW-L

Version Mapping

Table 2-36 lists the mapping between the AR121GW-L and software versions.

Table 2-36 Mapping between the AR121GW-L and software versions

Router Model	Software Version
AR121GW-L	V200R007C00 and later versions

Appearance and Structure

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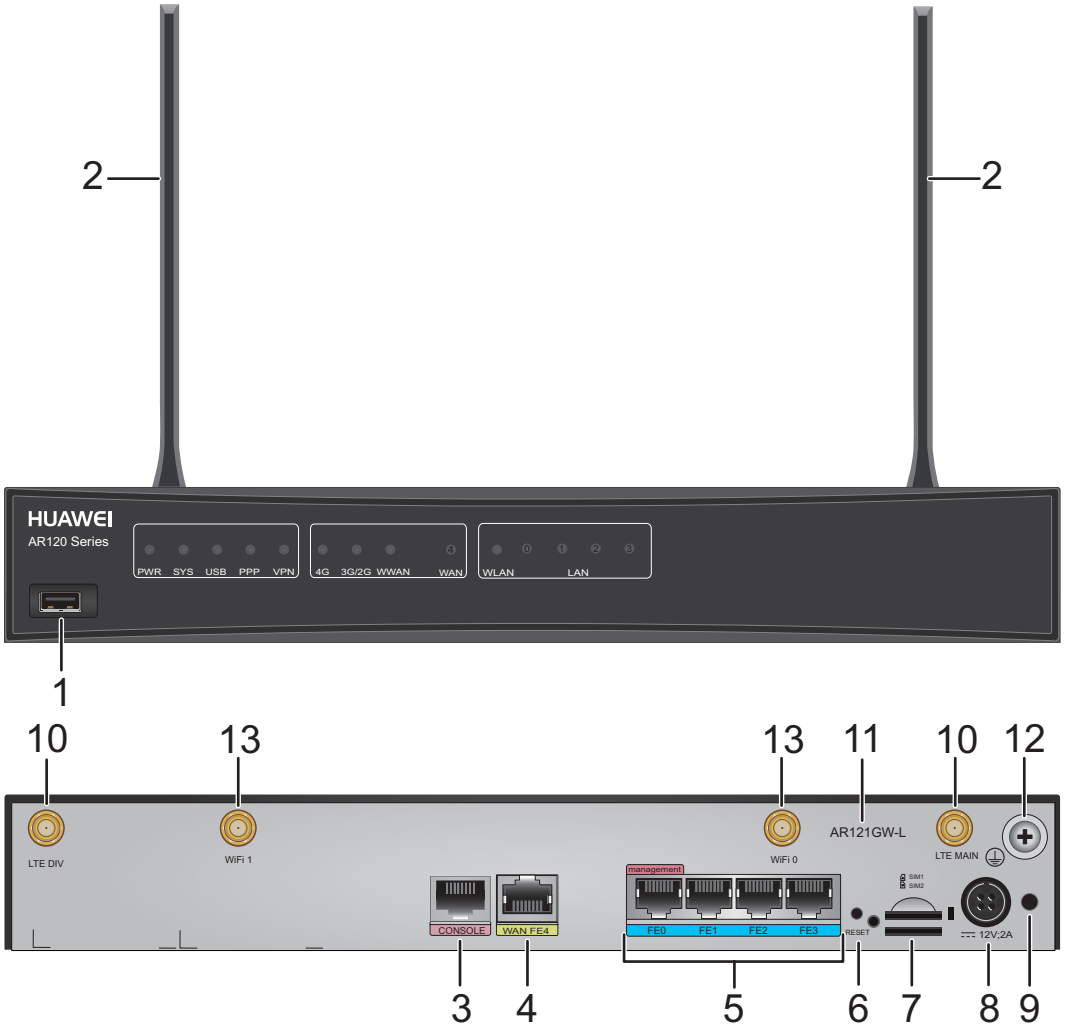
Appearance

Figure 2-16 shows the appearance of the AR121GW-L.

Figure 2-16 AR121GW-L appearance



1	**USB interface (host)**	2	Two **LTE antennas**
3	**CONSOLE interface**	4	WAN interface: **FE electrical interface**
5	LAN interfaces: four **FE electrical interfaces** **NOTE** FE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

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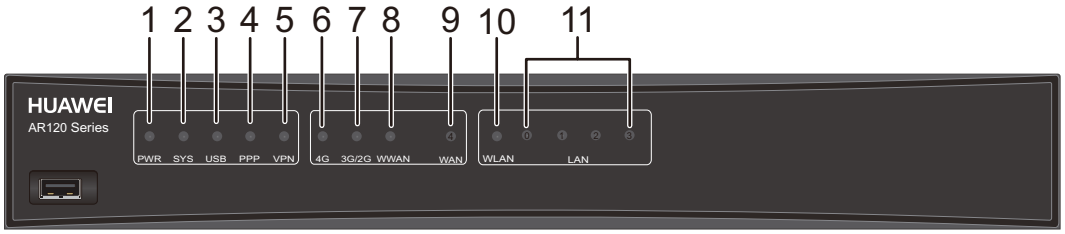
7	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**LTE antenna interface**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
13	Two **Wi-Fi antenna interfaces**	-	-

Indicator Description

Figure 2-17 shows indicators on the AR121GW-L.

Figure 2-17 Indicators on the AR121GW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	WAN	Green	Steady on: A WAN link has been established.
			Blinking: Data is being transmitted or received on the WAN link.
			Off: No WAN link is established.

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Number	Indicator	Color	Description
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN (FE0 to FE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-37** lists attributes of a console interface.

Table 2-37 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-38** lists attributes of a USB interface.

Table 2-38 USB interface attributes

Attribute	Description
Connector type	TYPE A

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Attribute	Description
Standards compliance	USB2.0
Working mode	Host

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-39** lists attributes of an FE electrical interface.

Table 2-39 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-40** lists attributes of an LTE antenna interface.

Table 2-40 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF

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Attribute	Description
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/4/5/7/8/20
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	**LTE Antenna**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-41** lists attributes of a Wi-Fi antenna interface.

Table 2-41 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi

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Attribute	Description
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR121GW-L has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-18** shows its appearance.

Figure 2-18 24 W power adapter appearance

Table 2-42 provides the functions of the 24 W power adapter.

Table 2-42 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.

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Function	Description
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-43 provides the specifications of the 24 W power adapter.

Table 2-43 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

AR121GW-L has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-44 lists technical specifications of the AR121GW-L.

Table 2-44 Technical specifications of the AR121GW-L

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz

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Item	Specification
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	13.26 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1

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Item	Specification
Service interfaces (standard configuration)	WAN interfaces: one FE electrical interface, and two LTE antenna interfaces LAN interfaces: four FE electrical interfaces, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.3.6 AR129GW-L

Version Mapping

Table 2-45 lists the mapping between the AR129GW-L and software versions.

Table 2-45 Mapping between the AR129GW-L and software versions

Router Model	Software Version
AR129GW-L	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-19 shows the appearance of the AR129GW-L.

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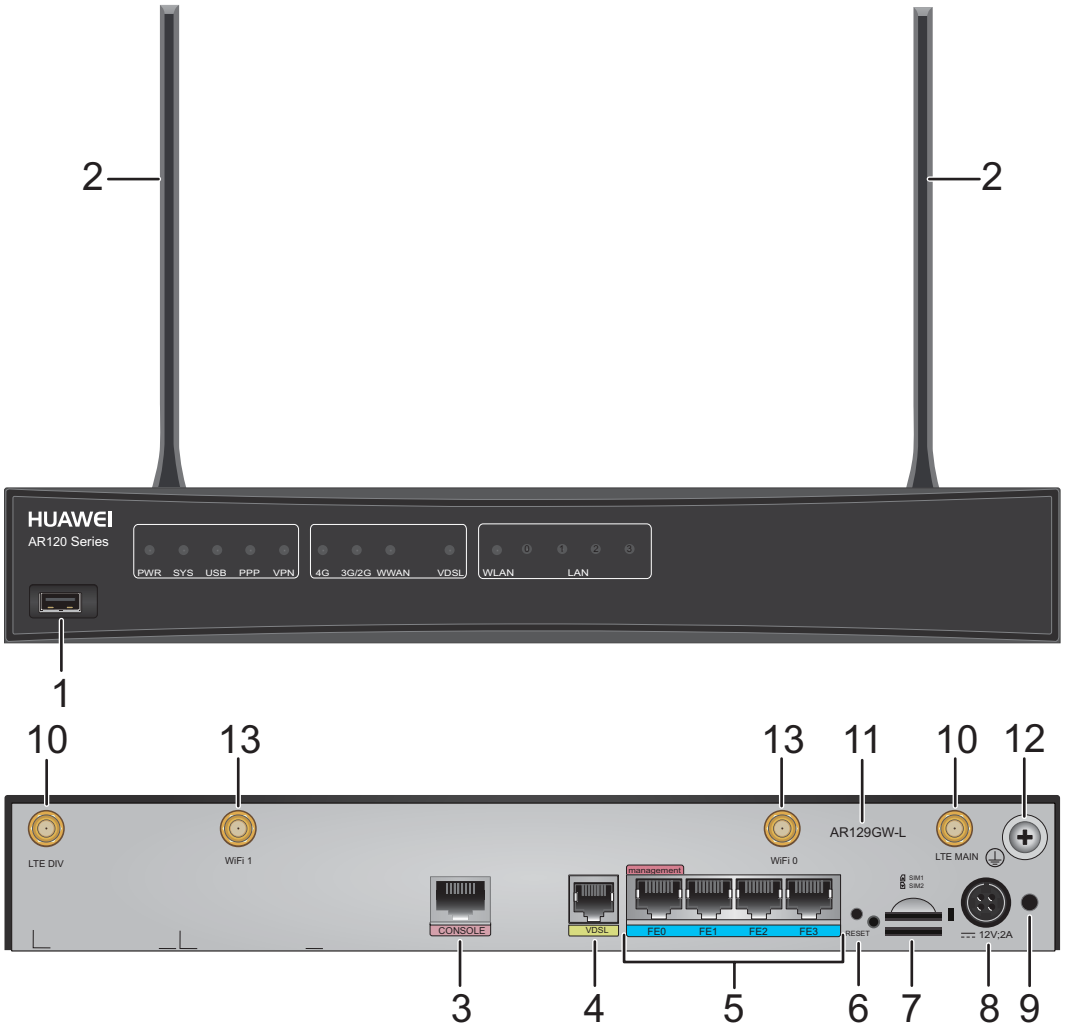
Figure 2-19 AR129GW-L appearance



1	**USB interface (host)**	2	Two **LTE antennas**
3	**CONSOLE interface**	4	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.
5	LAN interfaces: four **FE electrical interfaces** **NOTE** FE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

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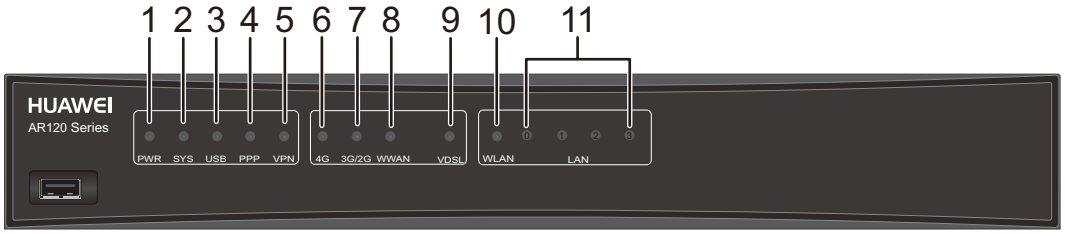
7	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**LTE antenna interface**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
13	Two **Wi-Fi antenna interfaces**	-	-

Indicator Description

Figure 2-20 shows indicators on the AR129GW-L.

Figure 2-20 Indicators on the AR129GW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.

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Number	Indicator	Color	Description
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN (FE0 to FE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-46** lists attributes of a console interface.

Table 2-46 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-47** lists attributes of a USB interface.

Table 2-47 USB interface attributes

Attribute	Description
Connector type	TYPE A

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Attribute	Description
Standards compliance	USB2.0
Working mode	Host

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-48** lists attributes of an FE electrical interface.

Table 2-48 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-49** lists attributes of an LTE antenna interface.

Table 2-49 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF

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Attribute	Description
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/4/5/7/8/20
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	**LTE Antenna**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-50** lists attributes of a Wi-Fi antenna interface.

Table 2-50 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi

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Attribute	Description
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-51** lists attributes of a VDSL interface.

Table 2-51 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR129GW-L has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-21** shows its appearance.

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Figure 2-21 24 W power adapter appearance

Table 2-52 provides the functions of the 24 W power adapter.

Table 2-52 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-53 provides the specifications of the 24 W power adapter.

Table 2-53 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz

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Item	Description
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

AR129GW-L has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-54 lists technical specifications of the AR129GW-L.

Table 2-54 Technical specifications of the AR129GW-L

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz

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Item	Specification
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	12.95 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one VDSL interface, and two LTE antenna interfaces LAN interfaces: four FE electrical interfaces, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

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2.4 AR150 Series

2.4.1 AR151

Version Mapping

Table 2-55 describes the matching relationship between the AR151 series routers and software versions.

Table 2-55 Matching between AR151 series routers and software versions

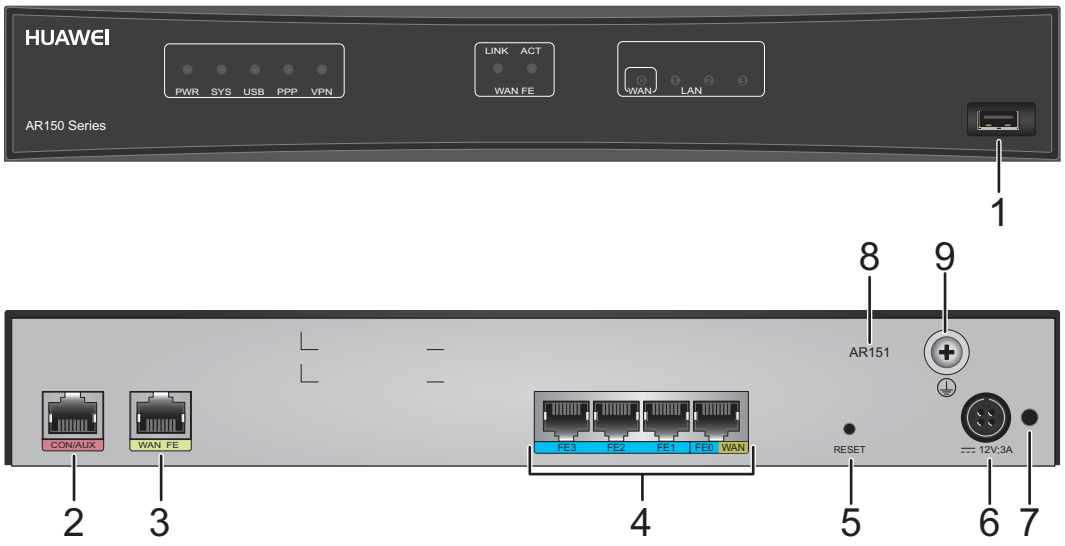
Router Model	Software Version
AR151	V200R002C00 and later versions

Appearance and Structure

Appearance

Figure 2-22 shows the appearance of the AR151 router.

Figure 2-22 AR151 appearance



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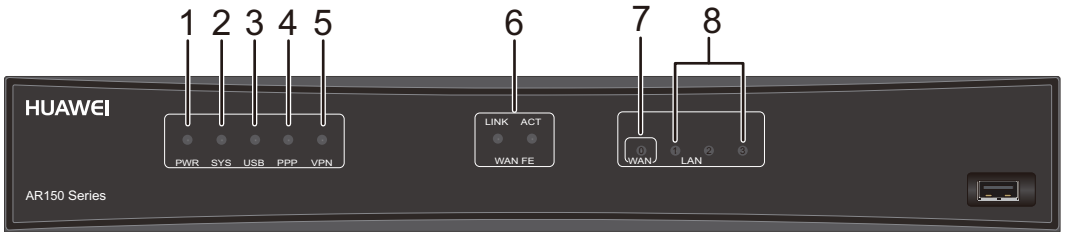
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR151 does not support AUX login.
3	WAN interface: **FE electrical interface**	4	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-23 shows the AR151 indicator.

Figure 2-23 Indicators on the AR151



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
8	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-56** lists the CON/AUX interface attributes.

Table 2-56 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-57** lists attributes of an FE electrical interface.

Table 2-57 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-58** lists attributes of a USB interface.

Table 2-58 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR151 has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-24** shows its appearance.

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Figure 2-24 36 W power adapter appearance

Table 2-59 describes functions of the 36 W power adapter.

Table 2-59 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-60 lists technical specifications of the 36 W power adapter.

Table 2-60 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	

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Item	Description
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

Heat Dissipation

The AR151 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-61 lists technical specifications of the AR151 series routers.

Table 2-61 AR151 series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)

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Item	Specification
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	11.6 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.2 AR157

Version Mapping

Table 2-62 lists the mapping between the AR157 series routers and software versions.

Table 2-62 Matching between AR157 series routers and software versions

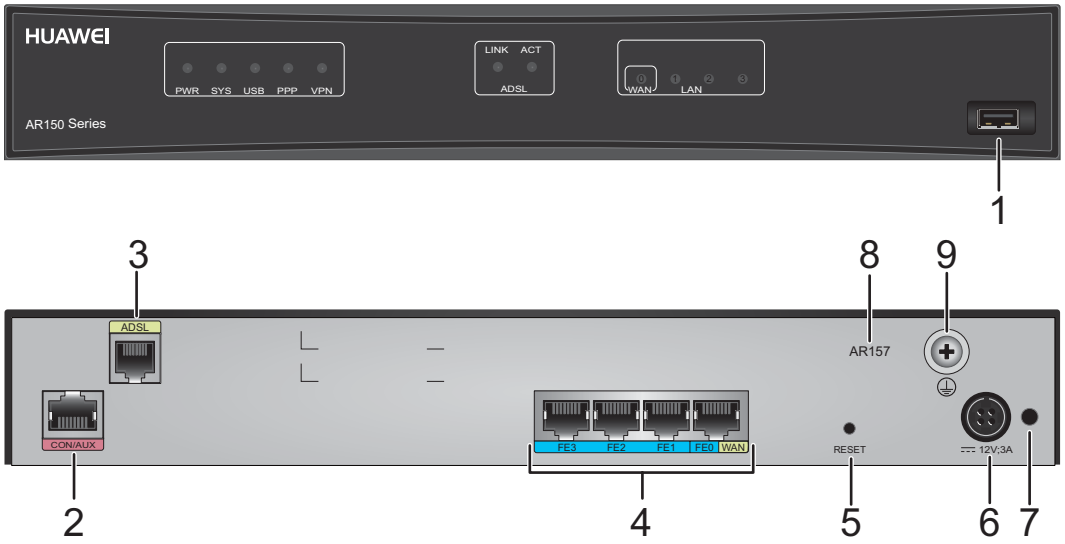
Router Model	Software Version
AR157	V200R002C00 and later versions

Appearance and Structure

Appearance

Figure 2-25 shows the appearance of the AR157 router.

Figure 2-25 AR157 appearance



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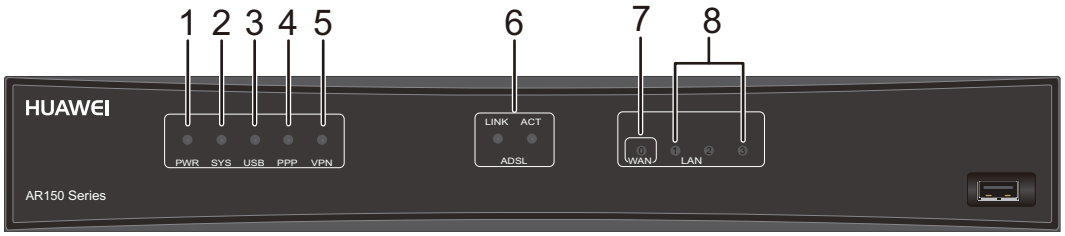
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR157 does not support AUX login.
3	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-26 shows the indicators on the AR157 series routers.

Figure 2-26 Indicators on the AR157



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
8	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-63** lists the CON/AUX interface attributes.

Table 2-63 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-64** lists attributes of an FE electrical interface.

Table 2-64 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-65** lists attributes of a USB interface.

Table 2-65 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-66** lists attributes of an ADSL-A/M interface.

Table 2-66 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR157 has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-27** shows its appearance.

Figure 2-27 36 W power adapter appearance

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Table 2-67 describes functions of the 36 W power adapter.

Table 2-67 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-68 lists technical specifications of the 36 W power adapter.

Table 2-68 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

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Heat Dissipation

The AR157 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-69 lists technical specifications of the AR157 series routers.

Table 2-69 AR157 series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS	Not supported
PoE	Not supported
Power consumption	

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Item	Specification
Maximum power consumption	15.2 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.3 AR156

Version Mapping

Table 2-70 lists the mapping between the AR156 series routers and software versions.

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Table 2-70 Matching between AR156 series routers and software versions

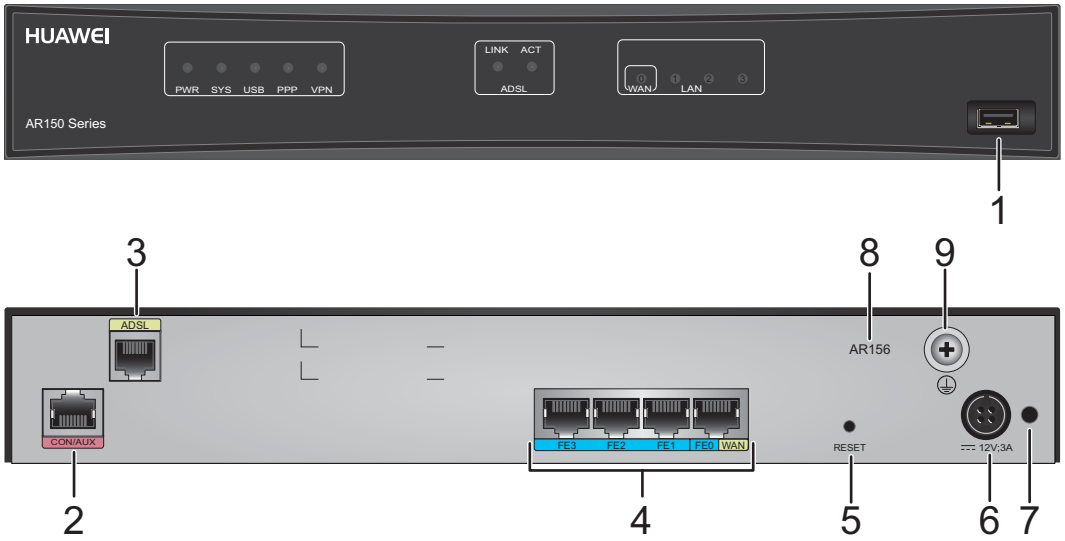
Router Model	Software Version
AR156	V200R002C02 and later versions

Appearance and Structure

Appearance

Figure 2-28 shows the appearance of the AR156 router.

Figure 2-28 AR156 appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR156 does not support AUX login.
3	WAN interface: **ADSL-B/J interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.

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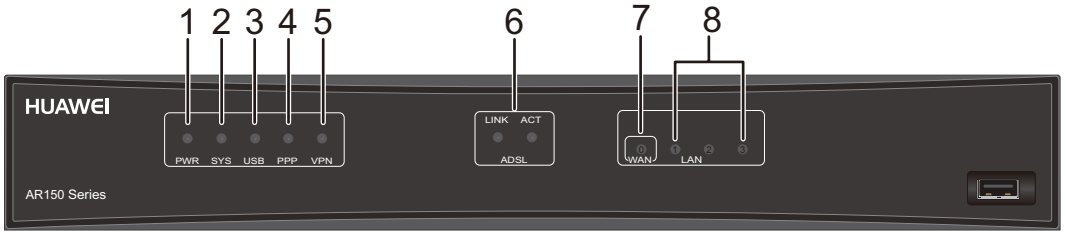
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-29 shows the indicators on the AR156 series routers.

Figure 2-29 Indicators on the AR156



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

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Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

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CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-71** lists the CON/AUX interface attributes.

Table 2-71 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-72** lists attributes of an FE electrical interface.

Table 2-72 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-73** lists attributes of a USB interface.

Table 2-73 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

ADSL-B/J Interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-74** lists attributes of an ADSL-B/J interface.

Table 2-74 ADSL-B/J interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.992.1 G.DMT ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ Annex J mode: a downlink rate of 24 Mbit/s and an uplink rate of 3 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR156 has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-30** shows its appearance.

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Figure 2-30 36 W power adapter appearance

Table 2-75 describes functions of the 36 W power adapter.

Table 2-75 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-76 lists technical specifications of the 36 W power adapter.

Table 2-76 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	

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Item	Description
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

Heat Dissipation

The AR156 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-77 lists technical specifications of the AR156 series routers.

Table 2-77 AR156 series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)

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Item	Specification
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	16.1 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one ADSL-B/J interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.4 AR158E

Version Mapping

Table 2-78 lists the mapping between the AR158E series routers and software versions.

Table 2-78 Matching between AR158E series routers and software versions

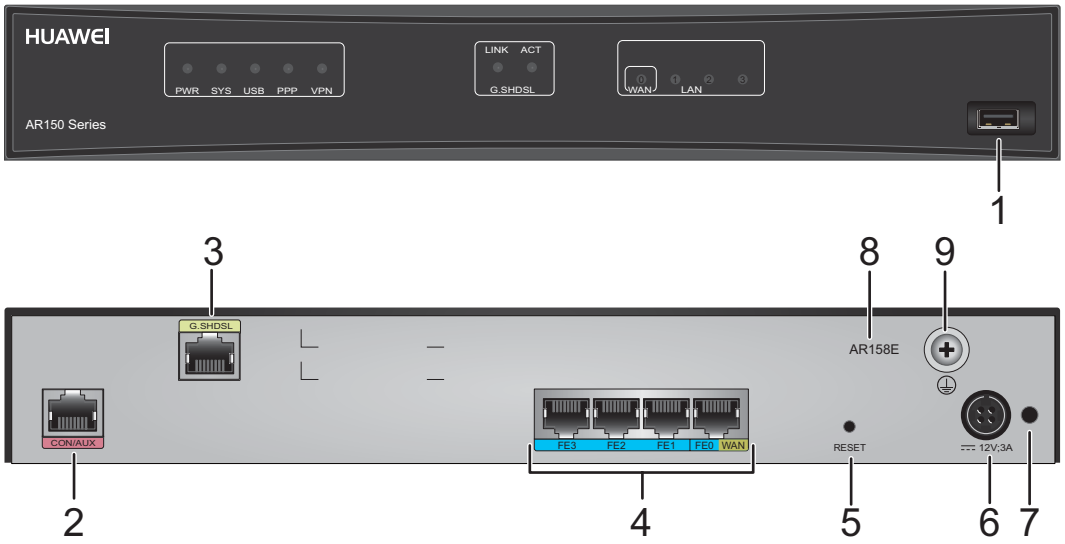
Router Model	Software Version
AR158E	V200R002C02 and later versions

Appearance and Structure

Appearance

Figure 2-31 shows the appearance of the AR158E router.

Figure 2-31 AR158E appearance



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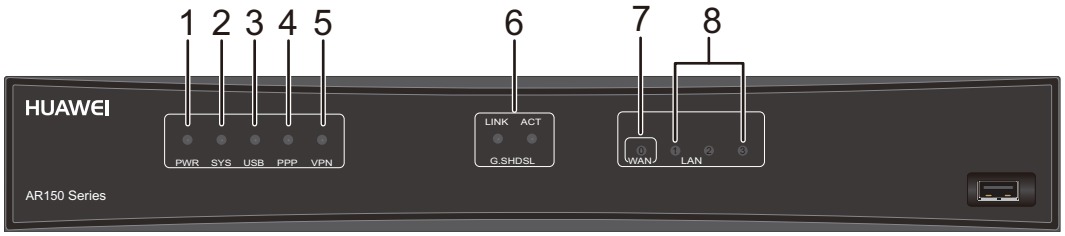
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR158E does not support AUX login.
3	WAN interface: **G.SHDSL interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-32 shows the indicators on the AR158E series routers.

Figure 2-32 Indicators on the AR158E



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
8	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-79** lists the CON/AUX interface attributes.

Table 2-79 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-80** lists attributes of an FE electrical interface.

Table 2-80 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-81** lists attributes of a USB interface.

Table 2-81 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

G.SHDSL Interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. **Table 2-82** lists attributes of a G.SHDSL interface.

Table 2-82 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2

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Attribute	Description
Rate	5.696 Mbit/s per pair
Cable type	**4.1.13 G.SHDSL Cable** or **4.1.7 Ethernet Cable**

Power Supply System

The AR158E has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-33** shows its appearance.

Figure 2-33 36 W power adapter appearance

Table 2-83 describes functions of the 36 W power adapter.

Table 2-83 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.

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Function	Description
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-84 lists technical specifications of the 36 W power adapter.

Table 2-84 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

Heat Dissipation

The AR158E router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-85 lists technical specifications of the AR158E series routers.

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Table 2-85 AR158E series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	14.7 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one G.SHDSL interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.5 AR151W-P

Version Mapping

Table 2-86 lists the mapping between the AR151W-P series routers and software versions.

Table 2-86 Matching between AR151W-P series routers and software versions

Router Model	Software Version
AR151W-P	V200R003C00 and later versions

Appearance and Structure

Appearance

Figure 2-34 shows the appearance of the AR151W-P router.

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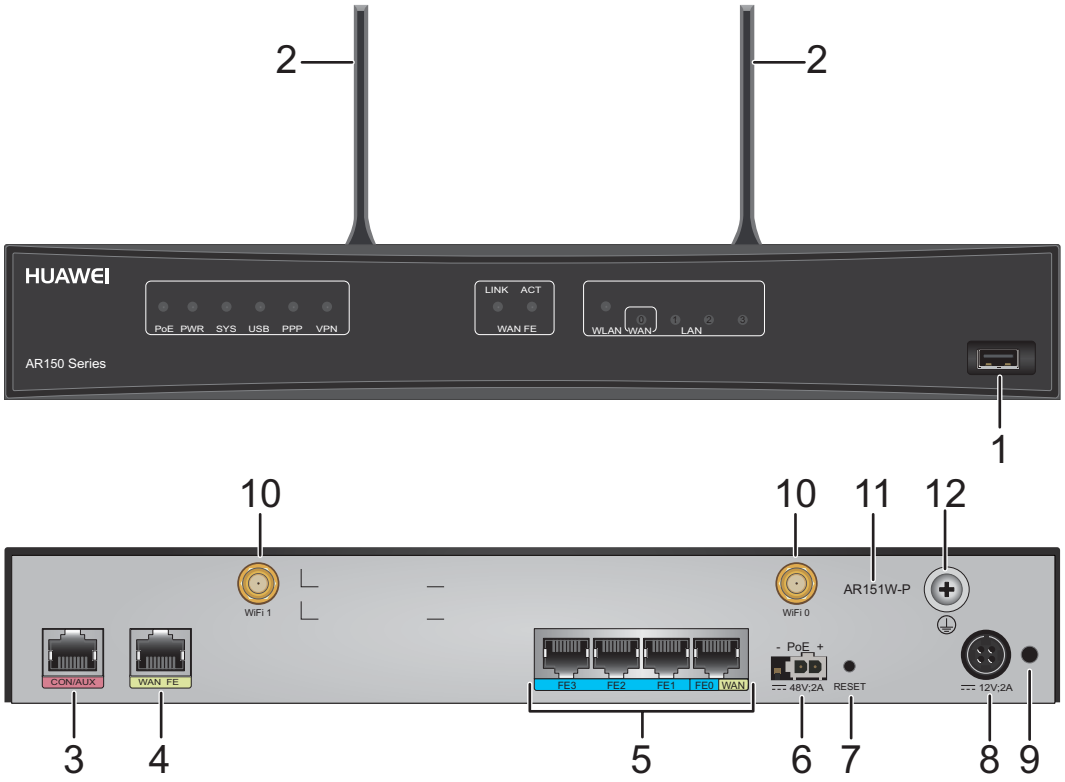
Figure 2-34 AR151W-P appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR151W-P does not support AUX login.	4	WAN interface: **FE electrical interface**
5	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.	6	PoE power jack **NOTE** The PoE power jack connects to a 100 W AC PoE power module to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.
7	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.

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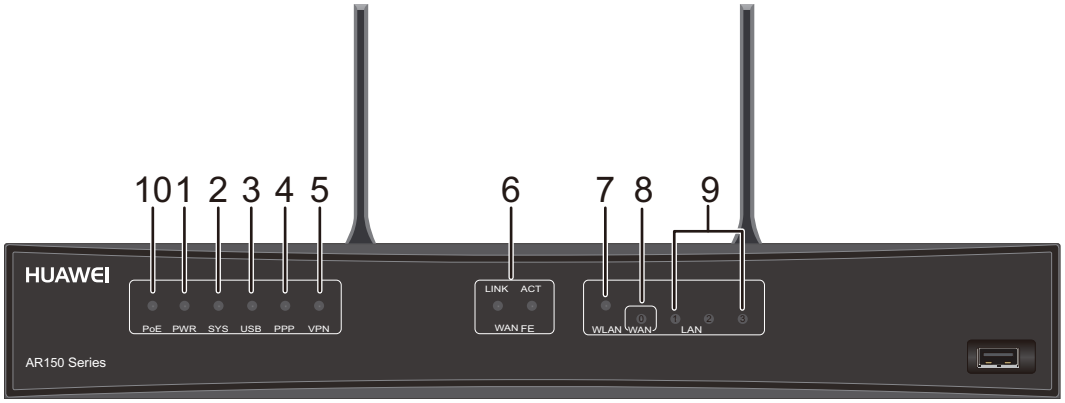
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	Two **Wi-Fi antenna interfaces**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-35 is a quick reference table for indicators of the AR151W-P series routers.

Figure 2-35 Indicators on the AR151W-P



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.
10	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.

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Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-87** lists the CON/AUX interface attributes.

Table 2-87 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-88** lists attributes of an FE electrical interface.

Table 2-88 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Attribute	Description
Cable type	4.1.7 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. Table 2-89 lists attributes of a USB interface.

Table 2-89 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. Table 2-90 lists attributes of a Wi-Fi antenna interface.

Table 2-90 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

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The AR151W-P has no built-in power modules and uses a 24 W power adapter for power supply. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its FE electrical interfaces.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-36** shows its appearance.

Figure 2-36 24 W power adapter appearance

Table 2-91 provides the functions of the 24 W power adapter.

Table 2-91 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-92 provides the specifications of the 24 W power adapter.

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Table 2-92 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-37** shows its appearance.

Figure 2-37 Appearance of the 100 W AC PoE power module

Table 2-93 describes functions of the 100 W AC PoE power module.

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Table 2-93 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-94 lists the specifications of the 100 W AC PoE power module.

Table 2-94 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

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Heat Dissipation

The AR151W-P router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-95 lists technical specifications of the AR151W-P series routers.

Table 2-95 AR151W-P series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Supported (FE0-FE3)
Power consumption	
Maximum power consumption	10.4 W

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Item	Specification
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.6 AR151G-HSPA+7

Version Mapping

Table 2-96 lists the mapping between the AR151G-HSPA+7 series routers and software versions.

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Table 2-96 Matching between AR151G-HSPA+7 series routers and software versions

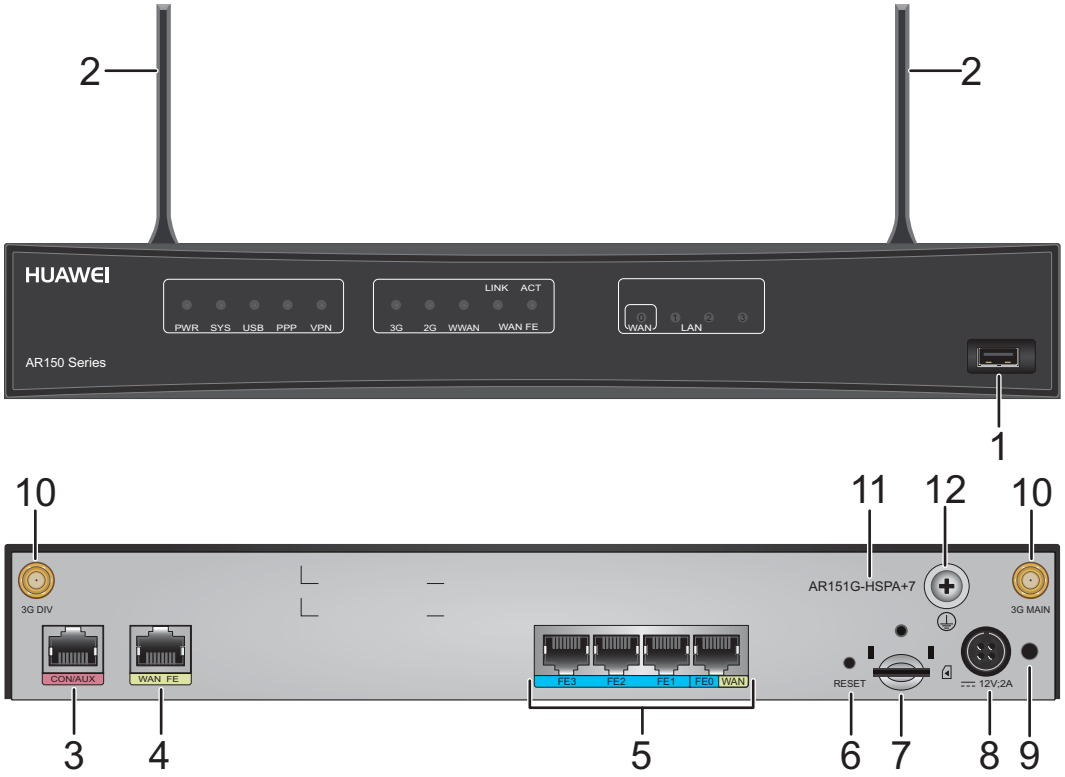
Router Model	Software Version
AR151G-HSPA+7	V200R003C00 and later versions

Appearance and Structure

Appearance

Figure 2-38 shows the appearance of the AR151G-HSPA+7 router.

Figure 2-38 AR151G-HSPA+7 appearance



1	**USB interface (host)**	2	Two **3G antennas**
3	**CON/AUX interface** **NOTE** The AR151G-HSPA+7 does not support AUX login.	4	WAN interface: **FE electrical interface**

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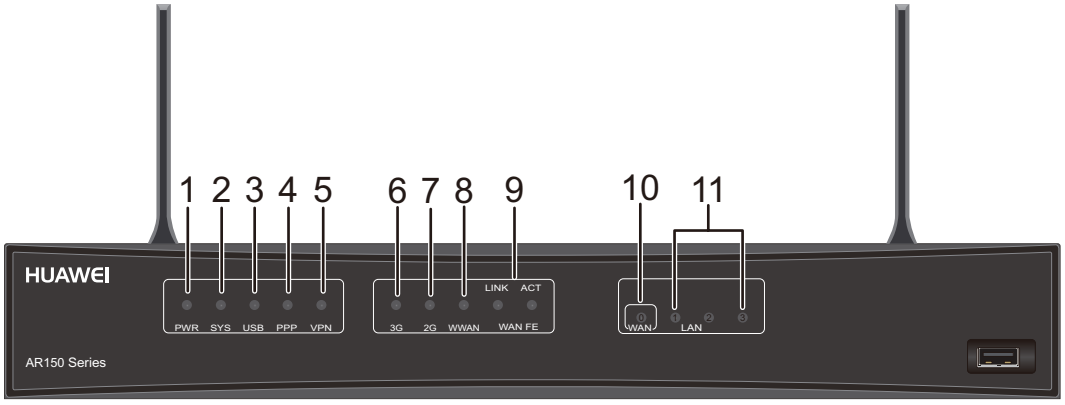
5	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	SIM card slot **NOTE** The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**3G-HSPA+7 antenna interface**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-39 is a quick reference table for indicators of the AR151G-HSPA+7 series routers.

Figure 2-39 Indicators on the AR151G-HSPA+7 panel



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
7	2G	Green	Steady on: The 2G signal strength is high. Fast blinking: The 2G signal strength is medium. Slow blinking: The 2G signal strength is low. Off: No 2G signal is available.

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Number	Indicator	Color	Description
8	WWAN	Green	Steady on: The 3G/2G connection has been set up and is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.
9	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
10	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-97** lists the CON/AUX interface attributes.

Table 2-97 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

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Attribute	Description
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-98** lists attributes of an FE electrical interface.

Table 2-98 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-99** lists attributes of a USB interface.

Table 2-99 USB interface attributes

Attribute	Description
Connector type	TYPE A

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Attribute	Description
Standards compliance	USB2.0
Working mode	Host

3G-HSPA+7 Interface

3G-HSPA+7 antenna interfaces of a router include a 3G MAIN interface (for the primary antenna) and a 3G DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, whereas the secondary antenna assists the primary antenna in signal receiving. **Table 2-100** lists attributes of a 3G-HSPA+7 antenna interface.

Table 2-100 3G-HSPA+7 antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● HSPA+/HSUPA/HSDPA/WCDMA: 850/900/1900/2100 (MHz)
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 9.6 kbit/s and downlink rate of 9.6 kbit/s ● GPRS/EDGE: Multi-slot Class 12, Class B ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 14.4 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21 Mbit/s
Cable type	**3G Antenna**

Power Supply System

The AR151G-HSPA+7 has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-40** shows its appearance.

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Figure 2-40 24 W power adapter appearance

Table 2-101 provides the functions of the 24 W power adapter.

Table 2-101 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-102 provides the specifications of the 24 W power adapter.

Table 2-102 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz

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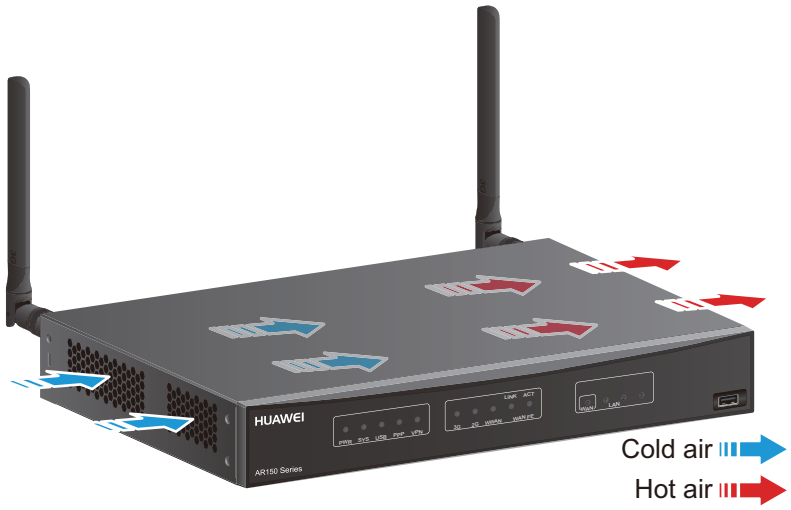
Item	Description
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR151G-HSPA+7 router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-41**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-41 Airflow



Technical Specifications

Table 2-103 lists technical specifications of the AR151G-HSPA+7 series routers.

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Table 2-103 AR151G-HSPA+7 series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	12.4 W
Heat dissipation	
Fan	Built-in fan, which is not pluggable
Airflow (facing the front panel)	Cold air flows into the router from the left side and is exhausted from the right side.
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interfaces: one FE electrical interface, two 3G-HSPA+7 antenna interfaces LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.7 AR157W

Version Mapping

Table 2-104 lists the mapping between the AR157W series routers and software versions.

Table 2-104 Matching between AR157W series routers and software versions

Router Model	Software Version
AR157W	V200R003C00 and later versions

Appearance and Structure

Appearance

Figure 2-42 shows the appearance of the AR157W router.

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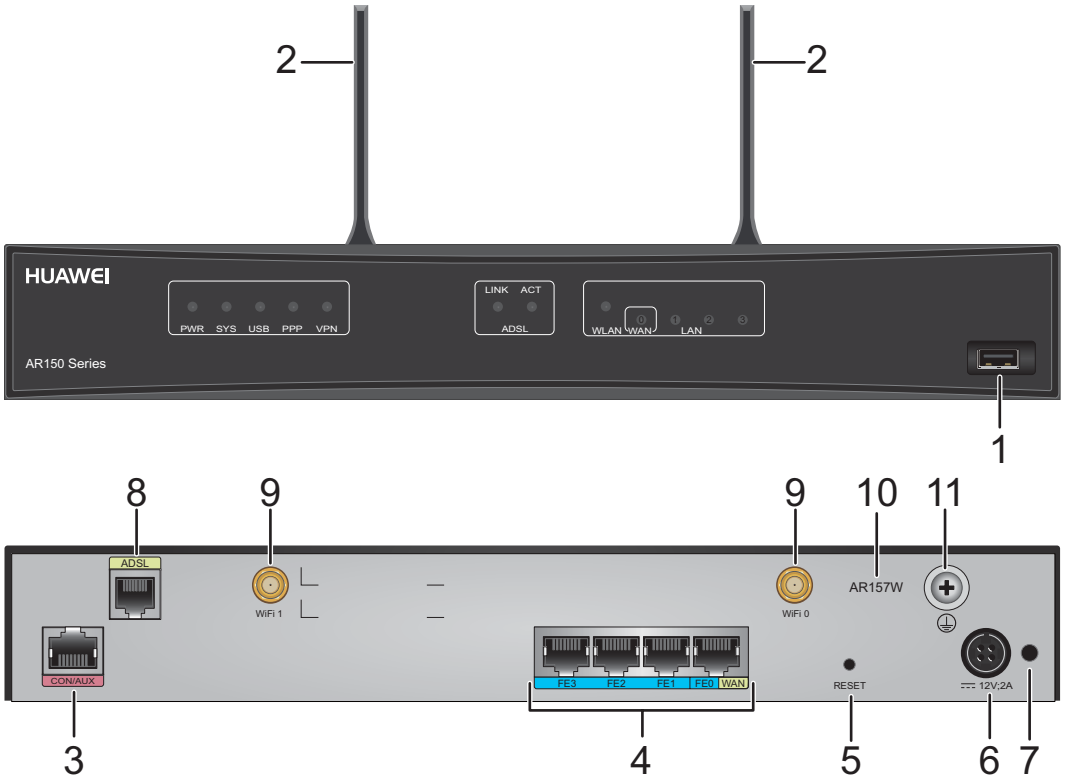
Figure 2-42 AR157W appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR157W does not support AUX login.	4	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.

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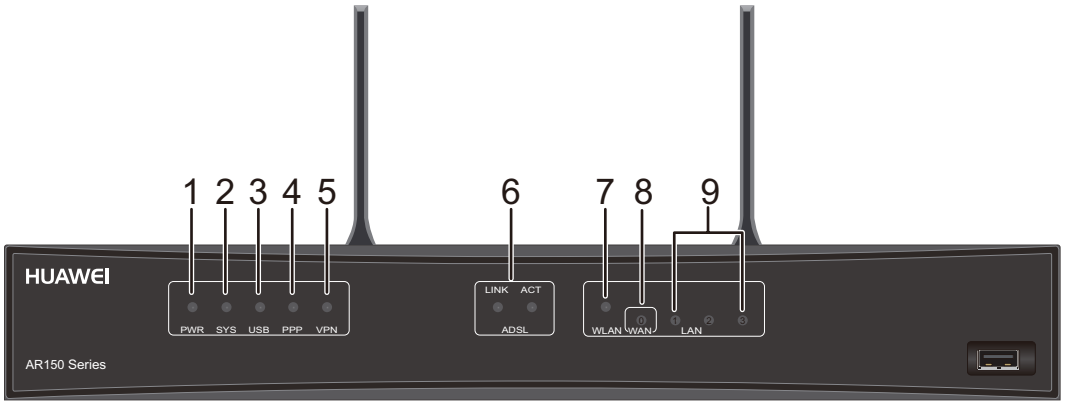
9	Two **Wi-Fi antenna interfaces**	10	Product model silkscreen
11	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-43 is a quick reference table for indicators of the AR157W series routers.

Figure 2-43 Indicators on the AR157W panel



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

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CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-105** lists the CON/AUX interface attributes.

Table 2-105 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-106** lists attributes of an FE electrical interface.

Table 2-106 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-107** lists attributes of a USB interface.

Table 2-107 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-108** lists attributes of a Wi-Fi antenna interface.

Table 2-108 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-109** lists attributes of an ADSL-A/M interface.

Table 2-109 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR157W has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-44** shows its appearance.

Figure 2-44 24 W power adapter appearance

Table 2-110 provides the functions of the 24 W power adapter.

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Table 2-110 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-111 provides the specifications of the 24 W power adapter.

Table 2-111 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

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Heat Dissipation

The AR157W router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-112 lists technical specifications of the AR157W series routers.

Table 2-112 AR157W series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	16.7 W

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Item	Specification
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface, and two Wi-Fi antenna interfaces.
Extended slots	Not supported
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.8 AR157VW

Version Mapping

Table 2-113 lists the mapping between the AR157VW series routers and software versions.

Table 2-113 Matching between AR157VW series routers and software versions

Router Model	Software Version
AR157VW	V200R003C00 and later versions

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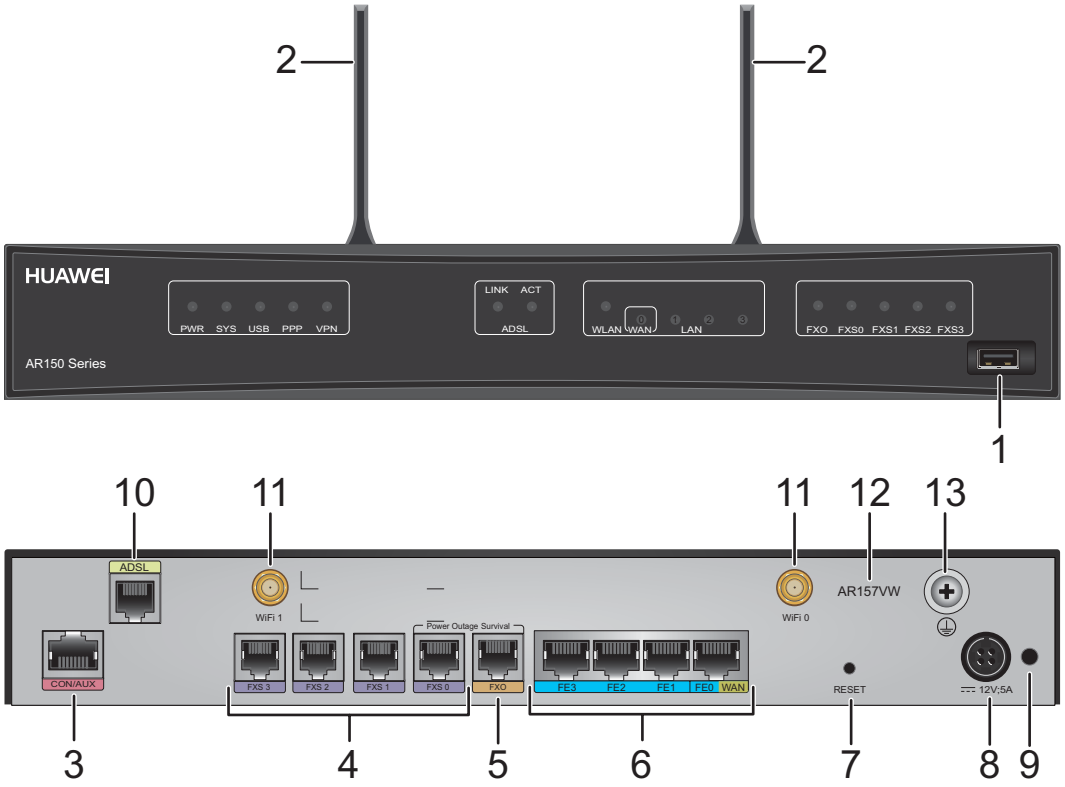
Appearance and Structure

Appearance

Figure 2-45 shows the appearance of the AR157VW router.

Figure 2-45 AR157VW appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR157VW does not support AUX login.	4	Four **FXS interfaces** **NOTE** The FXS interfaces can be connected to analog telephones using **standard telephone cables**.
5	One **FXO interface** **NOTE** The FXO interface can be connected to a public switched telephone network (PSTN) using a **standard telephone cable**.	6	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.

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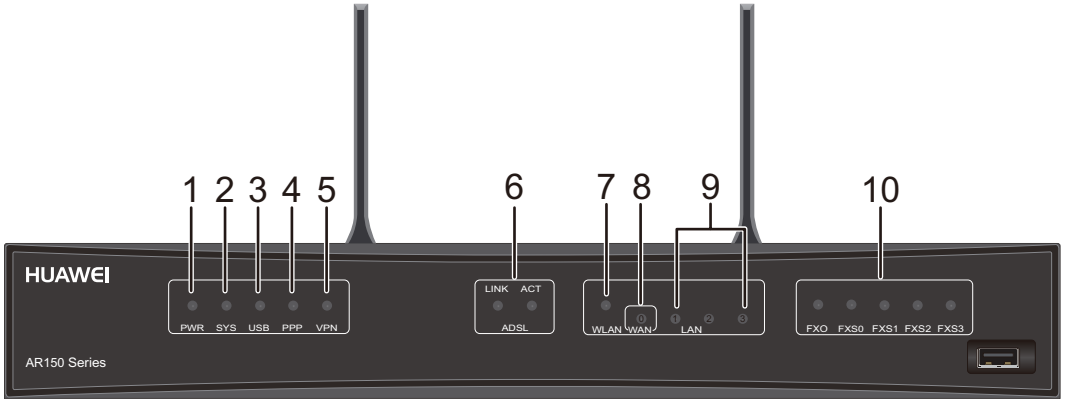
7	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.
11	Two **Wi-Fi antenna interfaces**	12	Product model silkscreen
13	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-46 is a quick reference table for indicators of the AR157VW series routers.

Figure 2-46 Indicators on the AR157VW panel



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

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Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.

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Number	Indicator	Color	Description
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.
10	FXS0-FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-114** lists the CON/AUX interface attributes.

Table 2-114 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

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FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-115** lists attributes of an FE electrical interface.

Table 2-115 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-116** lists attributes of a USB interface.

Table 2-116 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-117** lists attributes of a Wi-Fi antenna interface.

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Table 2-117 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-118** lists attributes of an ADSL-A/M interface.

Table 2-118 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s

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Attribute	Description
Cable type	**Standard Telephone Cable**

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 2-119** lists attributes of a FXS interface.

Table 2-119 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO Interface

A foreign exchange office (FX0) interface is a loop trunk interface and can connect to a PSTN network. **Table 2-120** lists attributes of a FXO interface.

Table 2-120 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

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Power Supply System

The AR157VW has no built-in power modules and uses a 60 W power adapter for power supply.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-47** shows its appearance.

Figure 2-47 60 W power adapter appearance

Table 2-121 provides the functions of the 60 W power adapter.

Table 2-121 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-122 provides the specifications of the 60 W power adapter.

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Table 2-122 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W

Heat Dissipation

The AR157VW router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-123 lists technical specifications of the AR157VW series routers.

Table 2-123 AR157VW series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (sd1 by default)	None
Hard disk	Not supported
Dimensions and weight	

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Item	Specification
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With rack-mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	20.8 W
Heat dissipation	
Fan	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: four FE electrical interfaces, in which FE0 LAN interface can be switched to a WAN interface, and two Wi-Fi antenna interfaces Voice interfaces: four FXS interfaces, one FXO interface
Extended slots	Not supported
Environment	

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Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.9 AR157G-HSPA+7

Version Mapping

Table 2-124 lists the mapping between the AR157G-HSPA+7 and software versions.

Table 2-124 Mapping between the AR157G-HSPA+7 and software versions

Router Model	Software Version
AR157G-HSPA+7	V200R003C00 and later versions

Appearance and Structure

Appearance

Figure 2-48 shows the appearance of the AR157G-HSPA+7.

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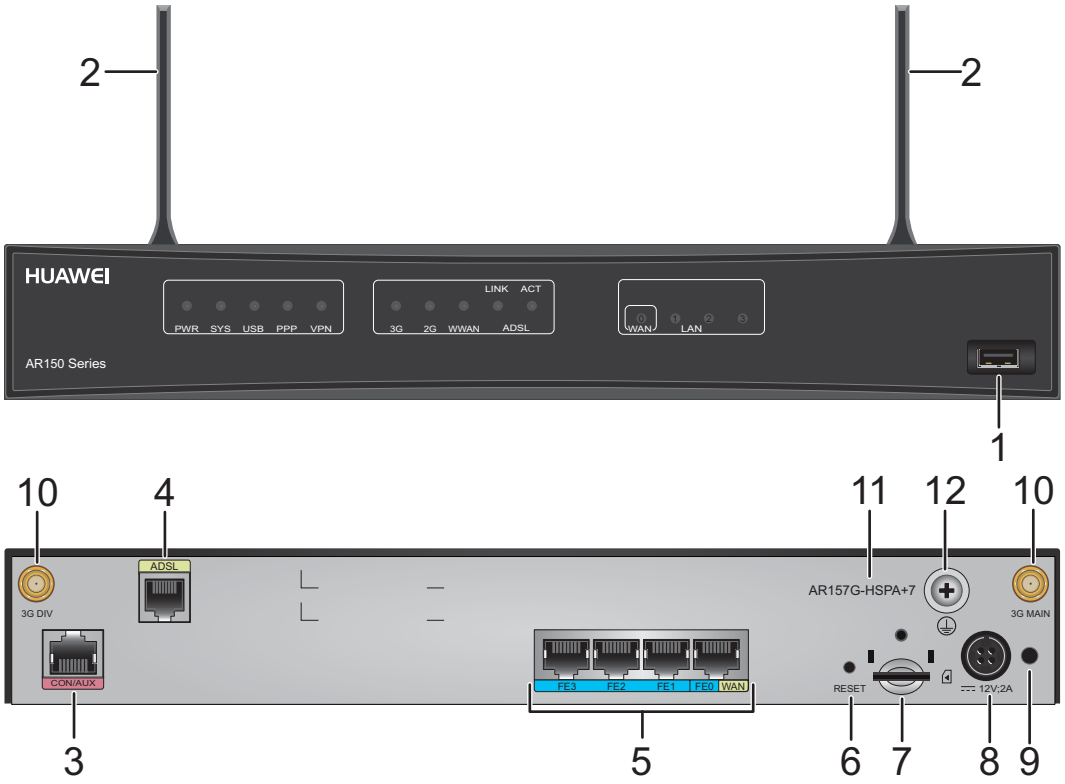
Figure 2-48 AR157G-HSPA+7 appearance



1	**USB interface (host)**	2	Two **3G antennas**
3	**CON/AUX interface** **NOTE** The AR157G-HSPA+7 does not support AUX login.	4	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.
5	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	SIM card slot **NOTE** The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.

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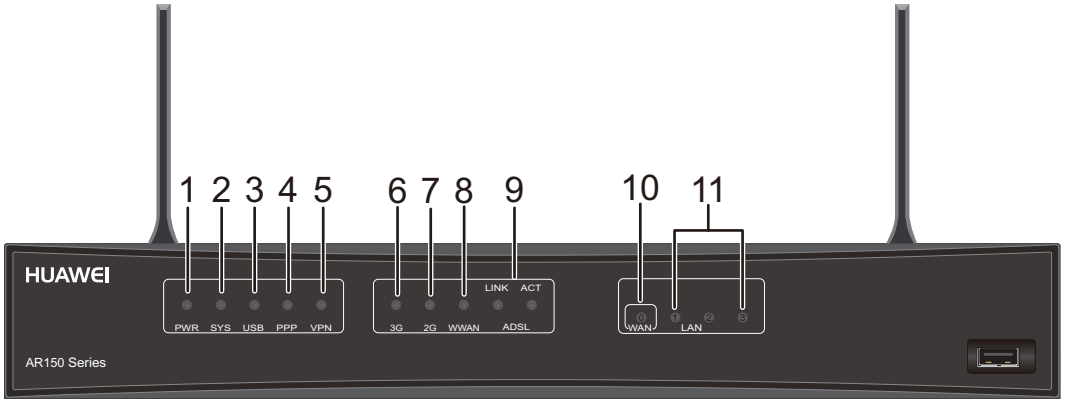
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**3G-HSPA+7 antenna interface**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-49 shows indicators on the AR157G-HSPA+7.

Figure 2-49 Indicators on the AR157G-HSPA+7



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
7	2G	Green	Steady on: The 2G signal strength is high. Fast blinking: The 2G signal strength is medium. Slow blinking: The 2G signal strength is low. Off: No 2G signal is available.
8	WWAN	Green	Steady on: The 3G/2G connection has been set up and is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.
9	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.

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Number	Indicator	Color	Description
10	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-125** lists the CON/AUX interface attributes.

Table 2-125 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-126** lists attributes of an FE electrical interface.

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Table 2-126 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-127** lists attributes of a USB interface.

Table 2-127 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

3G-HSPA+7 Interface

3G-HSPA+7 antenna interfaces of a router include a 3G MAIN interface (for the primary antenna) and a 3G DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, whereas the secondary antenna assists the primary antenna in signal receiving. **Table 2-128** lists attributes of a 3G-HSPA+7 antenna interface.

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Table 2-128 3G-HSPA+7 antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● HSPA+/HSUPA/HSDPA/WCDMA: 850/900/1900/2100 (MHz)
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 9.6 kbit/s and downlink rate of 9.6 kbit/s ● GPRS/EDGE: Multi-slot Class 12, Class B ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 14.4 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21 Mbit/s
Cable type	**3G Antenna**

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-129** lists attributes of an ADSL-A/M interface.

Table 2-129 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5

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Attribute	Description
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR157G-HSPA+7 has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-50** shows its appearance.

Figure 2-50 24 W power adapter appearance

Table 2-130 provides the functions of the 24 W power adapter.

Table 2-130 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-131 provides the specifications of the 24 W power adapter.

Table 2-131 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR157G-HSPA+7 router has built-in fans to cool the system. The fans are not pluggable.

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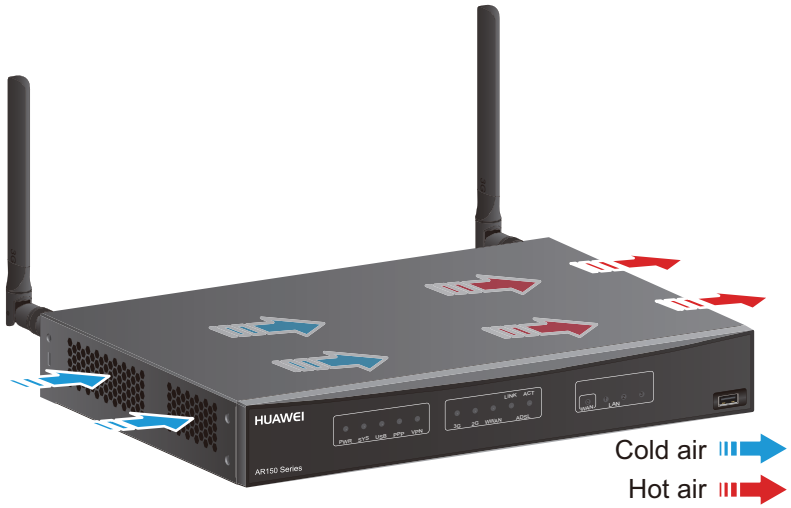
Seen from the front panel, the airflow is left to right, as shown in **Figure 2-51**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-51 Airflow



Technical Specifications

Table 2-132 lists technical specifications of the AR157G-HSPA+7.

Table 2-132 Technical specifications of the AR157G-HSPA+7

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	

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Item	Specification
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16.9 W
Heat dissipation	
Fan module	Built-in fan module, unpluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one ADSL-A/M interface and two 3G-HSPA+7 antenna interfaces LAN interfaces: four FE electrical interfaces. LAN interface FE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.10 AR158EVW

Version Mapping

Table 2-133 lists the mapping between the AR158EVW and software versions.

Table 2-133 Mapping between the AR158EVW and software versions

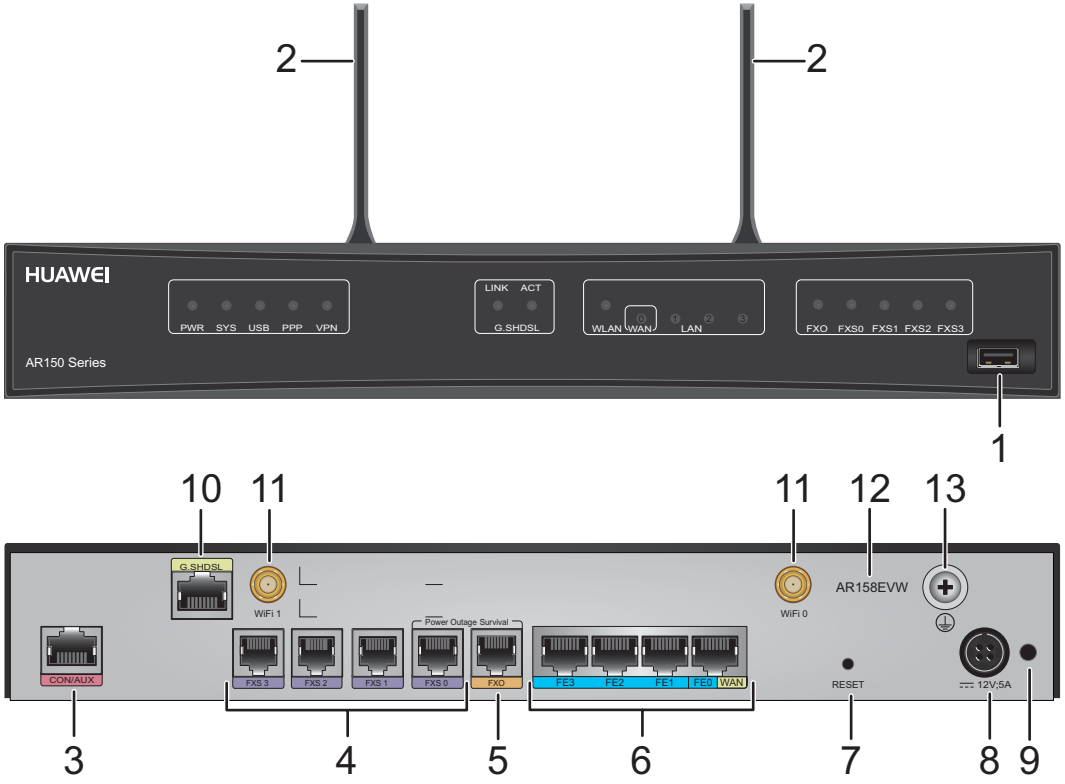
Router Model	Software Version
AR158EVW	V200R003C00 and later versions

Appearance and Structure

Appearance

Figure 2-52 shows the appearance of the AR158EVW.

Figure 2-52 AR158EVW appearance



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1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR158EVW does not support AUX login.	4	Four **FXS interfaces** **NOTE** The FXS interfaces can be connected to analog telephones using **standard telephone cables**.
5	One **FXO interface** **NOTE** The FXO interface can be connected to a public switched telephone network (PSTN) using a **standard telephone cable**.	6	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.
7	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	WAN interface: **G.SHDSL interface** **NOTE** This interface supports the dying gasp function.
11	Two **Wi-Fi antenna interfaces**	12	Product model silkscreen
13	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-53 shows indicators on the AR158EVW.

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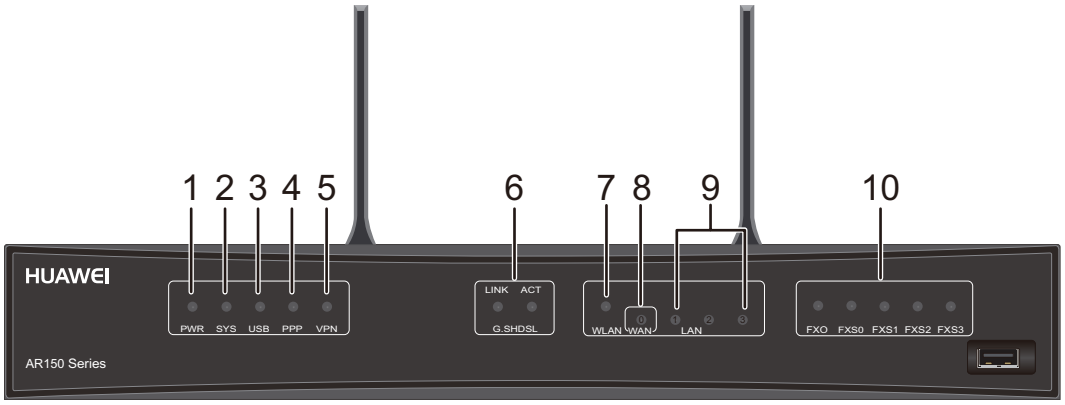
Figure 2-53 Indicators on the AR158EVW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.

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Number	Indicator	Color	Description
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.
10	FXS0-FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-134** lists the CON/AUX interface attributes.

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Table 2-134 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-135** lists attributes of an FE electrical interface.

Table 2-135 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-136** lists attributes of a USB interface.

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Table 2-136 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-137** lists attributes of a Wi-Fi antenna interface.

Table 2-137 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

G.SHDSL Interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. **Table 2-138** lists attributes of a G.SHDSL interface.

Table 2-138 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2

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Attribute	Description
Rate	5.696 Mbit/s per pair
Cable type	**4.1.13 G.SHDSL Cable** or **4.1.7 Ethernet Cable**

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 2-139** lists attributes of a FXS interface.

Table 2-139 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO Interface

A foreign exchange office (FX0) interface is a loop trunk interface and can connect to a PSTN network. **Table 2-140** lists attributes of a FXO interface.

Table 2-140 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz

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Attribute	Description
Cable type	**Standard Telephone Cable**

Power Supply System

The AR158EVW has no built-in power modules and uses a 60 W power adapter for power supply.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-54** shows its appearance.

Figure 2-54 60 W power adapter appearance

Table 2-141 provides the functions of the 60 W power adapter.

Table 2-141 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

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Table 2-142 provides the specifications of the 60 W power adapter.

Table 2-142 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W

Heat Dissipation

The AR158EVW has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-143 lists technical specifications of the AR158EVW.

Table 2-143 Technical specifications of the AR158EVW

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported

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Item	Specification
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	19.9 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one G.SHDSL interface LAN interfaces: four FE electrical interfaces, LAN interface FE0 can be configured as a WAN interface, and two Wi-Fi antenna interfaces. Voice interfaces: four FXS interfaces, and one FXO interface.
Extended slots	Not supported

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Item	Specification
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.11 AR151G-C

Version Mapping

Table 2-144 lists the mapping between the AR151G-C and software versions.

Table 2-144 Mapping between the AR151G-C and software versions

Router Model	Software Version
AR151G-C	V200R005C00 and later versions

Appearance and Structure

Appearance

Figure 2-55 shows the appearance of the AR151G-C.

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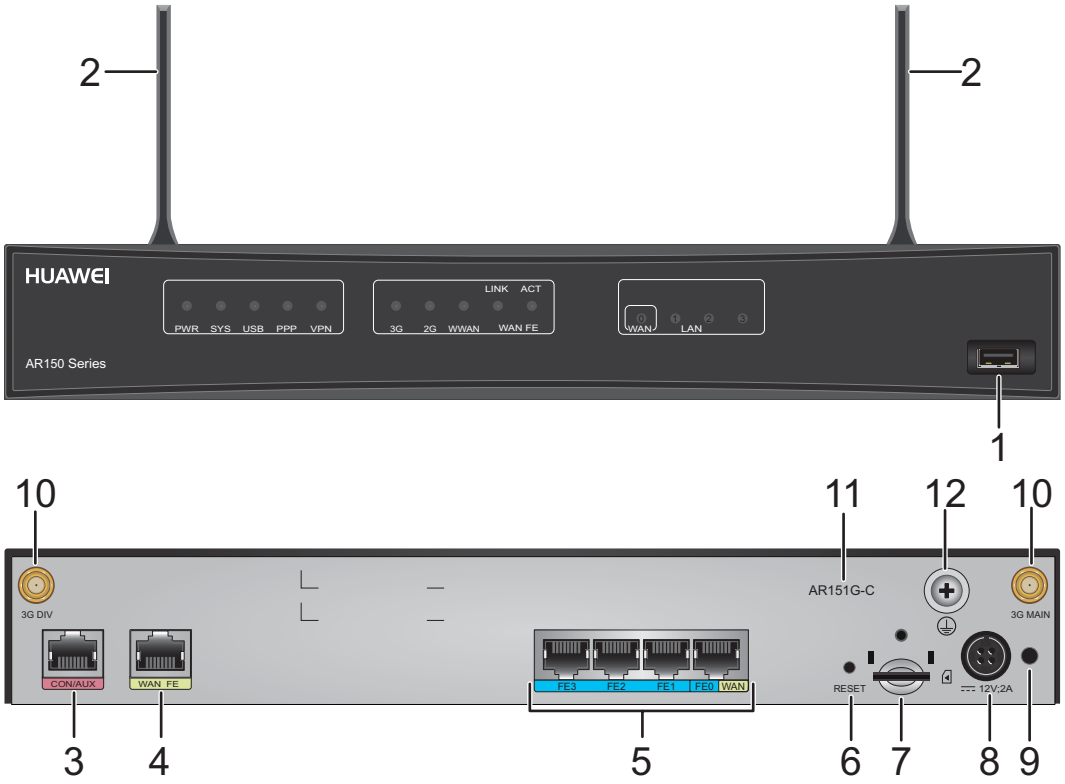
Figure 2-55 AR151G-C appearance



1	**USB interface (host)**	2	Two **3G antennas**
3	**CON/AUX interface** **NOTE** The AR151G-C does not support AUX login.	4	WAN interface: **FE electrical interface**
5	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	SIM card slot **NOTE** The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.

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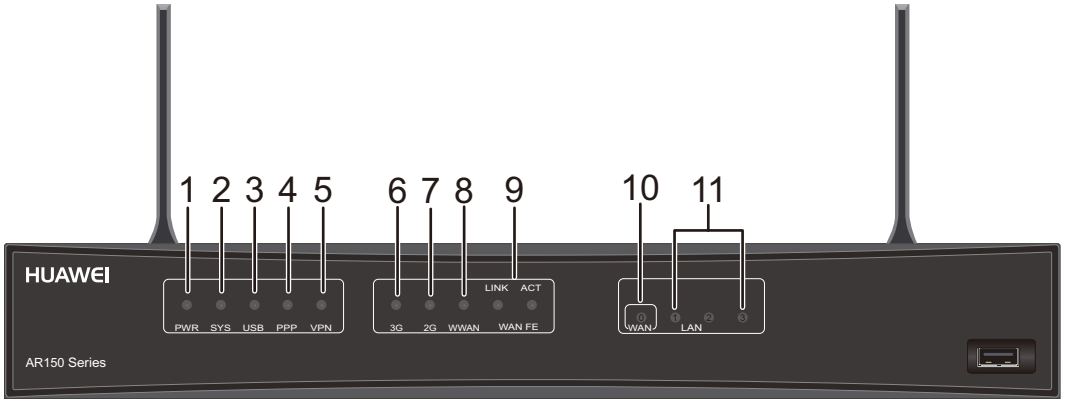
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**3G-EVDO antenna interface**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-56 shows indicators on the AR151G-C.

Figure 2-56 Indicators on the AR151G-C



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
7	2G	Green	Steady on: The 2G signal strength is high. Fast blinking: The 2G signal strength is medium. Slow blinking: The 2G signal strength is low. Off: No 2G signal is available.
8	WWAN	Green	Steady on: The 3G/2G connection has been set up and is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.
9	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.

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Number	Indicator	Color	Description
10	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface. Blinking: The LAN interface is transmitting or receiving data. Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-145** lists the CON/AUX interface attributes.

Table 2-145 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-146** lists attributes of an FE electrical interface.

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Table 2-146 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-147** lists attributes of a USB interface.

Table 2-147 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

3G-EVDO Antenna Interface

3G-EVDO antenna interfaces of a router include a 3G MAIN interface (for the primary antenna) and a 3G DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, whereas the secondary antenna assists the primary antenna in signal receiving. **Table 2-148** lists attributes of a 3G-EVDO antenna interface.

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Table 2-148 3G-EVDO antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● CDMA2000 1X: 800/1900 (MHz) ● CDMA2000 1X/EVDO Rev.0: 800/1900 (MHz) ● CDMA2000 1X/EVDO Rev A: 800/1900 (MHz)
Rate	● CDMA2000 1X: uplink rate of 153.6 kbit/s and downlink rate of 153.6 kbit/s ● CDMA2000 1X/EVDO Rev.0: uplink rate of 153.6 kbit/s and downlink rate of 2.4 Mbit/s ● CDMA2000 1X/EVDO Rev A: uplink rate of 1.8 Mbit/s and downlink rate of 3.1 Mbit/s
Cable type	**3G Antenna**

Power Supply System

The AR151G-C has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-57** shows its appearance.

Figure 2-57 24 W power adapter appearance

Table 2-149 provides the functions of the 24 W power adapter.

Table 2-149 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-150 provides the specifications of the 24 W power adapter.

Table 2-150 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR151G-C router has built-in fans to cool the system. The fans are not pluggable.

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Seen from the front panel, the airflow is left to right, as shown in **Figure 2-58**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-58 Airflow

Technical Specifications

Table 2-151 lists technical specifications of the AR151G-C.

Table 2-151 Technical specifications of the AR151G-C

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	

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Item	Specification
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	12.4 W
Heat dissipation	
Fan module	Built-in fan module, unpluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one FE electrical interface, and two 3G-EVDO antenna interfaces LAN interfaces: four FE electrical interfaces. LAN interface FE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.4.12 AR156W

Version Mapping

Table 2-152 lists the mapping between the AR156W and software versions.

Table 2-152 Mapping between the AR156W and software versions

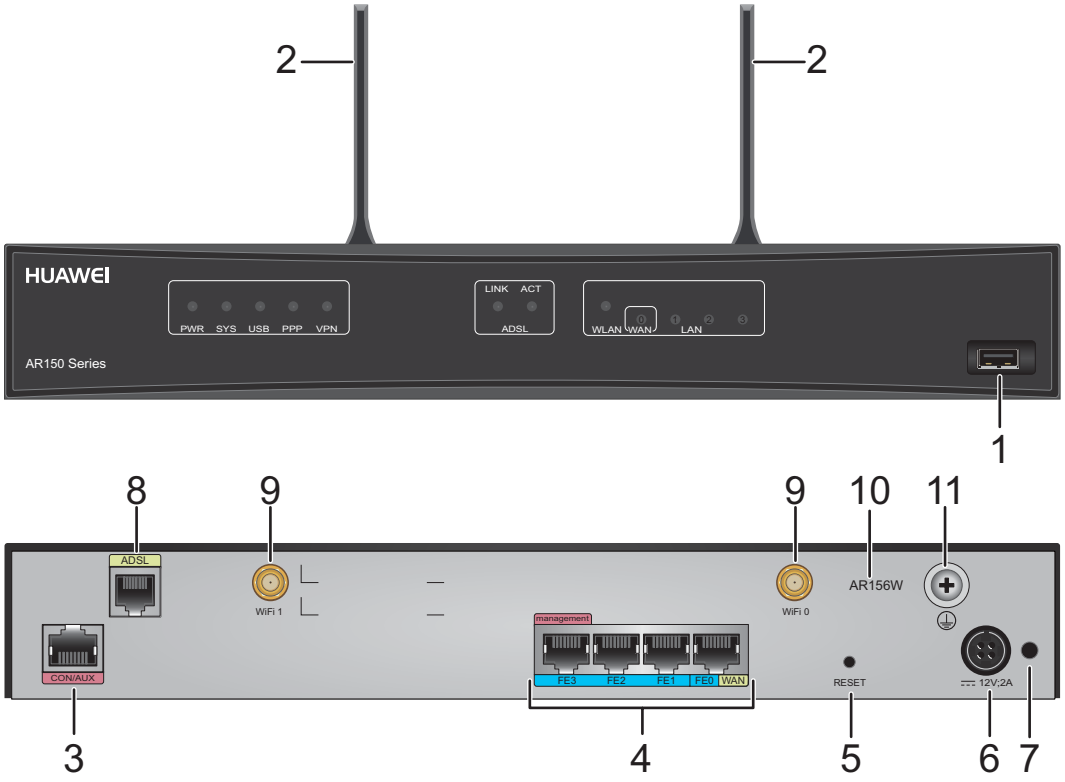
Router Model	Software Version
AR156W	V200R005C10 and later versions

Appearance and Structure

Appearance

Figure 2-59 shows the appearance of the AR156W.

Figure 2-59 AR156W appearance



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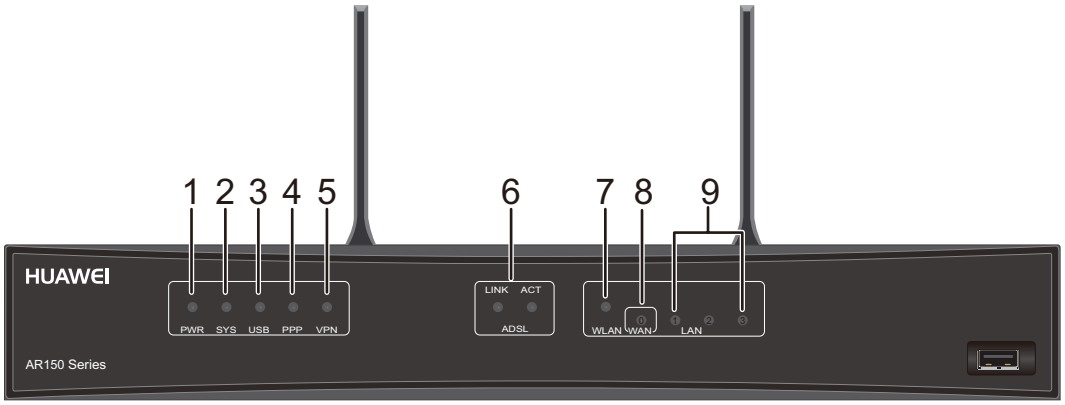
1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR156W does not support AUX login.	4	LAN interfaces: four **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE3 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: **ADSL-B/J interface** **NOTE** This interface supports the dying gasp function.
9	Two **Wi-Fi antenna interfaces**	10	Product model silkscreen
11	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-60 shows indicators on the AR156W.

Figure 2-60 Indicators on the AR156W



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: No data is transmitted or received on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.

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Number	Indicator	Color	Description
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1-FE3)	Green	Steady on: A link is connected on the LAN interface.
			Blinking: The LAN interface is transmitting or receiving data.
			Off: No link is connected on the LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-153** lists the CON/AUX interface attributes.

Table 2-153 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-154** lists attributes of an FE electrical interface.

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Table 2-154 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-155** lists attributes of a USB interface.

Table 2-155 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-156** lists attributes of a Wi-Fi antenna interface.

Table 2-156 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n

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Attribute	Description
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

ADSL-B/J Interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-157** lists attributes of an ADSL-B/J interface.

Table 2-157 ADSL-B/J interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.992.1 G.DMT ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ Annex J mode: a downlink rate of 24 Mbit/s and an uplink rate of 3 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR156W has no built-in power modules and uses a 24 W power adapter for power supply.

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24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-61** shows its appearance.

Figure 2-61 24 W power adapter appearance

Table 2-158 provides the functions of the 24 W power adapter.

Table 2-158 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-159 provides the specifications of the 24 W power adapter.

Table 2-159 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	

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Item	Description
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR156W has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-160 lists technical specifications of the AR156W.

Table 2-160 Technical specifications of the AR156W

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)

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Item	Specification
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16.7 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-B/J interface LAN interfaces: four FE electrical interfaces, LAN interface FE0 can be configured as a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5 AR160 Series

2.5.1 AR168F

Version Mapping

Table 2-161 lists the mapping between the AR168F and software versions.

Table 2-161 Mapping between the AR168F and software versions

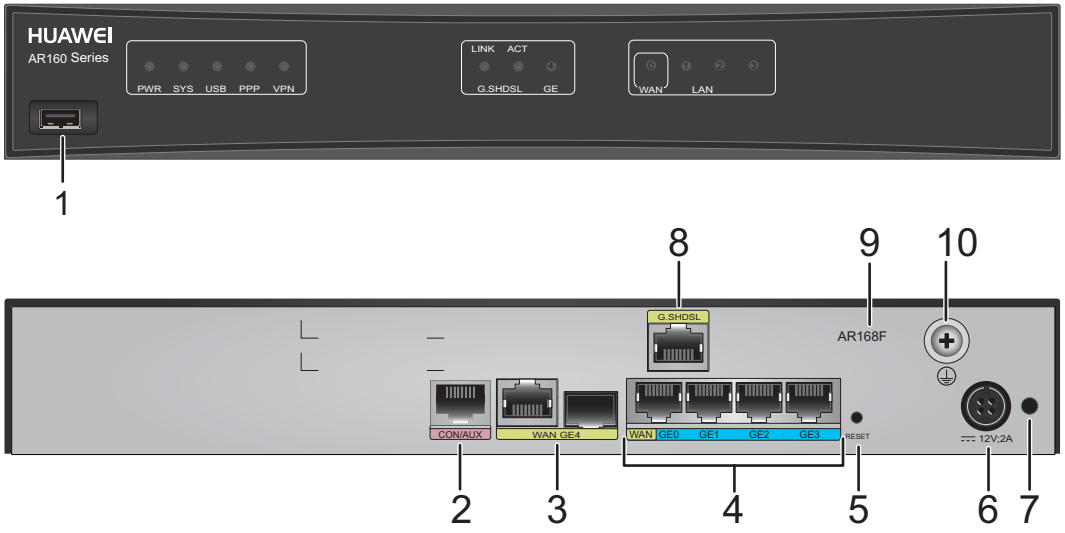
Router Model	Software Version
AR168F	V200R005C00 and later versions

Appearance and Structure

Appearance

Figure 2-62 shows the appearance of the AR168F.

Figure 2-62 AR168F appearance



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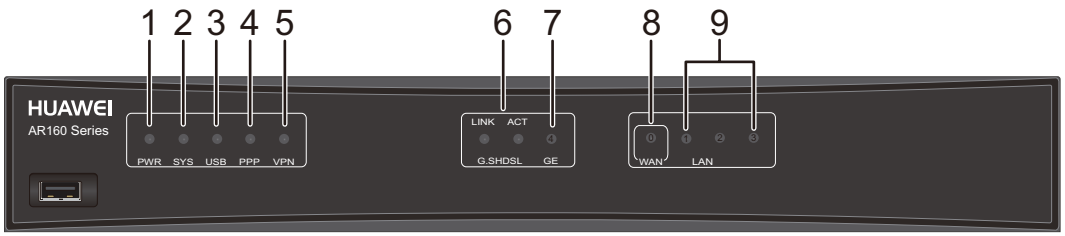
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR168F does not support AUX login.
3	WAN interface: **GE combo interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: **G.SHDSL interface** **NOTE** This interface supports the dying gasp function.
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-63 shows indicators on the AR168F.

Figure 2-63 Indicators on the AR168F



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	G.SHDSL LINK indicator	Green	Steady on: All the four DSL channels are active.
			● Stays on for 0.25s and blinks three times in the next 0.75s: One DSL channel is active. ● Stays on for 0.5 seconds and blinks twice in the next 0.5 seconds: Two DSL channels are active. ● Stays on for 0.75 seconds and blinks once in the next 0.25 seconds: Three DSL channels are active.
			Off: All the four DSL channels are inactive.
	G.SHDSL ACT indicator	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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Number	Indicator	Color	Description
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-162** lists the CON/AUX interface attributes.

Table 2-162 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-163** lists attributes of a USB interface.

Table 2-163 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

G.SHDSL Interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. **Table 2-164** lists attributes of a G.SHDSL interface.

Table 2-164 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	5.696 Mbit/s per pair
Cable type	**4.1.13 G.SHDSL Cable** or **4.1.7 Ethernet Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-165** lists attributes of a GE electrical interface.

Table 2-165 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

Power Supply System

The AR168F has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-64** shows its appearance.

Figure 2-64 24 W power adapter appearance

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Table 2-166 provides the functions of the 24 W power adapter.

Table 2-166 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-167 provides the specifications of the 24 W power adapter.

Table 2-167 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A

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Item	Description
Maximum output power	24 W

Heat Dissipation

AR168F has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-168 lists technical specifications of the AR168F router.

Table 2-168 Technical specifications of the AR168F

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17.8 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one G.SHDSL interface, and one GE combo interface. LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.2 AR169F/AR169BF

Version Mapping

Table 2-169 lists the mapping between the AR169F/AR169BF and software versions.

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Table 2-169 Mapping between the AR169F/AR169BF and software versions

Router Model	Software Version
AR169F	V200R005C00 and later versions
AR169BF	V200R006C10 and later versions

Appearance and Structure

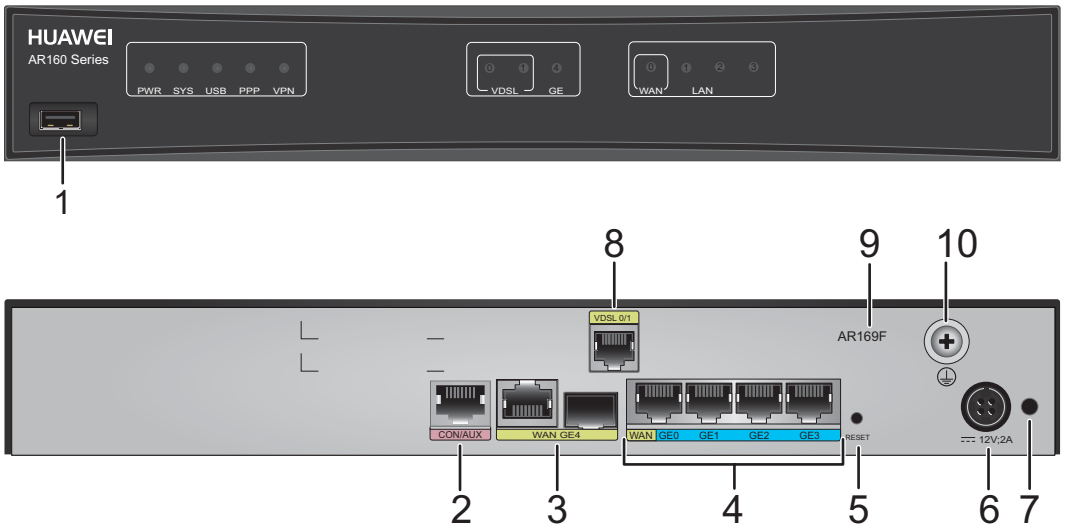
Appearance

NOTE

The AR169F and AR169BF have the same appearance but different silkscreens. The AR169F is used as an example here.

Figure 2-65 shows the appearance of the AR169F/AR169BF.

Figure 2-65 AR169F/AR169BF appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR169F/AR169BF does not support AUX login.
3	WAN interface: **GE combo interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.

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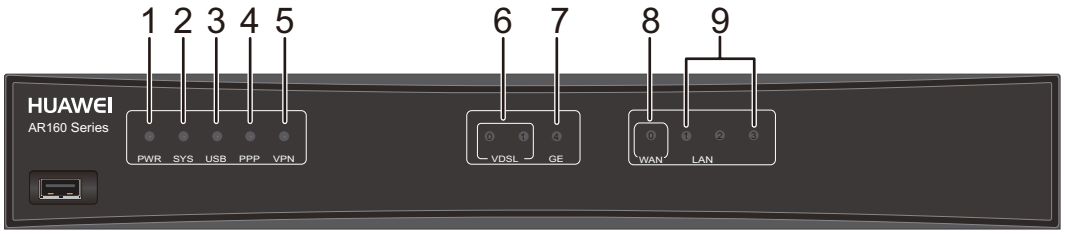
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-66 shows indicators on the AR169F/AR169BF.

Figure 2-66 Indicators on the AR169F/AR169BF



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

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Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	VDSL (AR169F)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.
	VDSL (AR169BF)	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established. ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.

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Number	Indicator	Color	Description
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-170** lists the CON/AUX interface attributes.

Table 2-170 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-171** lists attributes of a USB interface.

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Table 2-171 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-172** lists attributes of a VDSL interface.

Table 2-172 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-173** lists attributes of a GE electrical interface.

Table 2-173 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

Power Supply System

The AR169F/AR169BF has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-67** shows its appearance.

Figure 2-67 24 W power adapter appearance

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Table 2-174 provides the functions of the 24 W power adapter.

Table 2-174 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-175 provides the specifications of the 24 W power adapter.

Table 2-175 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A

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Item	Description
Maximum output power	24 W

Heat Dissipation

AR169F/AR169BF has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-176 lists technical specifications of the AR169F/AR169BF.

Table 2-176 Technical specifications of the AR169F/AR169BF

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	● AR169F: 512 MB ● AR169BF: 1 GB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W

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Item	Specification
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	● AR169F: 17.8 W ● AR169BF: 17.0 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one VDSL interface, and one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.3 AR161FG-L

Version Mapping

Table 2-177 lists the mapping between the AR161FG-L and software versions.

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Table 2-177 Mapping between the AR161FG-L and software versions

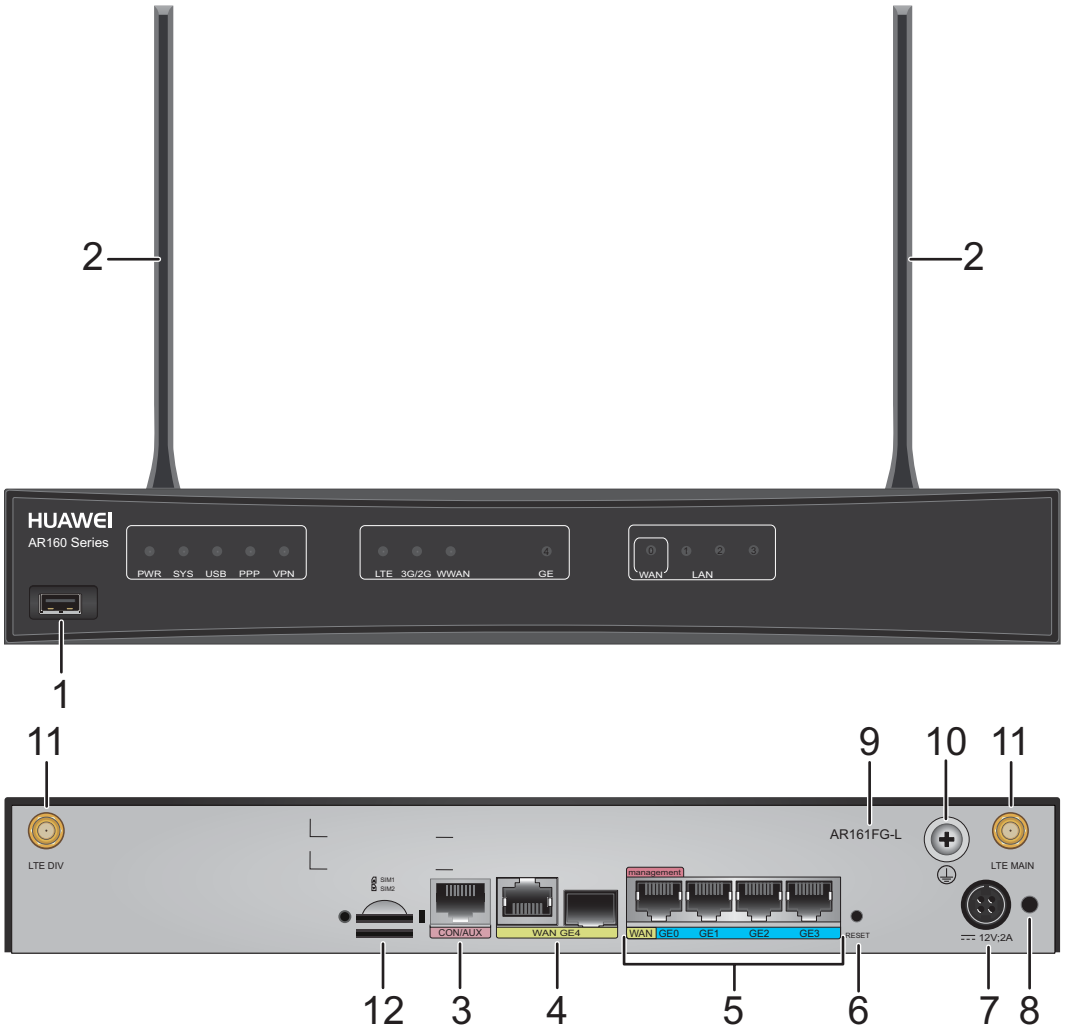
Router Model	Software Version
AR161FG-L	V200R005C10 and later versions

Appearance and Structure

Appearance

Figure 2-68 shows the appearance of the AR161FG-L.

Figure 2-68 AR161FG-L appearance



1	**USB interface (host)**	2	Two **LTE antennas**

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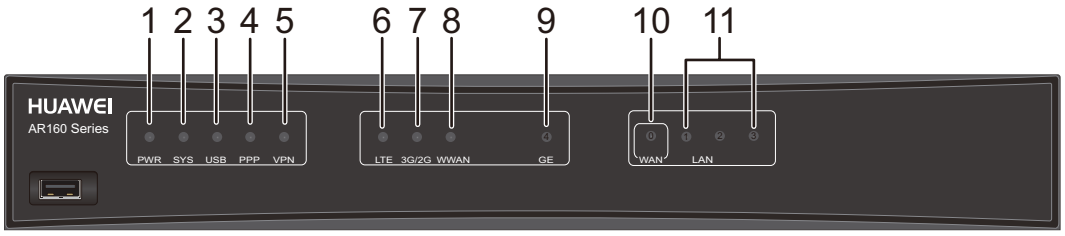
3	**CON/AUX interface** **NOTE** The AR161FG-L does not support AUX login.	4	WAN interface: **GE combo interface**
5	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	**LTE antenna interface**	12	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.

Indicator Description

Figure 2-69 shows indicators on the AR161FG-L.

Figure 2-69 Indicators on the AR161FG-L



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.

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Number	Indicator	Color	Description
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
9	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
10	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-178** lists the CON/AUX interface attributes.

Table 2-178 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-179** lists attributes of a USB interface.

Table 2-179 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-180** lists attributes of a GE electrical interface.

Table 2-180 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP

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Attribute	Description
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-181** lists attributes of an LTE antenna interface.

Table 2-181 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/5/7/8/20

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Attribute	Description
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s
Cable type	**LTE Antenna**

Power Supply System

The AR161FG-L has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-70** shows its appearance.

Figure 2-70 24 W power adapter appearance

Table 2-182 provides the functions of the 24 W power adapter.

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Table 2-182 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-183 provides the specifications of the 24 W power adapter.

Table 2-183 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

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Heat Dissipation

AR161FG-L has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-184 lists technical specifications of the AR161FG-L.

Table 2-184 Technical specifications of the AR161FG-L

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17 W

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Item	Specification
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.4 AR161FGW-L

Version Mapping

Table 2-185 lists the mapping between the AR161FGW-L and software versions.

Table 2-185 Mapping between the AR161FGW-L and software versions

Router Model	Software Version
AR161FGW-L	V200R005C10 and later versions

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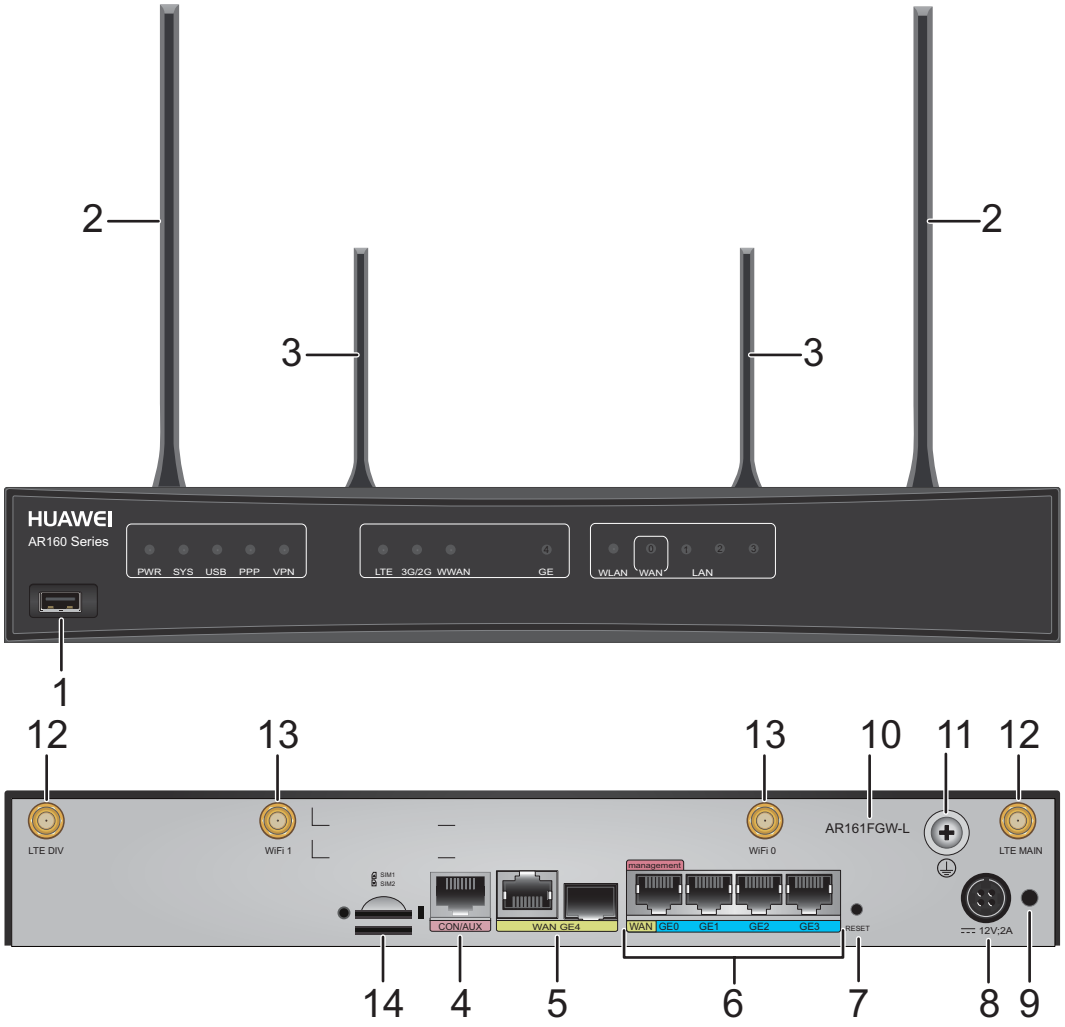
Appearance and Structure

Appearance

Figure 2-71 shows the appearance of the AR161FGW-L.

Figure 2-71 AR161FGW-L appearance



1	**USB interface (host)**	2	Two **LTE antennas**
3	Two **Wi-Fi antennas**	4	**CON/AUX interface** **NOTE** The AR161FGW-L does not support AUX login.

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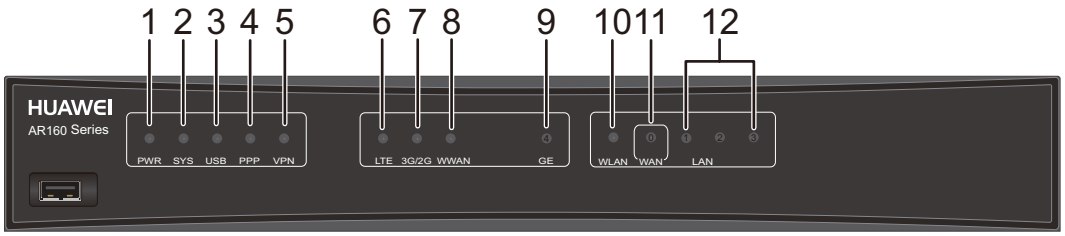
5	WAN interface: **GE combo interface**	6	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.
7	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	Product model silkscreen
11	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	12	**LTE antenna interface**
13	Two **Wi-Fi antenna interfaces**	14	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.

Indicator Description

Figure 2-72 shows indicators on the AR161FGW-L.

Figure 2-72 Indicators on the AR161FGW-L



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.

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Number	Indicator	Color	Description
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
9	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
12	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-186** lists the CON/AUX interface attributes.

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Table 2-186 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-187** lists attributes of a USB interface.

Table 2-187 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-188** lists attributes of a GE electrical interface.

Table 2-188 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

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Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-189** lists attributes of an LTE antenna interface.

Table 2-189 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/5/7/8/20

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Attribute	Description
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s
Cable type	**LTE Antenna**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-190** lists attributes of a Wi-Fi antenna interface.

Table 2-190 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

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Power Supply System

The AR161FGW-L has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-73** shows its appearance.

Figure 2-73 24 W power adapter appearance

Table 2-191 provides the functions of the 24 W power adapter.

Table 2-191 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-192 provides the specifications of the 24 W power adapter.

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Table 2-192 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

AR161FGW-L has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-193 lists technical specifications of the AR161FGW-L.

Table 2-193 Technical specifications of the AR161FGW-L

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	

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Item	Specification
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	18.8 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	

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Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.5 AR161FGW-La

Version Mapping

Table 2-194 lists the mapping between the AR161FGW-La router and software versions.

Table 2-194 Mapping between the AR161FGW-La router and software versions

Router Model	Software Version
AR161FGW-La	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-74 shows the appearance of the AR161FGW-La router.

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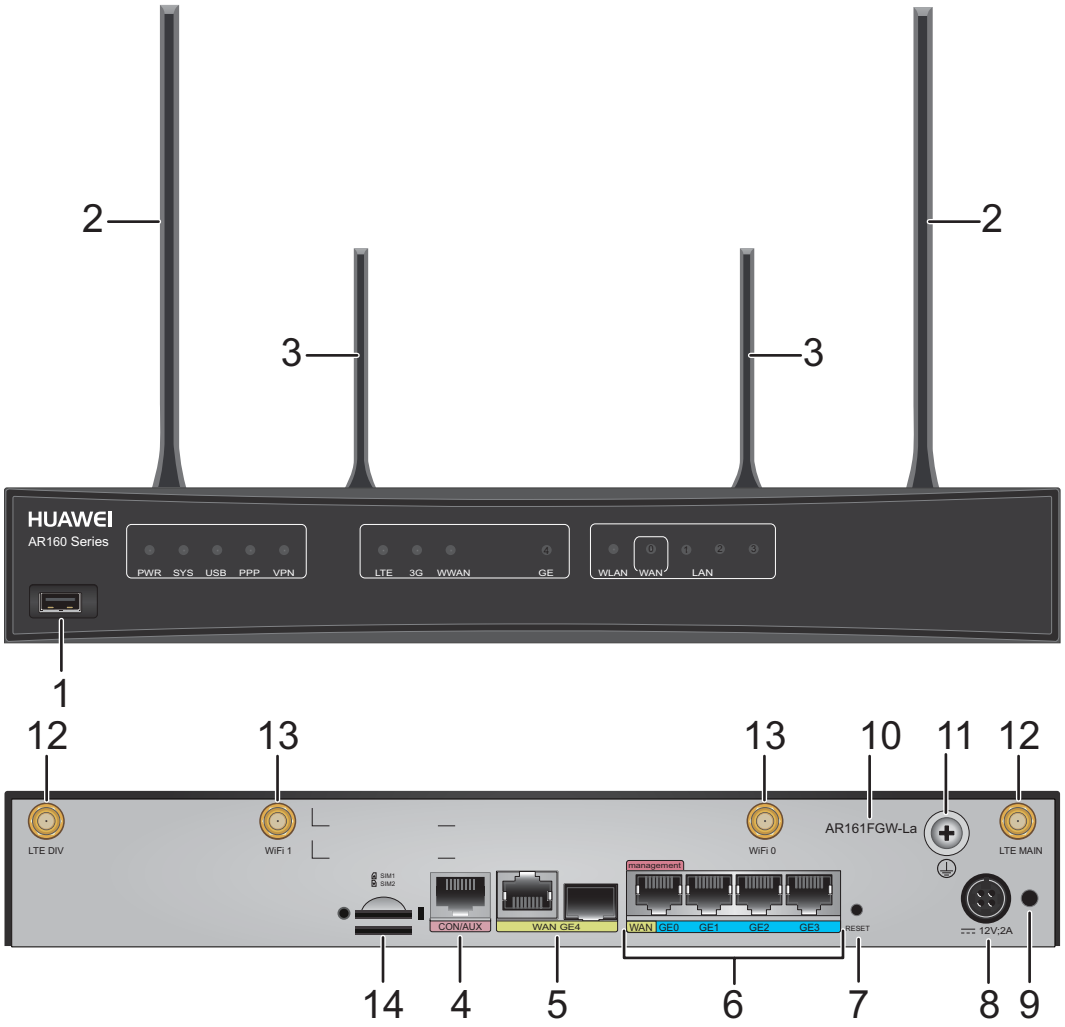
Figure 2-74 AR161FGW-La appearance



1	**USB interface (host)**	2	Two **LTE antennas**
3	Two **Wi-Fi antennas**	4	**CON/AUX interface** **NOTE** The AR161FGW-La does not support AUX login.
5	WAN interface: **GE combo interface**	6	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.

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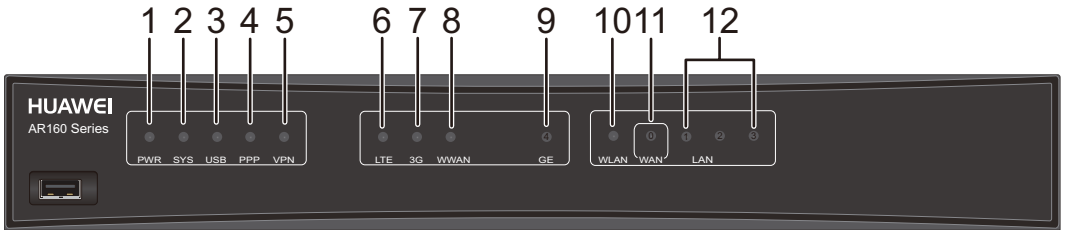
7	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	Product model silkscreen
11	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	12	**LTE antenna interface**
13	Two **Wi-Fi antenna interfaces**	14	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.

Indicator Description

Figure 2-75 shows indicators on the AR161FGW-La.

Figure 2-75 Indicators on the AR161FGW-La



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

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Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.
7	3G	Green	Steady on: The 3G signal strength is high.
			Fast blinking: The 3G signal strength is medium.
			Slow blinking: The 3G signal strength is low.
			Off: No 3G signal is available.
8	WWAN	Green	Steady on: An LTE/3G link has been set up and is active.
			Blinking: Data is being transmitted or received over the LTE/3G link.

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Number	Indicator	Color	Description
			Off: The LTE/3G link has not been set up or is inactive.
9	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
12	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-195** lists the CON/AUX interface attributes.

Table 2-195 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

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Attribute	Description
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-196** lists attributes of a USB interface.

Table 2-196 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-197** lists attributes of a GE electrical interface.

Table 2-197 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Attribute	Description
Cable type	4.1.7 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-198** lists attributes of an LTE antenna interface.

Table 2-198 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GPS (L1): 1575.42 (MHz) ● GLONASS (L1): 1602 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 2/4/5 ● LTE FDD: Band 2/4/5/17
Rate	● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s

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Attribute	Description
Cable type	**LTE Antenna**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-199** lists attributes of a Wi-Fi antenna interface.

Table 2-199 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR161FGW-La has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-76** shows its appearance.

Figure 2-76 24 W power adapter appearance

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Table 2-200 provides the functions of the 24 W power adapter.

Table 2-200 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-201 provides the specifications of the 24 W power adapter.

Table 2-201 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A

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Item	Description
Maximum output power	24 W

Heat Dissipation

The AR161FGW-La router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-202 lists technical specifications of the AR161FGW-La router.

Table 2-202 AR161FGW-La technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.00 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input power (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Not supported
Power consumption	
Maximum power consumption	18.8 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating environment temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.6 AR162F

Version Mapping

Table 2-203 lists the mapping between the AR162F and software versions.

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Table 2-203 Mapping between the AR162F and software versions

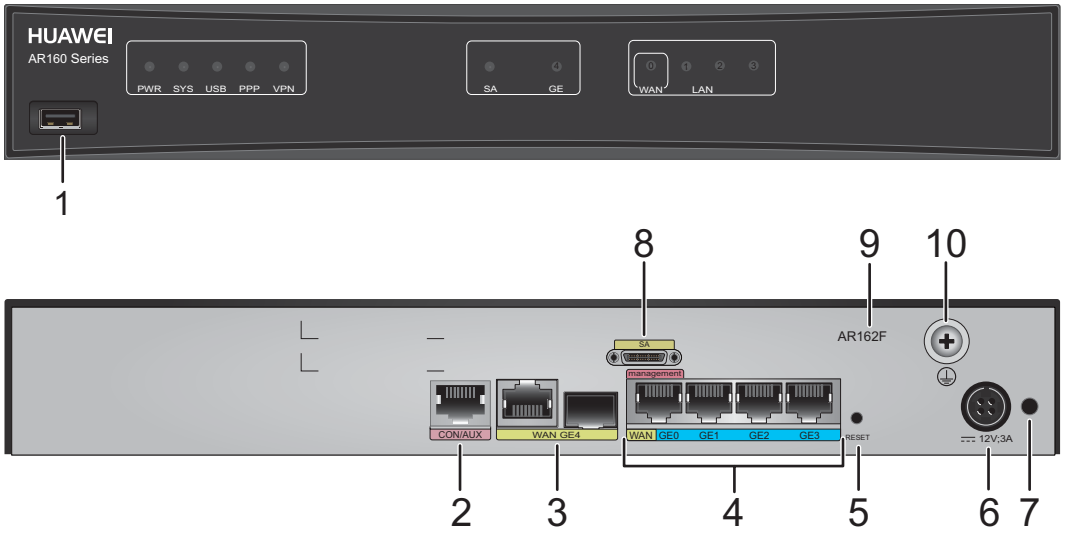
Router Model	Software Version
AR162F	V200R005C20 and later versions

Appearance and Structure

Appearance

Figure 2-77 shows the appearance of the AR162F.

Figure 2-77 AR162F appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR162F does not support AUX login.
3	WAN interface: **GE combo interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.

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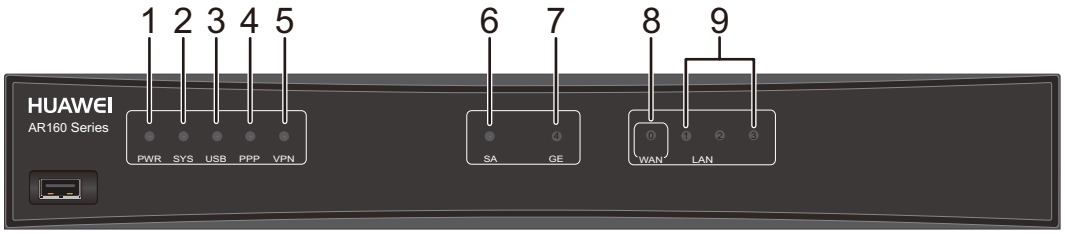
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: **SA interface**
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-78 shows indicators on the AR162F.

Figure 2-78 Indicators on the AR162F



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

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Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	SA	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

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Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-204** lists the CON/AUX interface attributes.

Table 2-204 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-205** lists attributes of a USB interface.

Table 2-205 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-206** lists attributes of a GE electrical interface.

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Table 2-206 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

SA Interface

When working in synchronous mode, the SA interfaces implement interworking between a branch and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. **Table 2-207** lists attributes of a SA interface.

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Table 2-207 SA interface attributes

Attribute	Description		
	Synchronous Serial Interface		**Asynchronous Serial Interface**
Connector type	DB28		
Standards compliance and working mode	● V.24 DTE ● V.24 DCE	● V.35 DTE ● V.35 DCE ● X.21 DTE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Services provided	DDN leased line		● Modem dial-up ● Backup
	Terminal access		● Asynchronous leased line ● Terminal access
Cable type	**4.1.11 SA Cable**		

Power Supply System

The AR162F has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-79** shows its appearance.

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Figure 2-79 36 W power adapter appearance

Table 2-208 describes functions of the 36 W power adapter.

Table 2-208 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-209 lists technical specifications of the 36 W power adapter.

Table 2-209 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	

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Item	Description
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

Heat Dissipation

AR162F has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-210 lists technical specifications of the AR162F.

Table 2-210 Technical specifications of the AR162F

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)

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Item	Specification
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.1 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one SA interface, and one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.7 AR161FW

Version Mapping

Table 2-211 lists the mapping between the AR161FW and software versions.

Table 2-211 Mapping between the AR161FW and software versions

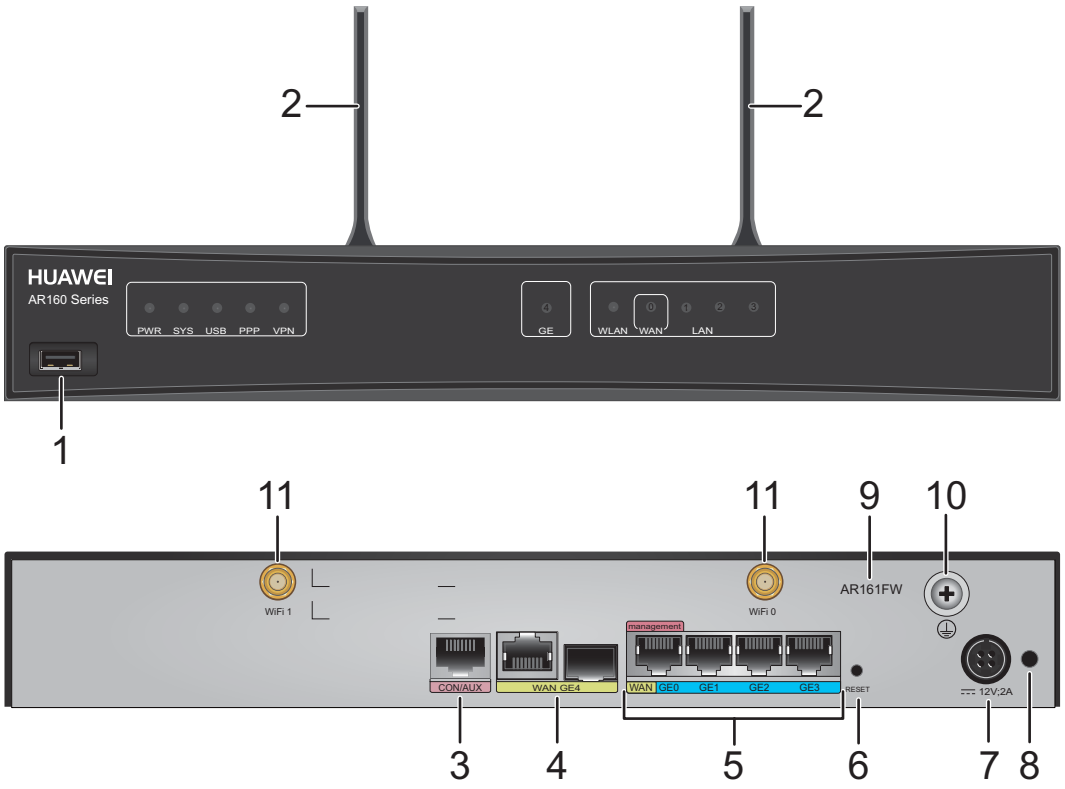
Router Model	Software Version
AR161FW	V200R005C20, V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-80 shows the appearance of the AR161FW.

Figure 2-80 AR161FW appearance



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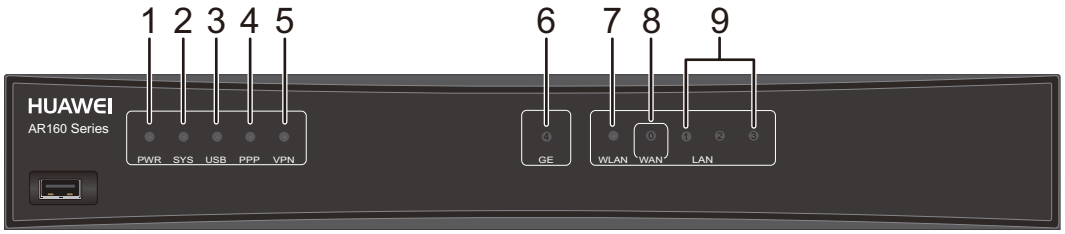
1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR161FW does not support AUX login.	4	WAN interface: **GE combo interface**
5	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	Two **Wi-Fi antenna interfaces**	-	-

Indicator Description

Figure 2-81 shows indicators on the AR161FW.

Figure 2-81 Indicators on the AR161FW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

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Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
9	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-212** lists the CON/AUX interface attributes.

Table 2-212 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-213** lists attributes of a USB interface.

Table 2-213 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

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GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-214** lists attributes of a GE electrical interface.

Table 2-214 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-215** lists attributes of a Wi-Fi antenna interface.

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Table 2-215 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR161FW has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-82** shows its appearance.

Figure 2-82 24 W power adapter appearance

Table 2-216 provides the functions of the 24 W power adapter.

Table 2-216 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-217 provides the specifications of the 24 W power adapter.

Table 2-217 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR161FW has no fans and uses natural heat dissipation.

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Technical Specifications

Table 2-218 lists technical specifications of the AR161FW router.

Table 2-218 Technical specifications of the AR161FW

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	15.2 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

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Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface, and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.8 AR161FW-P-M5

Version Mapping

Table 2-219 lists the mapping between the AR161FW-P-M5 and software versions.

Table 2-219 Mapping between the AR161FW-P-M5 and software versions

Router Model	Software Version
AR161FW-P-M5	V200R005C30 and later versions

Appearance and Structure

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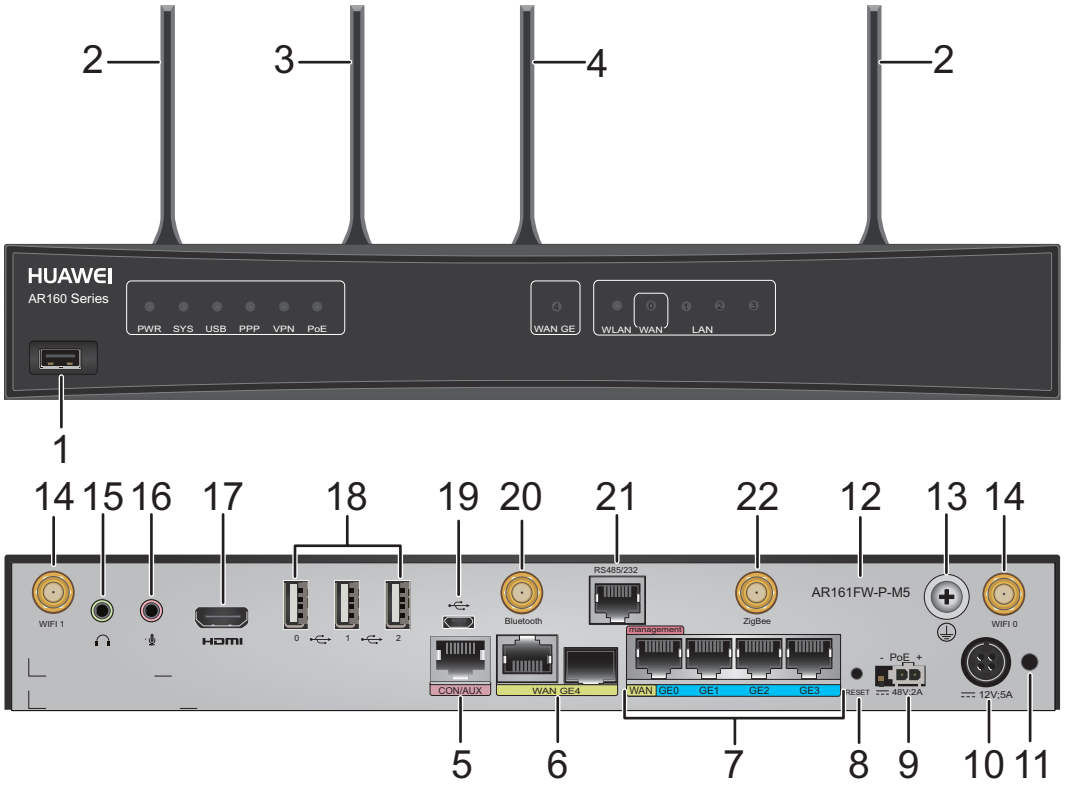
Appearance

Figure 2-83 shows the appearance of the AR161FW-P-M5.

Figure 2-83 AR161FW-P-M5 appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**ZigBee antenna**	4	**Bluetooth antenna**
5	**CON/AUX interface** **NOTE** The AR161FW-P-M5 does not support AUX login.	6	WAN interface: **GE combo interface**
7	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.	8	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

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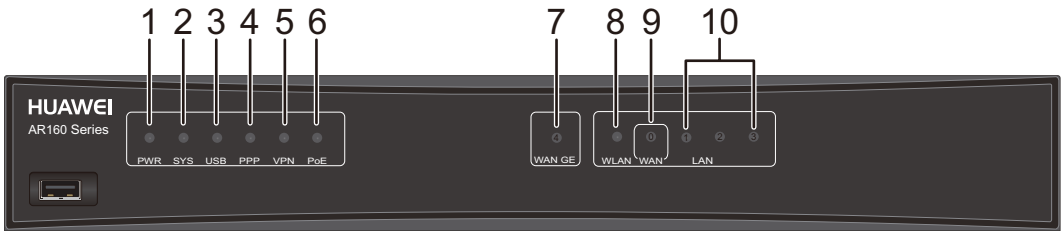
9	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.	10	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.
11	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	12	Product model silkscreen
13	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	14	Two **Wi-Fi antenna interfaces**
15	Earphone jack	16	Microphone jack
17	**HDMI video interface**	18	Three **USB interfaces (host)**
19	**USB interface (OTG)**	20	**Bluetooth antenna interface**
21	**RS485/232 interface**	22	ZigBee antenna interface

Indicator Description

Figure 2-84 shows indicators on the AR161FW-P-M5.

Figure 2-84 Indicators on the AR161FW-P-M5



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.

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Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
8	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
9	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
10	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-220** lists the CON/AUX interface attributes.

Table 2-220 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-221** lists attributes of a USB interface.

Table 2-221 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

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GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-222** lists attributes of a GE electrical interface.

Table 2-222 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-223** lists attributes of a Wi-Fi antenna interface.

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Table 2-223 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

HDMI Video Interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. **Table 2-224** lists attributes of a HDMI interface.

Table 2-224 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
Signal types supported	HDMI signal
Cable type	**HDMI video cable**

USB Interface (OTG)

A USB interface (OTG) is also called a Micro USB interface. It can connect to an operation terminal for onsite configuration. **Table 2-225** lists attributes of a Micro USB interface.

Table 2-225 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB2.0
Working mode	OTG

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Bluetooth Antenna Interface

The Bluetooth antenna interface of a router connects to a Bluetooth antenna to transmit and receive data. **Table 2-226** lists attributes of the Bluetooth interface.

Table 2-226 Bluetooth antenna interface attributes

Attribute	Description
Connector type	mini PCIe
Standards compliance	● BT4.0 ● EDR
Frequency bands supported	2.4 GHz
Rate	1 Mbps
Transmission distance	10 m
Cable type	**Bluetooth Antenna**

RS485/232 Interface

An RS232/485 interface is a serial interface. **Table 2-227** lists attributes of an RS232/485 interface.

Table 2-227 RS232/485 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232/485
Bud rate (bit/s)	● RS485: 19200 ● RS232: 9600
Cable type	**4.1.15 Serial Cable (RS232/485)**

Power Supply System

The AR161FW-P-M5 has no built-in power modules and uses a 60 W power adapter for power supply. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its GE electrical interfaces.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-85** shows its appearance.

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Figure 2-85 60 W power adapter appearance

Table 2-228 provides the functions of the 60 W power adapter.

Table 2-228 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-229 provides the specifications of the 60 W power adapter.

Table 2-229 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz

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Item	Specification
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-86** shows its appearance.

Figure 2-86 Appearance of the 100 W AC PoE power module

Table 2-230 describes functions of the 100 W AC PoE power module.

Table 2-230 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-231 lists the specifications of the 100 W AC PoE power module.

Table 2-231 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR161FW-P-M5 has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-232 lists technical specifications of the AR161FW-P-M5.

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Table 2-232 Technical specifications of the AR161FW-P-M5

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE0-GE3)
Power consumption	
Maximum power consumption	32.4 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	4
Service interfaces (standard configuration)	WAN interface: one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface, two Wi-Fi antenna interfaces, one Bluetooth antenna interface, and one ZigBee antenna interface Multimedia service interfaces: one headset jack, one microphone jack, and one HDMI video interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.9 AR169FVW

Version Mapping

Table 2-233 lists the mapping between the AR169FVW router and software versions.

Table 2-233 Mapping between the AR169FVW router and software versions

Router Model	Software Version
AR169FVW	V200R005C30 and later versions

Appearance and Structure

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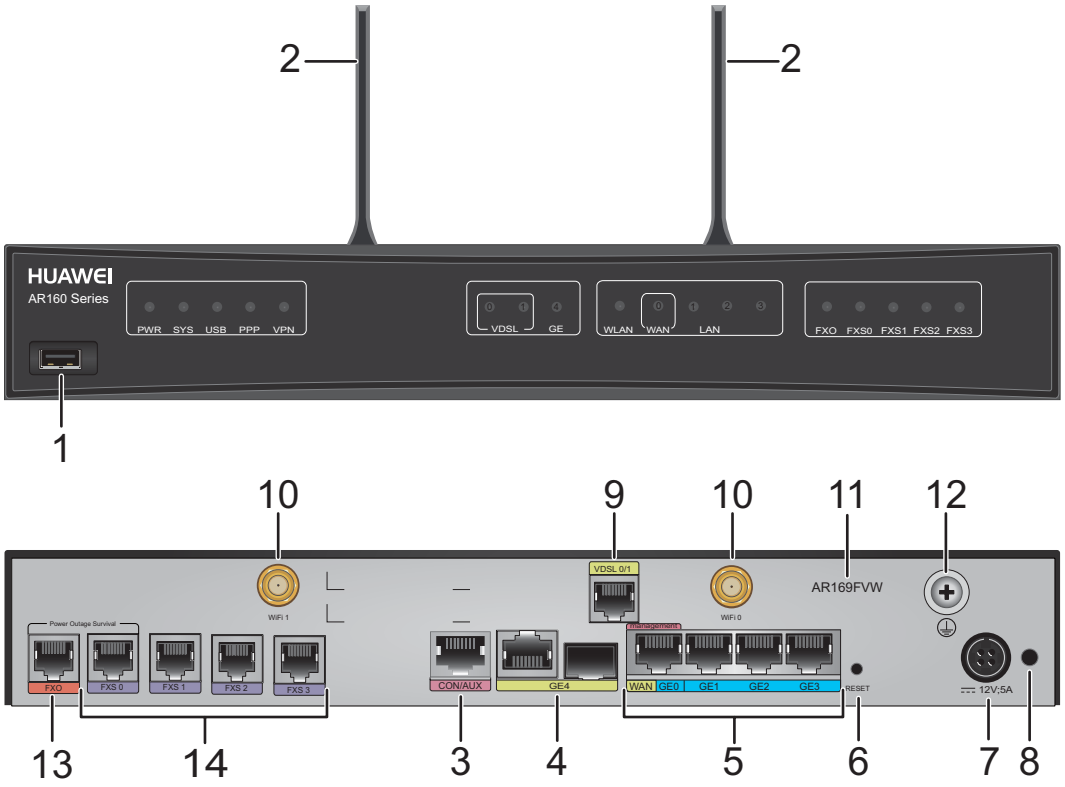
Appearance

Figure 2-87 shows the appearance of the AR169FVW router.

Figure 2-87 AR169FVW appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR169FVW does not support AUX login.	4	WAN interface: **GE combo interface**
5	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

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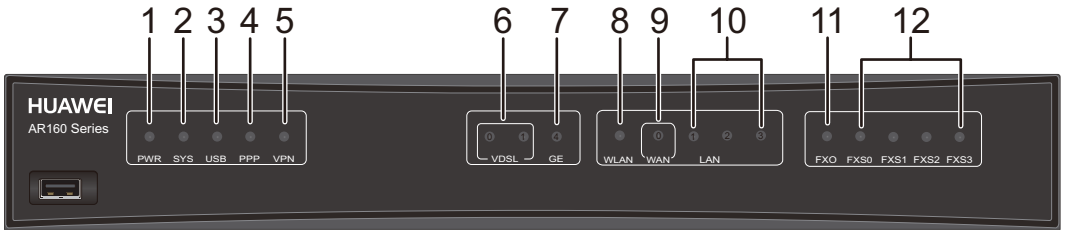
7	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
9	WAN interface: **VDSL interface** **NOTE** The VDSL0 and VDSL1 interfaces must be used together as two VDSL bonding interfaces.	10	Two **Wi-Fi antenna interfaces**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
13	One **FXO interface** **NOTE** The FXO interface can be connected to a public switched telephone network (PSTN) using a **standard telephone cable**.	14	Four **FXS interfaces** **NOTE** The FXS interfaces can be connected to analog telephones using **standard telephone cables**.

Indicator Description

Figure 2-88 shows the locations of AR169FVW indicators.

Figure 2-88 Indicators on an AR169FVW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.

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Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	Left VDSL indicator (LINK0) Right VDSL indicator (LINK1)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.
7	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
8	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.

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Number	Indicator	Color	Description
9	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
10	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.
11	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.
12	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-234** lists the CON/AUX interface attributes.

Table 2-234 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-235** lists attributes of a USB interface.

Table 2-235 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-236** lists attributes of a GE electrical interface.

Table 2-236 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.

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- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. Table 2-237 lists attributes of a Wi-Fi antenna interface.

Table 2-237 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. Table 2-238 lists attributes of a VDSL interface.

Table 2-238 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

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Attribute	Description
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 2-239** lists attributes of a FXS interface.

Table 2-239 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO Interface

A foreign exchange office (FX0) interface is a loop trunk interface and can connect to a PSTN network. **Table 2-240** lists attributes of a FXO interface.

Table 2-240 FXO interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

Power Supply System

The AR169FVW has no built-in power modules and uses a 60 W power adapter for power supply.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-89** shows its appearance.

Figure 2-89 60 W power adapter appearance

Table 2-241 provides the functions of the 60 W power adapter.

Table 2-241 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.

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Function	Description
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-242 provides the specifications of the 60 W power adapter.

Table 2-242 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W

Heat Dissipation

The AR169FVW routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-243 lists technical specifications of the AR169FVW routers.

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Table 2-243 AR169FVW routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	25.3 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and one VDSL interface LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface Voice interfaces: four FXS interfaces and one FX0 interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.10 AR169FGVW-L

Version Mapping

Table 2-244 lists the mapping between the AR169FGVW-L router and software versions.

Table 2-244 Mapping between the AR169FGVW-L router and software versions

Router Model	Software Version
AR169FGVW-L	V200R005C30 and later versions

Appearance and Structure

Appearance

Figure 2-90 shows the appearance of the AR169FGVW-L router.

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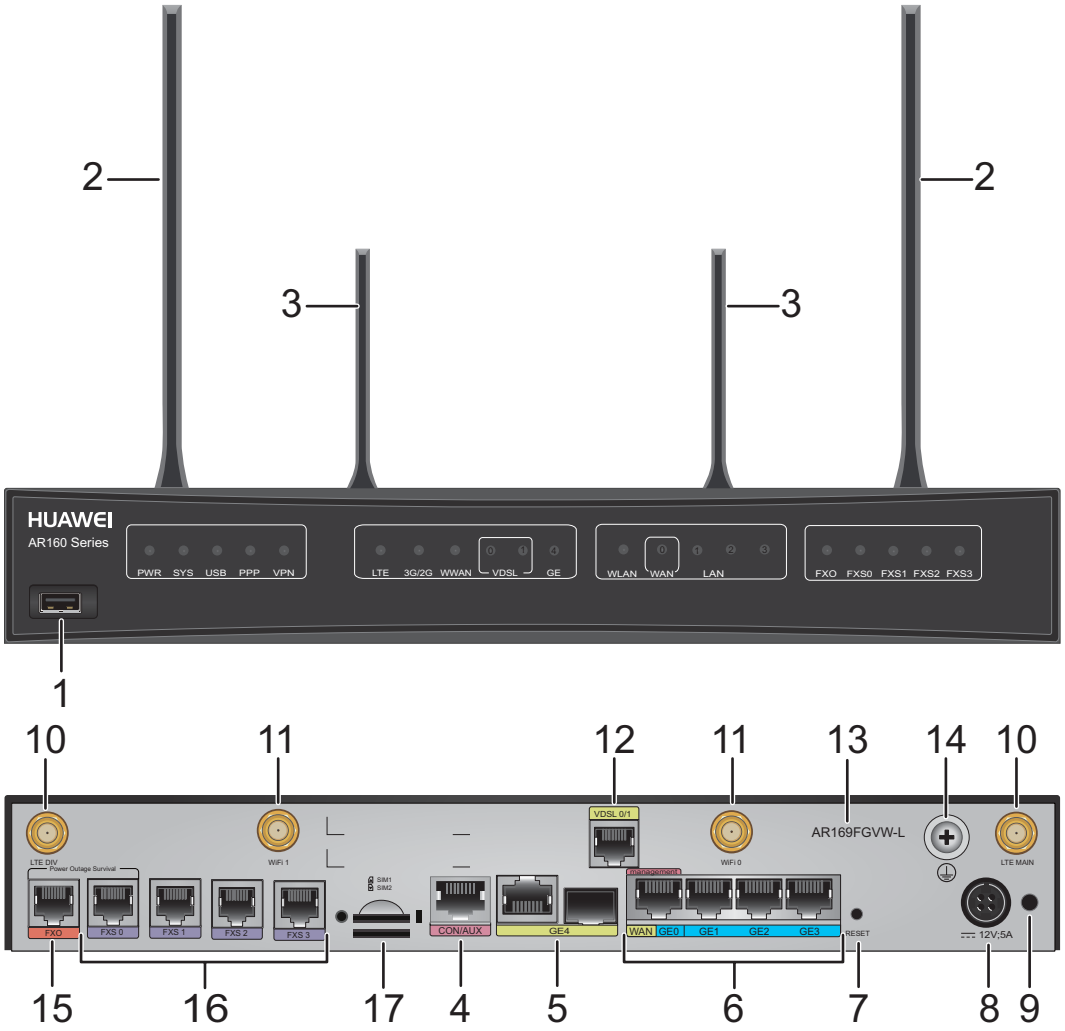
Figure 2-90 AR169FGVW-L appearance



1	**USB interface (host)**	2	Two **LTE antennas**
3	Two **Wi-Fi antennas**	4	**CON/AUX interface** **NOTE** The AR169FGVW-L does not support AUX login.
5	WAN interface: **GE combo interface**	6	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.

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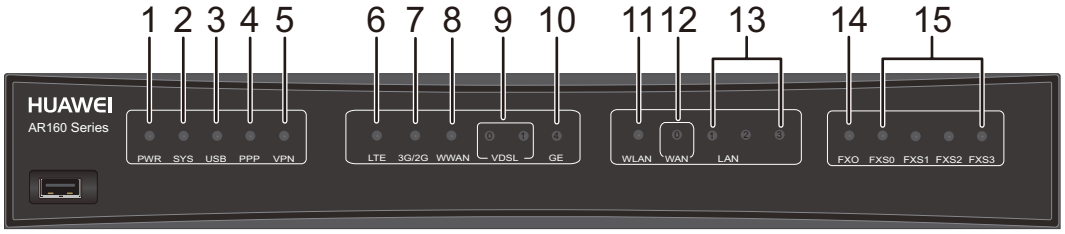
7	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**LTE antenna interface**
11	Two **Wi-Fi antenna interfaces**	12	WAN interface: **VDSL interface** **NOTE** The VDSL0 and VDSL1 interfaces must be used together as two VDSL bonding interfaces.
13	Product model silkscreen	14	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
15	One **FXO interface** **NOTE** The FXO interface can be connected to a public switched telephone network (PSTN) using a **standard telephone cable**.	16	Four **FXS interfaces** **NOTE** The FXS interfaces can be connected to analog telephones using **standard telephone cables**.
17	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.	-	-

Indicator Description

Figure 2-91 shows the locations of AR169FGVW-L indicators.

Figure 2-91 Indicators on an AR169FGVW-L



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high. Fast blinking: The 3G/2G signal strength is medium. Slow blinking: The 3G/2G signal strength is low. Off: No 3G/2G signal is available.

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Number	Indicator	Color	Description
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active. Blinking: Data is being transmitted or received over the LTE/3G/2G connection. Off: The LTE/3G/2G connection has not been established or is inactive.
9	Left VDSL indicator (LINK0) Right VDSL indicator (LINK1)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.
10	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
11	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
12	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
13	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.
14	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.
15	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.

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Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-245** lists the CON/AUX interface attributes.

Table 2-245 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-246** lists attributes of a USB interface.

Table 2-246 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-247** lists attributes of a GE electrical interface.

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Table 2-247 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-248** lists attributes of a Wi-Fi antenna interface.

Table 2-248 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz

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Attribute	Description
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-249** lists attributes of a VDSL interface.

Table 2-249 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 2-250** lists attributes of a FXS interface.

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Table 2-250 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO Interface

A foreign exchange office (FX0) interface is a loop trunk interface and can connect to a PSTN network. **Table 2-251** lists attributes of a FXO interface.

Table 2-251 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-252** lists attributes of an LTE antenna interface.

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Table 2-252 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/5/7/8/20
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s
Cable type	**LTE Antenna**

Power Supply System

The AR169FGVW-L has no built-in power modules and uses a 60 W power adapter for power supply.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-92** shows its appearance.

Figure 2-92 60 W power adapter appearance

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Table 2-253 provides the functions of the 60 W power adapter.

Table 2-253 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-254 provides the specifications of the 60 W power adapter.

Table 2-254 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A

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Item	Specification
Maximum output power	60 W

Heat Dissipation

The AR169FGVW-L routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-255 lists technical specifications of the AR169FGVW-L routers.

Table 2-255 AR169FGVW-L routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Not supported
Power consumption	
Maximum power consumption	28.9 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one VDSL interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface, and two Wi-Fi antenna interfaces Voice interfaces: four FXS interfaces and one FX0 interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.11 AR161F

Version Mapping

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Table 2-256 lists the mapping between the AR161F router and software versions.

Table 2-256 Mapping between the AR161F router and software versions

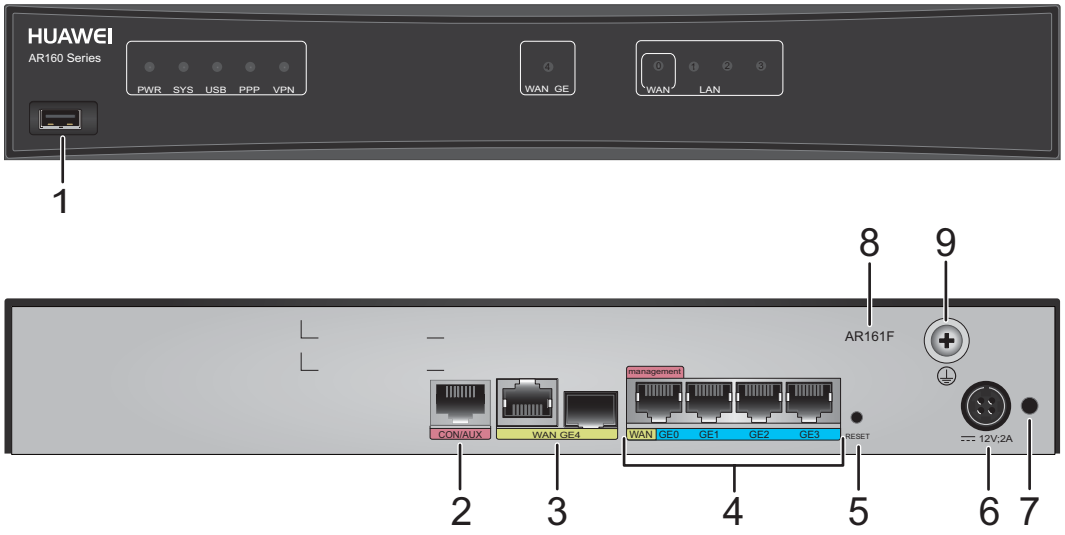
Router Model	Software Version
AR161F	V200R005C30 and later versions

Appearance and Structure

Appearance

Figure 2-93 shows the appearance of the AR161F router.

Figure 2-93 AR161F appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR161F does not support AUX login.
3	WAN interface: **GE combo interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.

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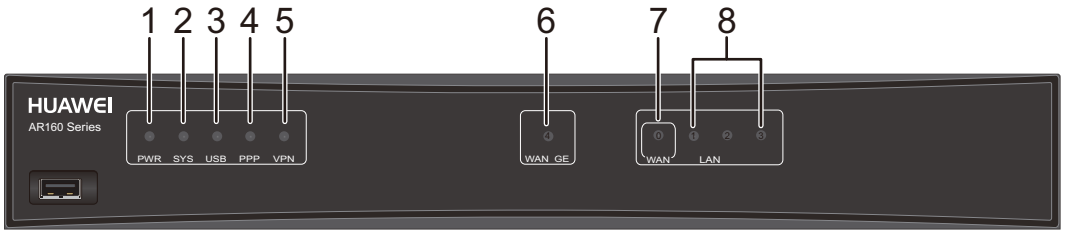
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-94 shows the locations of AR161F indicators.

Figure 2-94 Indicators on the AR161F



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

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Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.
7	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

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CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-257** lists the CON/AUX interface attributes.

Table 2-257 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-258** lists attributes of a USB interface.

Table 2-258 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-259** lists attributes of a GE electrical interface.

Table 2-259 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

Power Supply System

The AR161F has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-95** shows its appearance.

Figure 2-95 24 W power adapter appearance

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Table 2-260 provides the functions of the 24 W power adapter.

Table 2-260 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-261 provides the specifications of the 24 W power adapter.

Table 2-261 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A

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Item	Description
Maximum output power	24 W

Heat Dissipation

The AR161F routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-262 lists technical specifications of the AR161F routers.

Table 2-262 AR161F routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17.8 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one GE combo interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.12 AR169FGW-L

Version Mapping

Table 2-263 lists the mapping between the AR169FGW-L router and software versions.

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Table 2-263 Mapping between the AR169FGW-L router and software versions

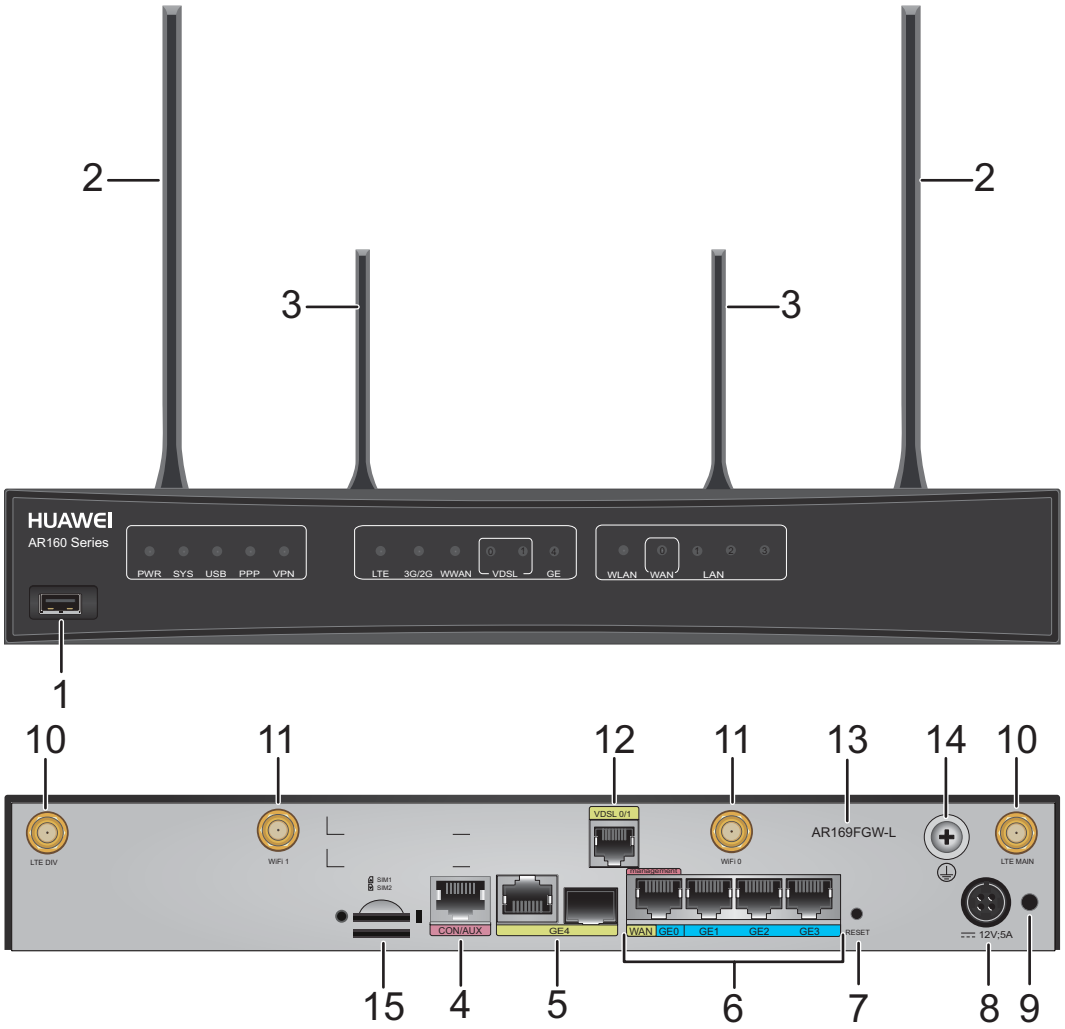
Router Model	Software Version
AR169FGW-L	V200R005C30 and later versions

Appearance and Structure

Appearance

Figure 2-96 shows the appearance of the AR169FGW-L router.

Figure 2-96 AR169FGW-L appearance



1	**USB interface (host)**	2	Two **LTE antennas**

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3	Two **Wi-Fi antennas**	4	**CON/AUX interface** **NOTE** The AR169FGW-L does not support AUX login.
5	WAN interface: **GE combo interface**	6	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.
7	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**LTE antenna interface**
11	Two **Wi-Fi antenna interfaces**	12	WAN interface: **VDSL interface** **NOTE** The VDSL0 and VDSL1 interfaces must be used together as two VDSL bonding interfaces.
13	Product model silkscreen	14	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
15	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.	-	-

Indicator Description

Figure 2-97 shows the locations of AR169FGW-L indicators.

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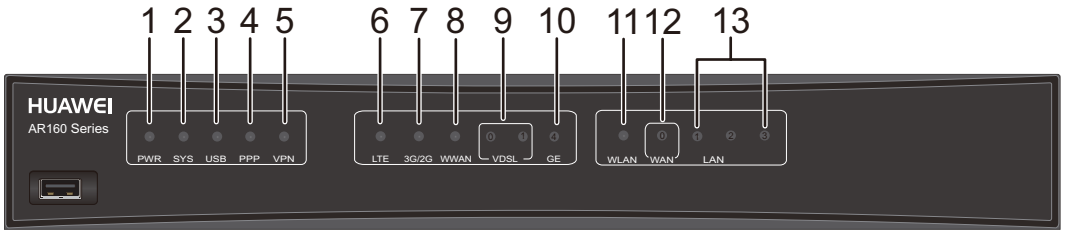
Figure 2-97 Indicators on an AR169FGW-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.

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Number	Indicator	Color	Description
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high. Fast blinking: The 3G/2G signal strength is medium. Slow blinking: The 3G/2G signal strength is low. Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active. Blinking: Data is being transmitted or received over the LTE/3G/2G connection. Off: The LTE/3G/2G connection has not been established or is inactive.
9	Left VDSL indicator (LINK0) Right VDSL indicator (LINK1)	Green	Steady on: A link has been established on the WAN interface. Blinking: The WAN link on the interface is activating. Off: No link is established on the WAN interface.
10	GE combo interface indicator	Green	Steady on: A link has been established on the GE combo interface. Blinking: Data is being transmitted or received on the GE combo interface. Off: No link is established on the GE combo interface.
11	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
12	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.
13	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

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Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-264** lists the CON/AUX interface attributes.

Table 2-264 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-265** lists attributes of a USB interface.

Table 2-265 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-266** lists attributes of a GE electrical interface.

Table 2-266 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-267** lists attributes of a Wi-Fi antenna interface.

Table 2-267 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2

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Attribute	Description
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-268** lists attributes of a VDSL interface.

Table 2-268 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-269** lists attributes of an LTE antenna interface.

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Table 2-269 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/5/7/8/20
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s
Cable type	**LTE Antenna**

Power Supply System

The AR169FGW-L has no built-in power modules and uses a 60 W power adapter for power supply.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-98** shows its appearance.

Figure 2-98 60 W power adapter appearance

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Table 2-270 provides the functions of the 60 W power adapter.

Table 2-270 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-271 provides the specifications of the 60 W power adapter.

Table 2-271 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A

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Item	Specification
Maximum output power	60 W

Heat Dissipation

The AR169FGW-L routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-272 lists technical specifications of the AR169FGW-L routers.

Table 2-272 AR169FGW-L routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	1 GB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Not supported
Power consumption	
Maximum power consumption	22 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one VDSL interface and two LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces, in which LAN interface GE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.13 AR161

Version Mapping

Table 2-273 lists the mapping between the AR161 router and software versions.

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Table 2-273 Mapping between the AR161 router and software versions

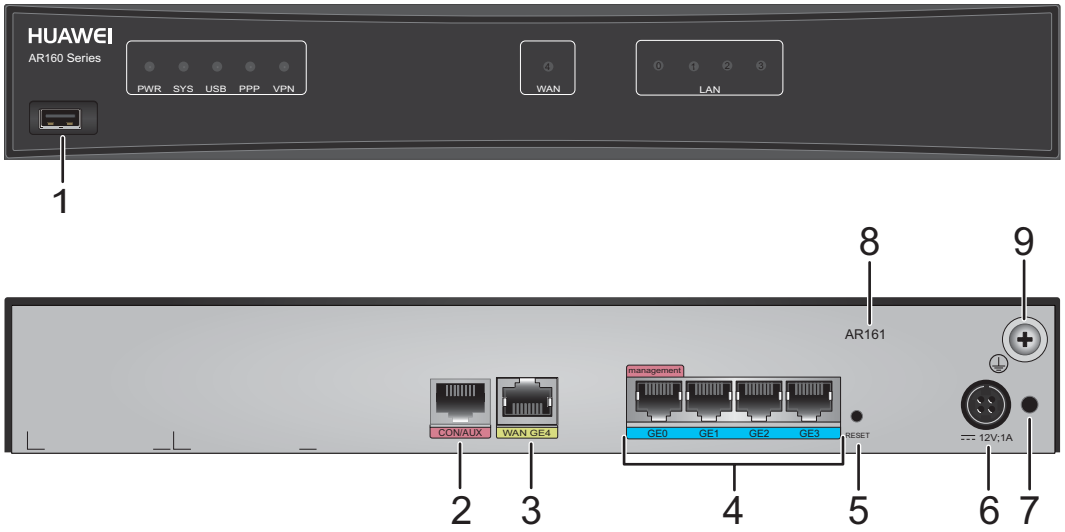
Router Model	Software Version
AR161	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-99 shows the appearance of the AR161 router.

Figure 2-99 AR161 appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR161 does not support AUX login.
3	WAN interface: **GE electrical interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.

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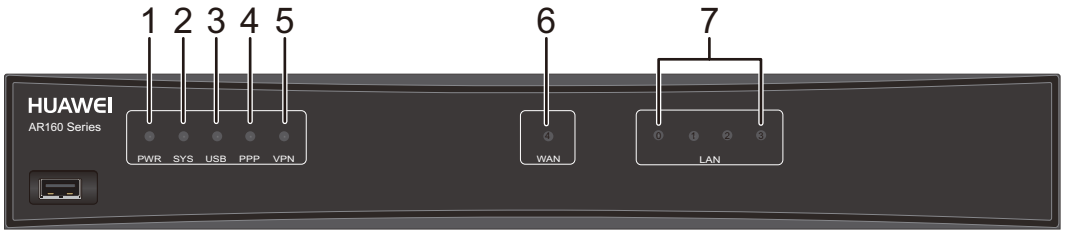
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-100 shows the locations of AR161 indicators.

Figure 2-100 Indicators on the AR161



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

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Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN	Green	Steady on: A link has been established on the WAN interface.
			Blinking: Data is being transmitted or received on the WAN interface.
			Off: No link is established on the WAN interface.
7	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-274** lists the CON/AUX interface attributes.

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Table 2-274 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-275** lists attributes of a USB interface.

Table 2-275 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-276** lists attributes of a GE electrical interface.

Table 2-276 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

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Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

Power Supply System

The AR161 has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-101** shows its appearance.

Figure 2-101 24 W power adapter appearance

Table 2-277 provides the functions of the 24 W power adapter.

Table 2-277 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.

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Function	Description
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-278 provides the specifications of the 24 W power adapter.

Table 2-278 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR161 routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-279 lists technical specifications of the AR161 routers.

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Table 2-279 AR161 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	9.3 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one GE electrical interface LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.14 AR169

Version Mapping

Table 2-280 lists the mapping between the AR169 router and software versions.

Table 2-280 Mapping between the AR169 router and software versions

Router Model	Software Version
AR169	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-102 shows the appearance of the AR169 router.

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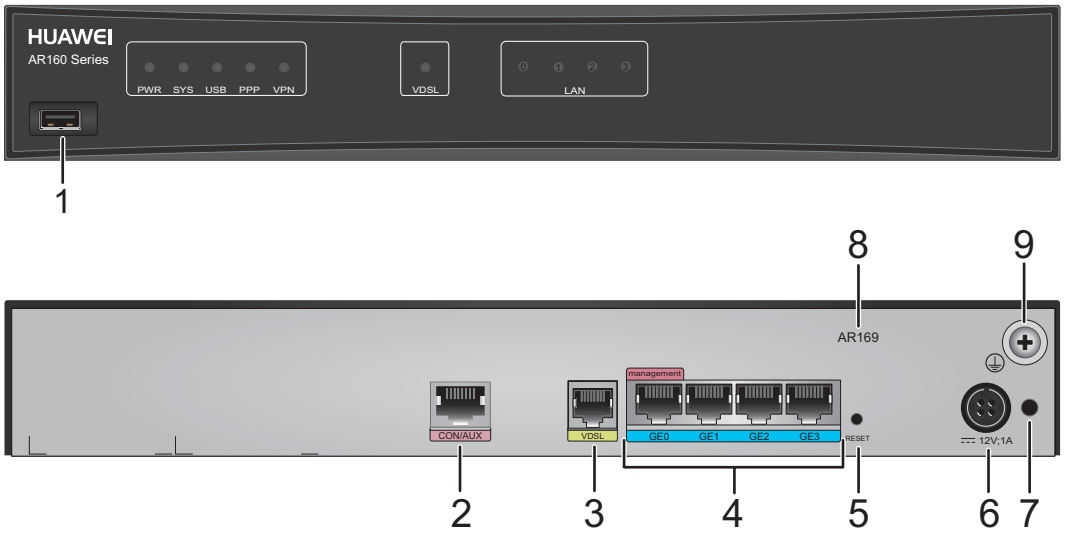
Figure 2-102 AR169 appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR169 does not support AUX login.
3	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

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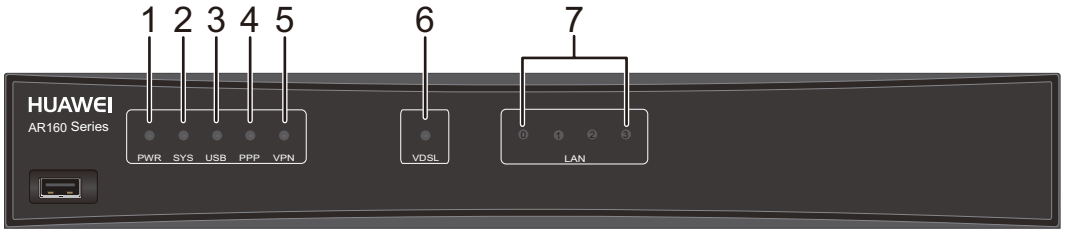
Indicator Description

Figure 2-103 shows the locations of AR169 indicators.

Figure 2-103 Indicators on the AR169



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.

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Number	Indicator	Color	Description
6	VDSL	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
7	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-281** lists the CON/AUX interface attributes.

Table 2-281 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-282** lists attributes of a USB interface.

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Table 2-282 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-283** lists attributes of a VDSL interface.

Table 2-283 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-284** lists attributes of a GE electrical interface.

Table 2-284 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

Power Supply System

The AR169 has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-104** shows its appearance.

Figure 2-104 24 W power adapter appearance

Table 2-285 provides the functions of the 24 W power adapter.

Table 2-285 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-286 provides the specifications of the 24 W power adapter.

Table 2-286 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR169 routers have no fans and use natural heat dissipation.

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Technical Specifications

Table 2-287 lists technical specifications of the AR169 routers.

Table 2-287 AR169 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	9.7 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

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Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one VDSL interface LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.15 AR161G-L

Version Mapping

Table 2-288 lists the mapping between the AR161G-L router and software versions.

Table 2-288 Mapping between the AR161G-L router and software versions

Router Model	Software Version
AR161G-L	V200R006C10 and later versions

Appearance and Structure

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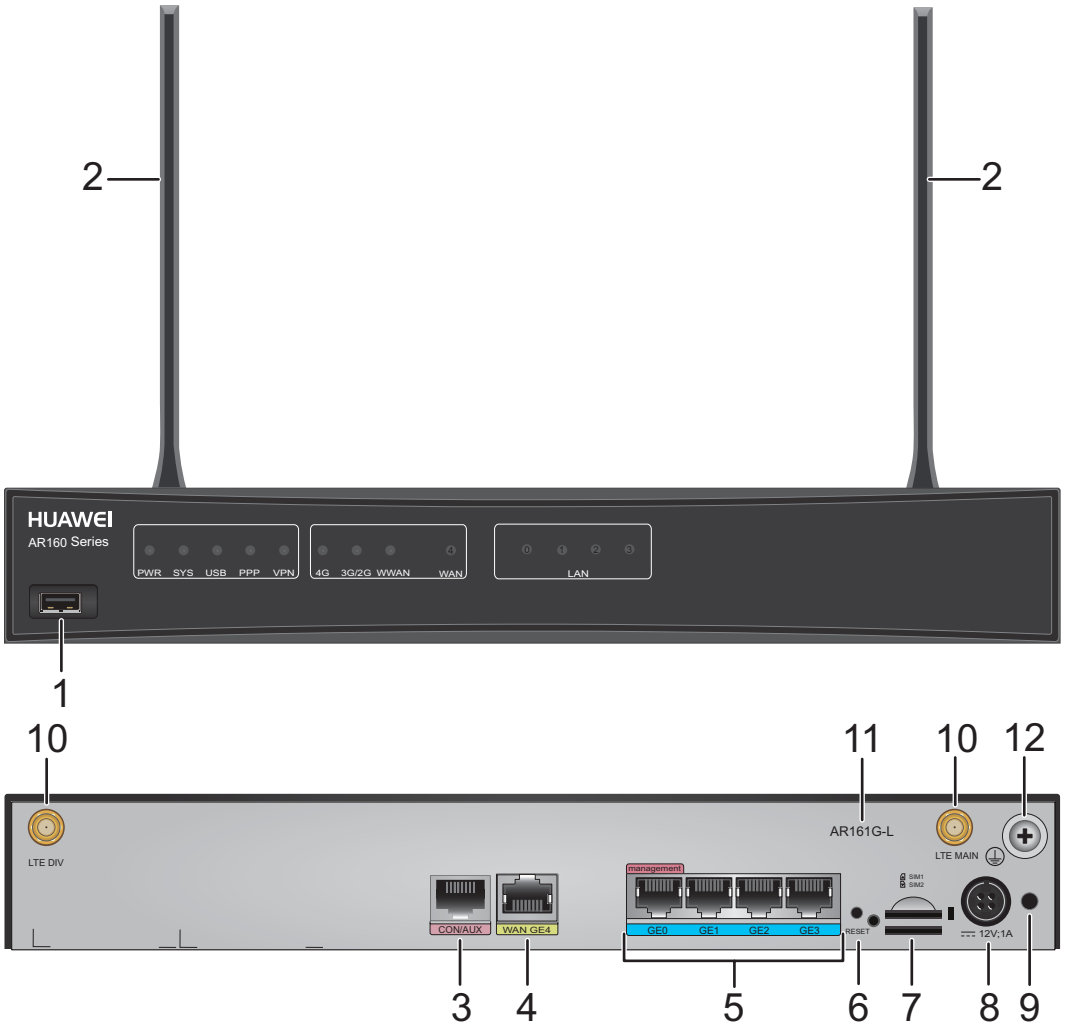
Appearance

Figure 2-105 shows the appearance of the AR161G-L router.

Figure 2-105 AR161G-L appearance



1	**USB interface (host)**	2	Two **LTE antennas**
3	**CON/AUX interface** **NOTE** The AR161G-L does not support AUX login.	4	WAN interface: **GE electrical interface**

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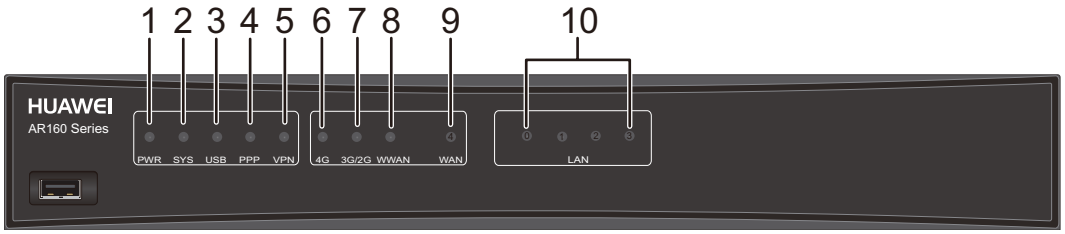
5	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**LTE antenna interface**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-106 shows the locations of AR161G-L indicators.

Figure 2-106 Indicators on the AR161G-L



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

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Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.

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Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	WAN	Green	Steady on: A WAN link has been established.
			Blinking: Data is being transmitted or received on the WAN link.
			Off: No WAN link is established.
10	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-289** lists the CON/AUX interface attributes.

Table 2-289 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-290** lists attributes of a USB interface.

Table 2-290 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-291** lists attributes of a GE electrical interface.

Table 2-291 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-292** lists attributes of an LTE antenna interface.

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Table 2-292 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/4/5/7/8/20
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	**LTE Antenna**

Power Supply System

The AR161G-L has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-107** shows its appearance.

Figure 2-107 24 W power adapter appearance

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Table 2-293 provides the functions of the 24 W power adapter.

Table 2-293 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-294 provides the specifications of the 24 W power adapter.

Table 2-294 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A

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Item	Description
Maximum output power	24 W

Heat Dissipation

The AR161G-L routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-295 lists technical specifications of the AR161G-L routers.

Table 2-295 AR161G-L routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.9 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.16 AR169G-L

Version Mapping

Table 2-296 lists the mapping between the AR169G-L router and software versions.

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Table 2-296 Mapping between the AR169G-L router and software versions

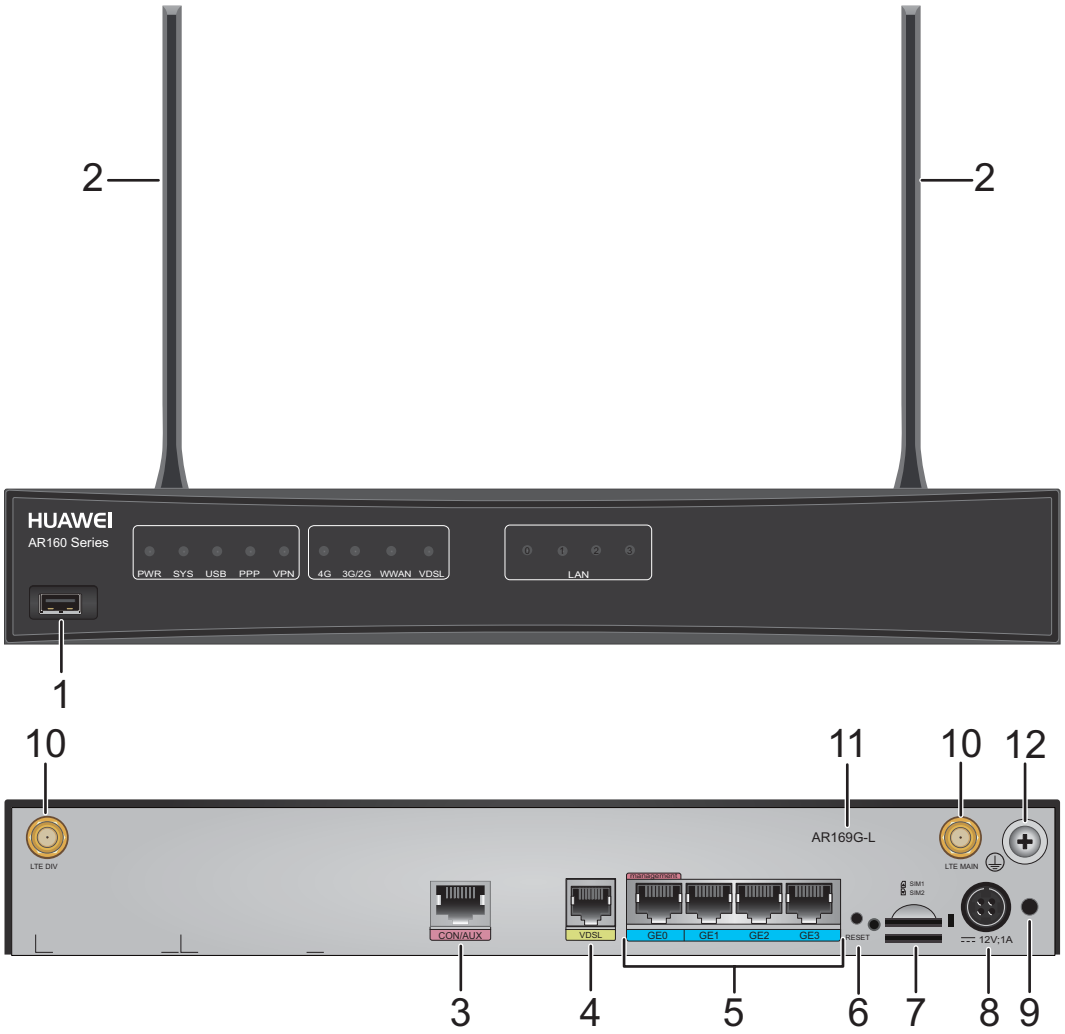
Router Model	Software Version
AR169G-L	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-108 shows the appearance of the AR169G-L router.

Figure 2-108 AR169G-L appearance



1	**USB interface (host)**	2	Two **LTE antennas**

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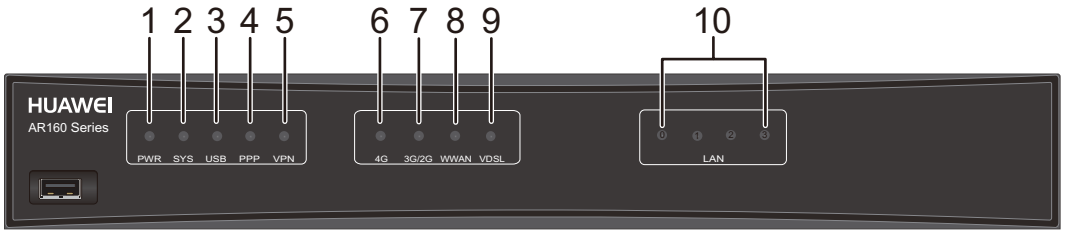
3	**CON/AUX interface** **NOTE** The AR169G-L does not support AUX login.	4	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.
5	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**LTE antenna interface**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-109 shows the locations of AR169G-L indicators.

Figure 2-109 Indicators on the AR169G-L



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	4G	Green	Steady on: The 4G signal strength is high.
			Fast blinking: The 4G signal strength is medium.
			Slow blinking: The 4G signal strength is low.
			Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.

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Number	Indicator	Color	Description
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 4G/3G/2G connection.
			Off: The 4G/3G/2G connection has not been established or is inactive.
9	VDSL	Green	Steady on: A VDSL link has been established.
			Off: No VDSL link is established.
10	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-297** lists the CON/AUX interface attributes.

Table 2-297 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-298** lists attributes of a USB interface.

Table 2-298 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-299** lists attributes of a GE electrical interface.

Table 2-299 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-300** lists attributes of an LTE antenna interface.

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Table 2-300 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/4/5/7/8/20
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	**LTE Antenna**

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-301** lists attributes of a VDSL interface.

Table 2-301 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

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Attribute	Description
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR169G-L has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-110** shows its appearance.

Figure 2-110 24 W power adapter appearance

Table 2-302 provides the functions of the 24 W power adapter.

Table 2-302 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.

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Function	Description
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-303 provides the specifications of the 24 W power adapter.

Table 2-303 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR169G-L routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-304 lists technical specifications of the AR169G-L routers.

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Table 2-304 AR169G-L routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.5 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one VDSL interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.17 AR169-P-M9

Version Mapping

Table 2-305 lists the mapping between the AR169-P-M9 router and software versions.

Table 2-305 Mapping between the AR169-P-M9 router and software versions

Router Model	Software Version
AR169-P-M9	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-111 shows the appearance of the AR169-P-M9 router.

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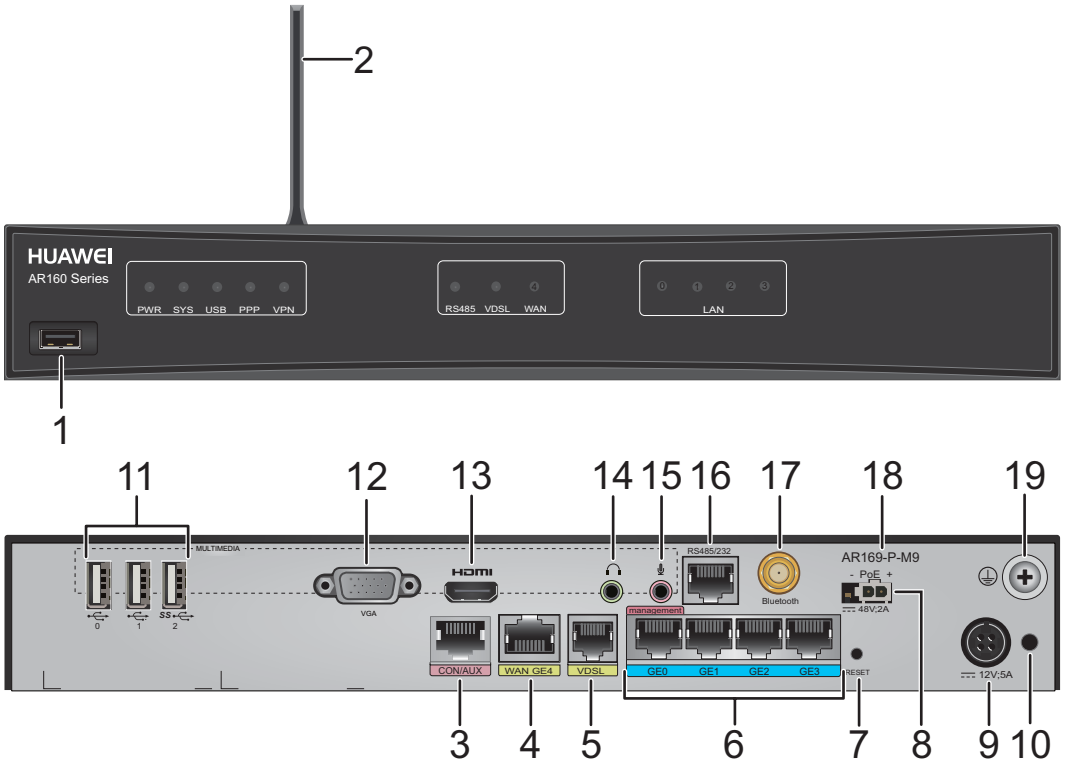
Figure 2-111 AR169-P-M9 appearance



1	**USB interface (host)**	2	**Bluetooth antenna**
3	**CON/AUX interface** **NOTE** The AR169-P-M9 does not support AUX login.	4	WAN interface: **GE electrical interface**
5	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.	6	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
7	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	8	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.

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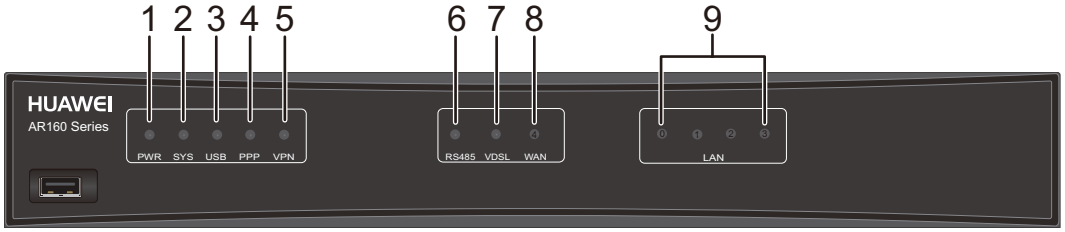
9	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.	10	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
11	Three **USB interfaces (host)**	12	**VGA interface**
13	**HDMI video interface**	14	Earphone jack
15	Microphone jack	16	**RS485/232 interface**
17	**Bluetooth antenna interface**	18	Product model silkscreen
19	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-112 shows the locations of AR169-P-M9 indicators.

Figure 2-112 Indicators on the AR169-P-M9



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	RS485	Green	Steady on: An RS485 link has been established and is working normally. Off: No RS485 link is established or a communication failure occurs on the link.
7	VDSL	Green	Steady on: A link has been established on the VDSL interface. Off: No link is established on the VDSL interface.
8	WAN	Green	Steady on: A link has been established on the WAN interface. Blinking: Data is being transmitted or received on the WAN interface. Off: No link is established on the WAN interface.
9	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

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CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-306** lists the CON/AUX interface attributes.

Table 2-306 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-307** lists attributes of a USB interface.

Table 2-307 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-308** lists attributes of a GE electrical interface.

Table 2-308 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

VGA Interface

A video graphics array (VGA) interface provides VGA video output. **Table 2-309** lists attributes of a VGA interface.

Table 2-309 VGA interface attributes

Attribute	Description
Connector type	VGA connector
Signal types supported	VGA signal
Cable type	**VGA video cable**

Bluetooth Antenna Interface

The Bluetooth antenna interface of a router connects to a Bluetooth antenna to transmit and receive data. **Table 2-310** lists attributes of the Bluetooth interface.

Table 2-310 Bluetooth antenna interface attributes

Attribute	Description
Connector type	mini PCIe
Standards compliance	● BT4.0 ● EDR
Frequency bands supported	2.4 GHz
Rate	1 Mbps

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Attribute	Description
Transmission distance	10 m
Cable type	**Bluetooth Antenna**

RS485/232 Interface

An RS232/485 interface is a serial interface. **Table 2-311** lists attributes of an RS232/485 interface.

Table 2-311 RS232/485 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232/485
Bud rate (bit/s)	● RS485: 19200 ● RS232: 9600
Cable type	**4.1.15 Serial Cable (RS232/485)**

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-312** lists attributes of a VDSL interface.

Table 2-312 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

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Attribute	Description
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR169-P-M9 has no built-in power modules and uses a 60 W power adapter for power supply. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its GE electrical interfaces.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-113** shows its appearance.

Figure 2-113 60 W power adapter appearance

Table 2-313 provides the functions of the 60 W power adapter.

Table 2-313 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.

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Function	Description
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-314 provides the specifications of the 60 W power adapter.

Table 2-314 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-114** shows its appearance.

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Figure 2-114 Appearance of the 100 W AC PoE power module

Table 2-315 describes functions of the 100 W AC PoE power module.

Table 2-315 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-316 lists the specifications of the 100 W AC PoE power module.

Table 2-316 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz

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Item	Specification
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR169-P-M9 uses built-in unpluggable fan modules to cool the system.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-115**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-115 Airflow

Technical Specifications

Table 2-317 lists technical specifications of the AR169-P-M9 routers.

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Table 2-317 AR169-P-M9 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE0-GE3)
Power consumption	
Maximum power consumption	30.2 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	4
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and one VDSL interface LAN interfaces: four GE electrical interfaces and one Bluetooth antenna interface Multimedia service interfaces: one headset jack, one microphone jack, one HDMI video interface, and one VGA interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.18 AR161W

Version Mapping

Table 2-318 lists the mapping between the AR161W router and software versions.

Table 2-318 Mapping between the AR161W router and software versions

Router Model	Software Version
AR161W	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-116 shows the appearance of the AR161W router.

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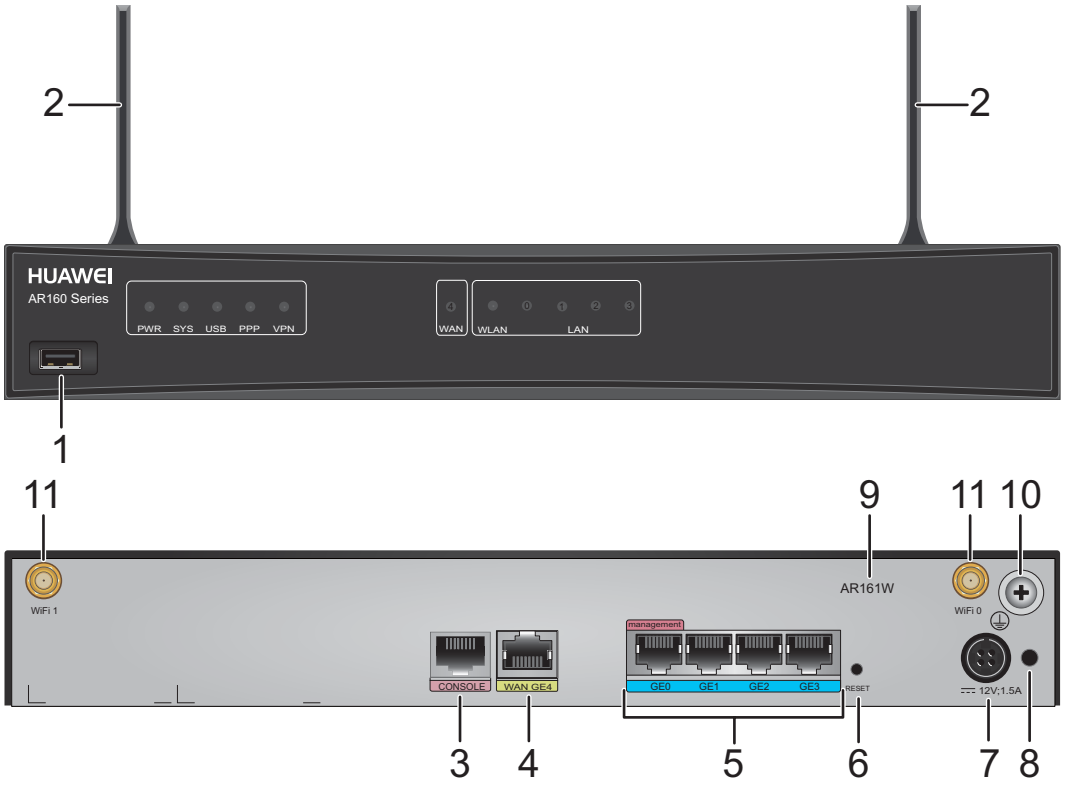
Figure 2-116 AR161W appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CONSOLE interface**	4	WAN interface: **GE electrical interface**
5	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

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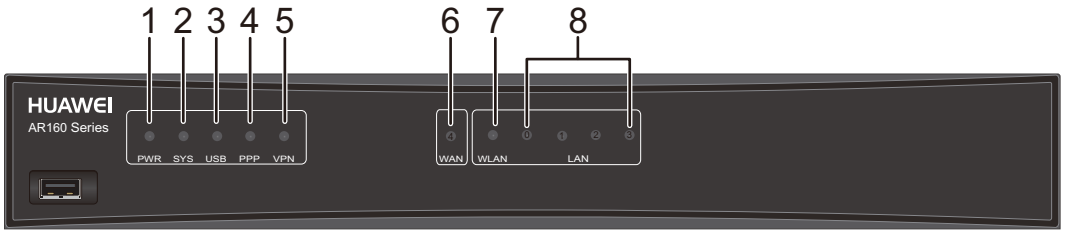
11	Two **Wi-Fi antenna interfaces**	-	-

Indicator Description

Figure 2-117 shows the locations of AR161W indicators.

Figure 2-117 Indicators on the AR161W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.

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Number	Indicator	Color	Description
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN	Green	Steady on: A link has been established on the WAN interface.
			Blinking: Data is being transmitted or received on the WAN interface.
			Off: No link is established on the WAN interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-319** lists attributes of a console interface.

Table 2-319 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-320** lists attributes of a USB interface.

Table 2-320 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-321** lists attributes of a GE electrical interface.

Table 2-321 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-322** lists attributes of a Wi-Fi antenna interface.

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Table 2-322 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR161W has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-118** shows its appearance.

Figure 2-118 24 W power adapter appearance

Table 2-323 provides the functions of the 24 W power adapter.

Table 2-323 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-324 provides the specifications of the 24 W power adapter.

Table 2-324 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR161W routers have no fans and use natural heat dissipation.

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Technical Specifications

Table 2-325 lists technical specifications of the AR161W routers.

Table 2-325 AR161W routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.3 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

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Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one GE electrical interface LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.19 AR169W

Version Mapping

Table 2-326 lists the mapping between the AR169W router and software versions.

Table 2-326 Mapping between the AR169W router and software versions

Router Model	Software Version
AR169W	V200R006C10 and later versions

Appearance and Structure

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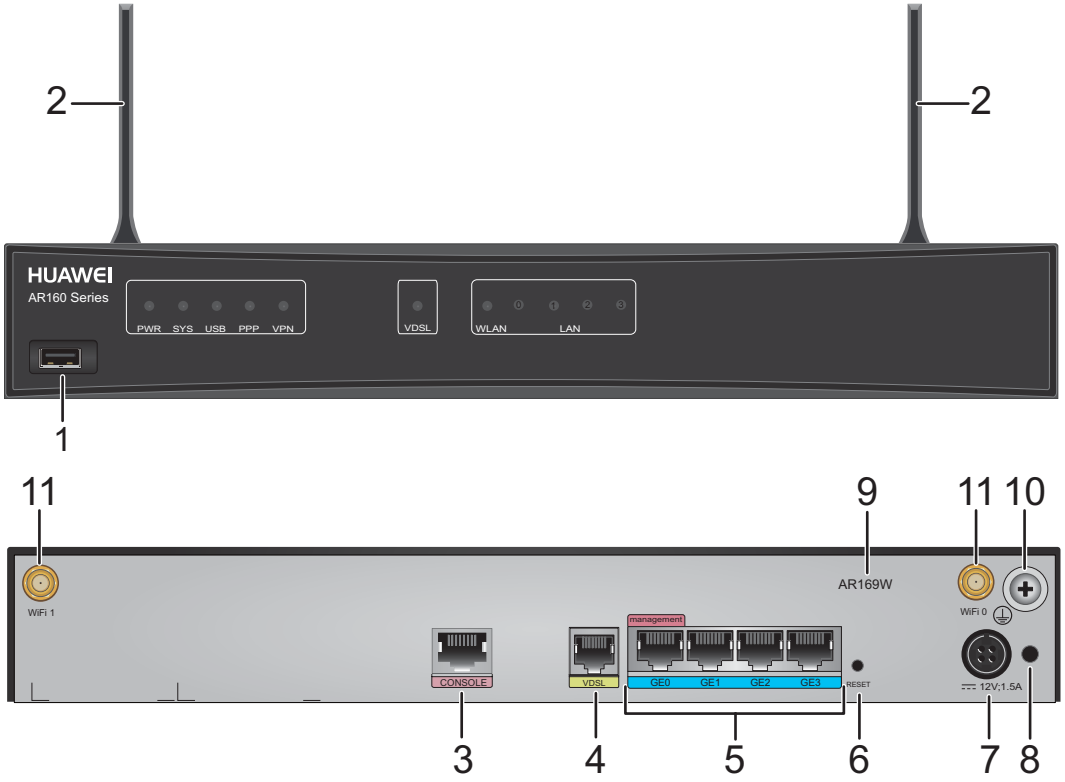
Appearance

Figure 2-119 shows the appearance of the AR169W router.

Figure 2-119 AR169W appearance



1	**USB interface (host)**	2	Two **Wi-Fi antennas**
3	**CONSOLE interface**	4	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.
5	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.

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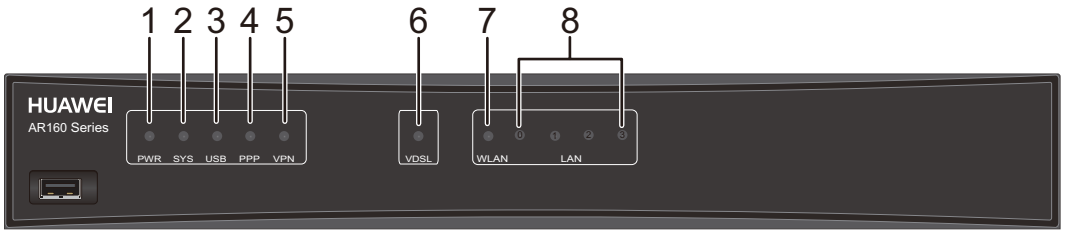
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	Two **Wi-Fi antenna interfaces**	-	-

Indicator Description

Figure 2-120 shows the locations of AR169W indicators.

Figure 2-120 Indicators on the AR169W



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

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Number	Indicator	Color	Description
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	VDSL	Green	Steady on: A link has been established on the VDSL interface.
			Blinking: Data is being transmitted or received on the VDSL interface.
			Off: No link is established on the VDSL interface.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-327** lists attributes of a console interface.

Table 2-327 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)

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Attribute	Description
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-328** lists attributes of a USB interface.

Table 2-328 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-329** lists attributes of a GE electrical interface.

Table 2-329 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-330** lists attributes of a VDSL interface.

Table 2-330 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-331** lists attributes of a Wi-Fi antenna interface.

Table 2-331 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi

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Attribute	Description
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR169W has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-121** shows its appearance.

Figure 2-121 24 W power adapter appearance

Table 2-332 provides the functions of the 24 W power adapter.

Table 2-332 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.

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Function	Description
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-333 provides the specifications of the 24 W power adapter.

Table 2-333 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

The AR169W routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-334 lists technical specifications of the AR169W routers.

Table 2-334 AR169W routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz

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Item	Specification
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.5 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1

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Item	Specification
Service interfaces (standard configuration)	WAN interface: one VDSL interface LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.20 AR169W-P-M9

Version Mapping

Table 2-335 lists the mapping between the AR169W-P-M9 and software versions.

Table 2-335 Mapping between the AR169W-P-M9 and software versions

Router Model	Software Version
AR169W-P-M9	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-122 shows the appearance of the AR169W-P-M9.

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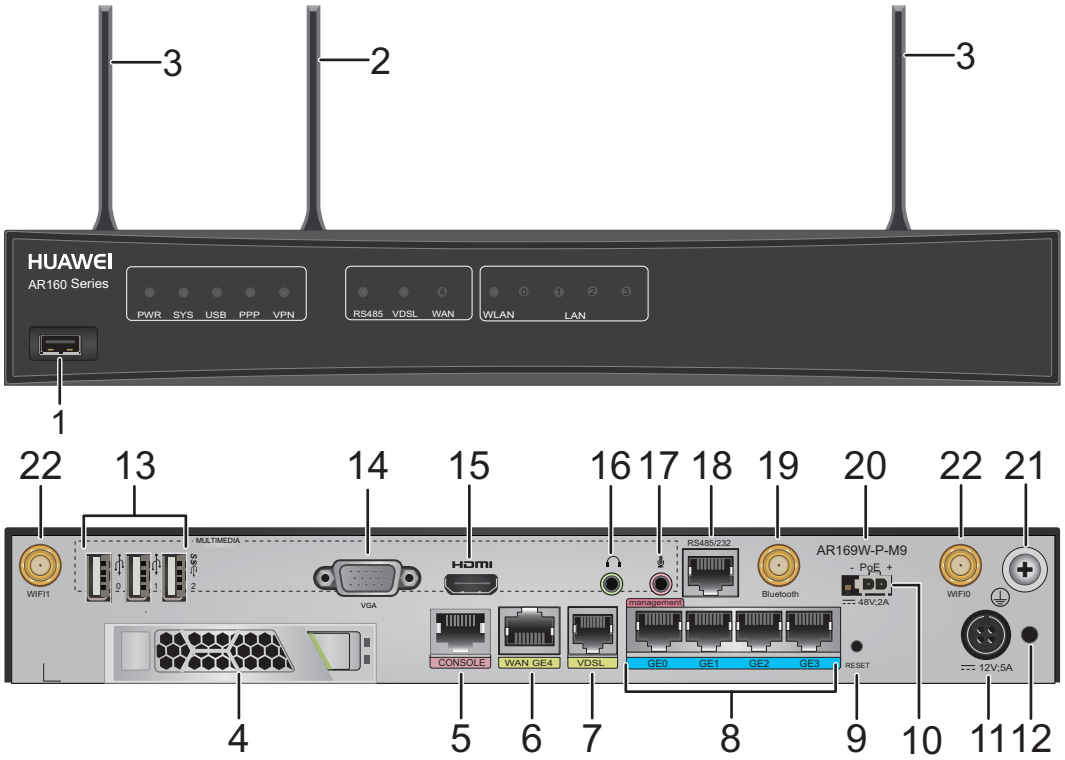
Figure 2-122 AR169W-P-M9 appearance



1	**USB interface (host)**	2	**Bluetooth antenna**
3	Two **Wi-Fi antennas**	4	Hard disk drive interface
5	**CONSOLE interface**	6	WAN interface: **GE electrical interface**
7	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.	8	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
9	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	10	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.
11	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.	12	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.

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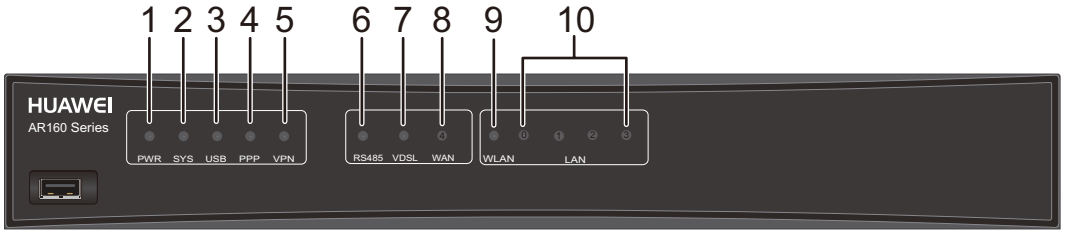
13	Three **USB interfaces (host)** **NOTE** The output power of the USB interface is 5 W. When a USB CD-ROM driver with high power consumption is connected to the USB interface, it must be powered by an independent external power source.	14	**VGA interface**
15	**HDMI video interface**	16	Earphone jack
17	Microphone jack	18	**RS485/232 interface**
19	**Bluetooth antenna interface**	20	Product model silkscreen
21	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	22	Two **Wi-Fi antenna interfaces**

Indicator Description

Figure 2-123 shows indicators on the AR169W-P-M9.

Figure 2-123 Indicators on the AR169W-P-M9



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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Number	Indicator	Color	Description
3	USB **NOTE** It is the indicator of the USB interface on the front panel.	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	RS485	Green	Steady on: An RS485 link has been established and is working normally. Off: No RS485 link is established or a communication failure occurs on the link.
7	VDSL	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
8	WAN-side GE electrical interface indicator	Green	Steady on: A link has been established on the GE electrical interface. Blinking: Data is being transmitted or received on the GE electrical interface. Off: No link is established on the GE electrical interface.
9	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
10	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

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Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-336** lists attributes of a console interface.

Table 2-336 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-337** lists attributes of a USB interface.

Table 2-337 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-338** lists attributes of a GE electrical interface.

Table 2-338 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

VGA Interface

A video graphics array (VGA) interface provides VGA video output. **Table 2-339** lists attributes of a VGA interface.

Table 2-339 VGA interface attributes

Attribute	Description
Connector type	VGA connector
Signal types supported	VGA signal
Cable type	**VGA video cable**

HDMI Video Interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. **Table 2-340** lists attributes of a HDMI interface.

Table 2-340 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
Signal types supported	HDMI signal
Cable type	**HDMI video cable**

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Bluetooth Antenna Interface

The Bluetooth antenna interface of a router connects to a Bluetooth antenna to transmit and receive data. **Table 2-341** lists attributes of the Bluetooth interface.

Table 2-341 Bluetooth antenna interface attributes

Attribute	Description
Connector type	mini PCIe
Standards compliance	● BT4.0 ● EDR
Frequency bands supported	2.4 GHz
Rate	1 Mbps
Transmission distance	10 m
Cable type	**Bluetooth Antenna**

RS485/232 Interface

An RS232/485 interface is a serial interface. **Table 2-342** lists attributes of an RS232/485 interface.

Table 2-342 RS232/485 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232/485
Bud rate (bit/s)	● RS485: 19200 ● RS232: 9600
Cable type	**4.1.15 Serial Cable (RS232/485)**

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-343** lists attributes of a VDSL interface.

Table 2-343 VDSL interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 2-344** lists attributes of a Wi-Fi antenna interface.

Table 2-344 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n/ac
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	867 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi/3.0 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**Wi-Fi Antenna**

Power Supply System

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The AR169W-P-M9 has no built-in power modules and uses a 60 W power adapter for power supply.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-124** shows its appearance.

Figure 2-124 60 W power adapter appearance

Table 2-345 provides the functions of the 60 W power adapter.

Table 2-345 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-346 provides the specifications of the 60 W power adapter.

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Table 2-346 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W

Heat Dissipation

The AR169W-P-M9 router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-125**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-125 Airflow

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Technical Specifications

Table 2-347 lists technical specifications of the AR169W-P-M9.

Table 2-347 Technical specifications of the AR169W-P-M9

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE0-GE3)
Power consumption	
Maximum power consumption	41 W
Heat dissipation	
Fan module	Built-in fan module, unpluggable
Airflow (facing the front panel)	Left to right

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Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	4
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface, and one VDSL interface LAN interfaces: four GE electrical interfaces, one Bluetooth antenna interface, and two Wi-Fi antenna interfaces Multimedia service interfaces: one headset jack, one microphone jack, one HDMI video interface, and one VGA interface
Extended slots	Not supported
Environment parameters	
Operating temperature	● With a hard disk installed: 5°C to 40°C (32°F to 104°F) ● With no hard disk installed: 0°C to 40°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	● With a hard disk installed: < 3000 m (9843 ft.) ● With no hard disk installed: < 5000 m (16404 ft.)

2.5.21 AR169RW-P-M9

Version Mapping

Table 2-348 lists the mapping between the AR169RW-P-M9 and software versions.

Table 2-348 Mapping between the AR169RW-P-M9 and software versions

Router Model	Software Version
AR169RW-P-M9	V200R007C00 and later versions

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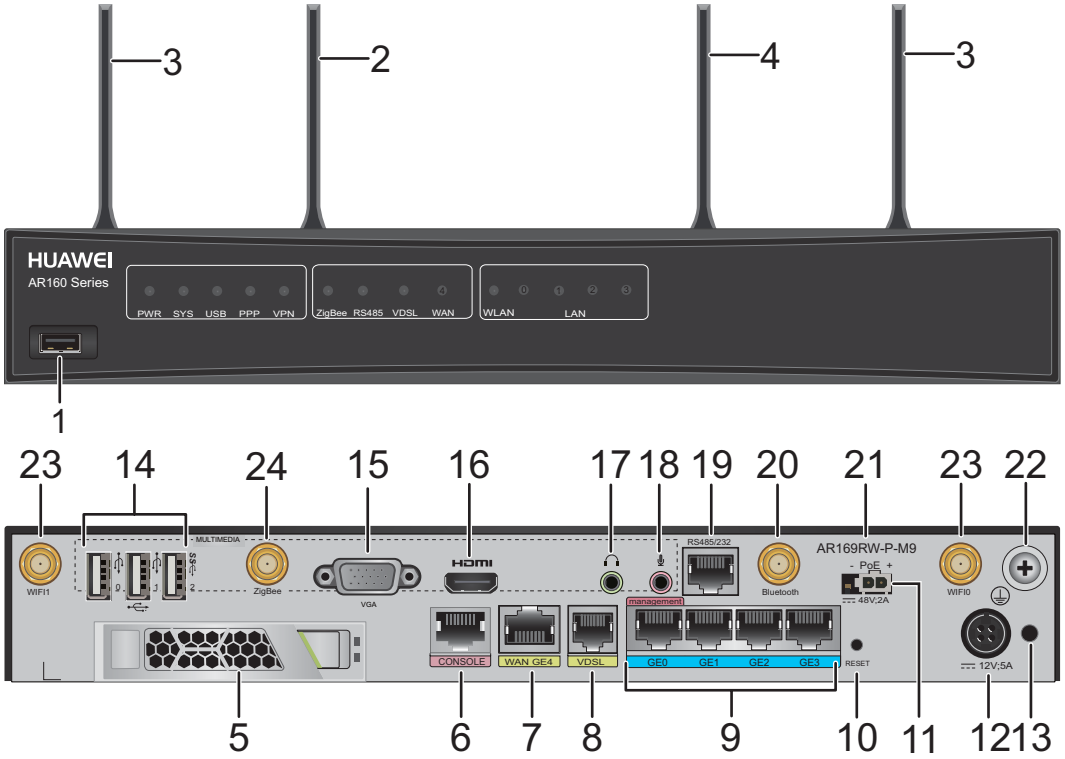
Appearance and Structure

Appearance

Figure 2-126 shows the appearance of the AR169RW-P-M9.

Figure 2-126 AR169RW-P-M9 appearance



1	**USB interface (host)**	2	**Bluetooth antenna**
3	Two **Wi-Fi antennas**	4	**ZigBee antenna**
5	Hard disk drive interface	6	**CONSOLE interface**
7	WAN interface: **GE electrical interface**	8	WAN interface: **VDSL interface** **NOTE** This interface supports the dying gasp function.

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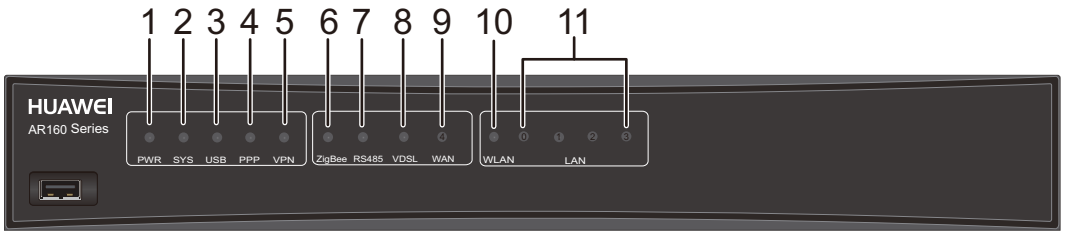
9	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	10	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
11	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.	12	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.
13	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	14	Three **USB interfaces (host)** **NOTE** The output power of the USB interface is 5 W. When a USB CD-ROM driver with high power consumption is connected to the USB interface, it must be powered by an independent external power source.
15	**VGA interface**	16	**HDMI video interface**
17	Earphone jack	18	Microphone jack
19	**RS485/232 interface**	20	**Bluetooth antenna interface**
21	Product model silkscreen	22	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
23	Two **Wi-Fi antenna interfaces**	24	ZigBee antenna interface

Indicator Description

Figure 2-127 shows indicators on the AR169RW-P-M9.

Figure 2-127 Indicators on the AR169RW-P-M9



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB **NOTE** It is the indicator of the USB interface on the front panel.	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	ZigBee	Green	Steady on: The ZigBee link connection is normal. Blinking: The ZigBee link connection is normal, and data is being transmitted or received on the ZigBee link. Off: No ZigBee link is established.
7	RS485	Green	Steady on: An RS485 link has been established and is working normally. Off: No RS485 link is established or a communication failure occurs on the link.
8	VDSL	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.

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Number	Indicator	Color	Description
9	WAN-side GE electrical interface indicator	Green	Steady on: A link has been established on the GE electrical interface. Blinking: Data is being transmitted or received on the GE electrical interface. Off: No link is established on the GE electrical interface.
10	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
11	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-349** lists attributes of a console interface.

Table 2-349 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-350** lists attributes of a USB interface.

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Table 2-350 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-351** lists attributes of a GE electrical interface.

Table 2-351 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

VGA Interface

A video graphics array (VGA) interface provides VGA video output. **Table 2-352** lists attributes of a VGA interface.

Table 2-352 VGA interface attributes

Attribute	Description
Connector type	VGA connector
Signal types supported	VGA signal

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Attribute	Description
Cable type	**VGA video cable**

HDMI Video Interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. **Table 2-353** lists attributes of a HDMI interface.

Table 2-353 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
Signal types supported	HDMI signal
Cable type	**HDMI video cable**

Bluetooth Antenna Interface

The Bluetooth antenna interface of a router connects to a Bluetooth antenna to transmit and receive data. **Table 2-354** lists attributes of the Bluetooth interface.

Table 2-354 Bluetooth antenna interface attributes

Attribute	Description
Connector type	mini PCIe
Standards compliance	● BT4.0 ● EDR
Frequency bands supported	2.4 GHz
Rate	1 Mbps
Transmission distance	10 m
Cable type	**Bluetooth Antenna**

RS485/232 Interface

An RS232/485 interface is a serial interface. **Table 2-355** lists attributes of an RS232/485 interface.

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Table 2-355 RS232/485 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232/485
Bud rate (bit/s)	● RS485: 19200 ● RS232: 9600
Cable type	**4.1.15 Serial Cable (RS232/485)**

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-356** lists attributes of a VDSL interface.

Table 2-356 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 2-357** lists attributes of a Wi-Fi antenna interface.

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Table 2-357 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n/ac
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	867 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi/3.0 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**Wi-Fi Antenna**

Power Supply System

The AR169RW-P-M9 has no built-in power modules and uses a 60 W power adapter for power supply. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its GE electrical interfaces.

60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-128** shows its appearance.

Figure 2-128 60 W power adapter appearance

Table 2-358 provides the functions of the 60 W power adapter.

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Table 2-358 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-359 provides the specifications of the 60 W power adapter.

Table 2-359 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W

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100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-129** shows its appearance.

Figure 2-129 Appearance of the 100 W AC PoE power module

Table 2-360 describes functions of the 100 W AC PoE power module.

Table 2-360 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-361 lists the specifications of the 100 W AC PoE power module.

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Table 2-361 Technical specifications of the 100 W AC PoE power module

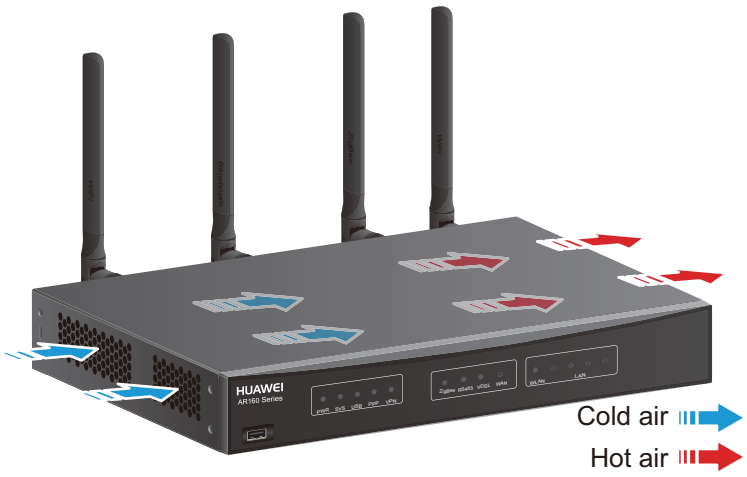
Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR169RW-P-M9 router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-130**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-130 Airflow



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Technical Specifications

Table 2-362 lists technical specifications of the AR169RW-P-M9.

Table 2-362 Technical specifications of the AR169RW-P-M9

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE0-GE3)
Power consumption	
Maximum power consumption	42 W
Heat dissipation	
Fan module	Built-in fan module, unpluggable
Airflow (facing the front panel)	Left to right

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Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	4
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface, and one VDSL interface LAN interfaces: four GE electrical interfaces, one Bluetooth antenna interface, two Wi-Fi antenna interfaces, and one ZigBee antenna interface Multimedia service interfaces: one headset jack, one microphone jack, one HDMI video interface, and one VGA interface
Extended slots	Not supported
Environment parameters	
Operating temperature	● With a hard disk installed: 5°C to 40°C (32°F to 104°F) ● With no hard disk installed: 0°C to 40°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	● With a hard disk installed: < 3000 m (9843 ft.) ● With no hard disk installed: < 5000 m (16404 ft.)

2.5.22 AR161FV-1P

Version Mapping

Table 2-363 lists the mapping between the AR161FV-1P and software versions.

Table 2-363 Mapping between the AR161FV-1P and software versions

Router Model	Software Version
AR161FV-1P	V200R007C00 and later versions

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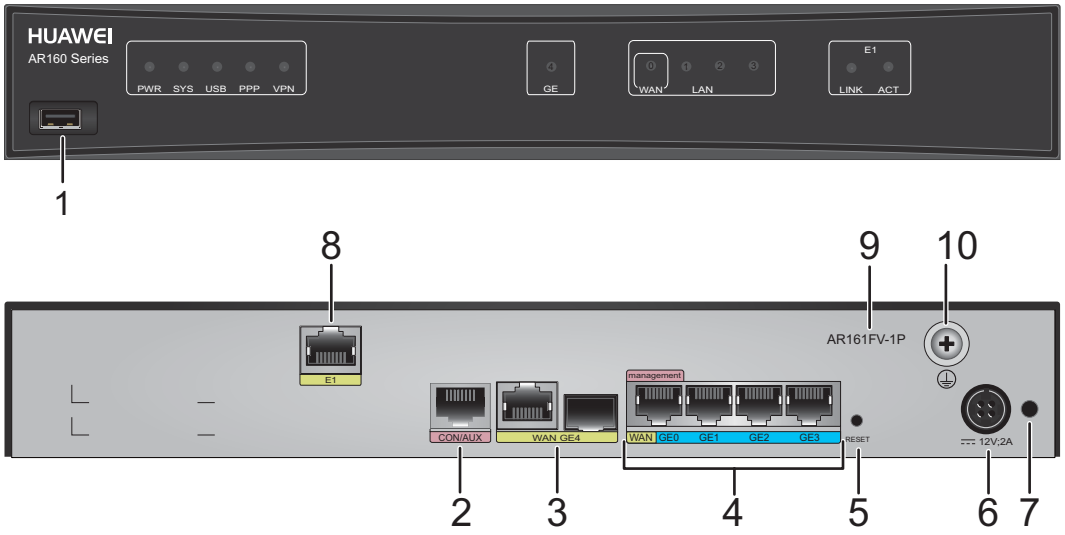
Appearance and Structure

Appearance

Figure 2-131 shows the appearance of the AR161FV-1P.

Figure 2-131 AR161FV-1P appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR161FV-1P does not support AUX login.
3	WAN interface: **GE combo interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router. It can be configured as a WAN interface.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.

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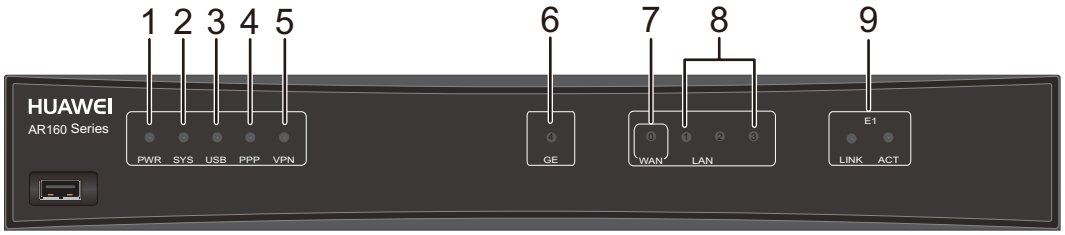
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	WAN interface: **VE1 interface** **NOTE** This interface can be connected to a wide area network using an **E1/T1 cable**.
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-132 shows indicators on the AR161FV-1P.

Figure 2-132 Indicators on the AR161FV-1P



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN-side GE combo interface indicator	Green	Steady on: A link has been established on the combo interface.
			Blinking: Data is being transmitted or received on the combo interface.
			Off: No link is established on the combo interface.
7	LAN/WAN (GE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (GE1 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
9	E1 LINK indicator	Green	Steady on: An E1 link has been established.
			Off: No E1 link is established.
	E1 ACT indicator	Green	Blinking: Data is being transmitted or received on the E1 interface.
			Off: No data is being transmitted or received on the E1 interface.

Interface Description

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CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-364** lists the CON/AUX interface attributes.

Table 2-364 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-365** lists attributes of a USB interface.

Table 2-365 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-366** lists attributes of a GE electrical interface.

Table 2-366 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

VE1 Interface

A VE1 interface uses to transmit voice signals. **Table 2-367** describes the VE1 interface attributes.

Table 2-367 VE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface speed	2.048 Mbit/s
Working mode	VE1

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Attribute	Description
Services provided	● Backup ● Terminal access
Cable	4.1.9 E1/T1 Cable

Power Supply System

The AR161FV-1P has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. Figure 2-133 shows its appearance.

Figure 2-133 24 W power adapter appearance

Table 2-368 provides the functions of the 24 W power adapter.

Table 2-368 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.

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Function	Description
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-369 provides the specifications of the 24 W power adapter.

Table 2-369 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

AR161FV-1P has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-370 lists technical specifications of the AR161FV-1P.

Table 2-370 Technical specifications of the AR161FV-1P

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz

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Item	Specification
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1

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Item	Specification
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, and one E1 interface LAN interfaces: four GE electrical interfaces, in which LAN interface GE0 can be configured as a WAN interface.
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.5.23 AR161G-U

Version Mapping

Table 2-371 lists the mapping between the AR161G-U and software versions.

Table 2-371 Mapping between the AR161G-U and software versions

Router Model	Software Version
AR161G-U	V200R007C01 version

Appearance and Structure

Appearance

Figure 2-134 shows the appearance of the AR161G-U.

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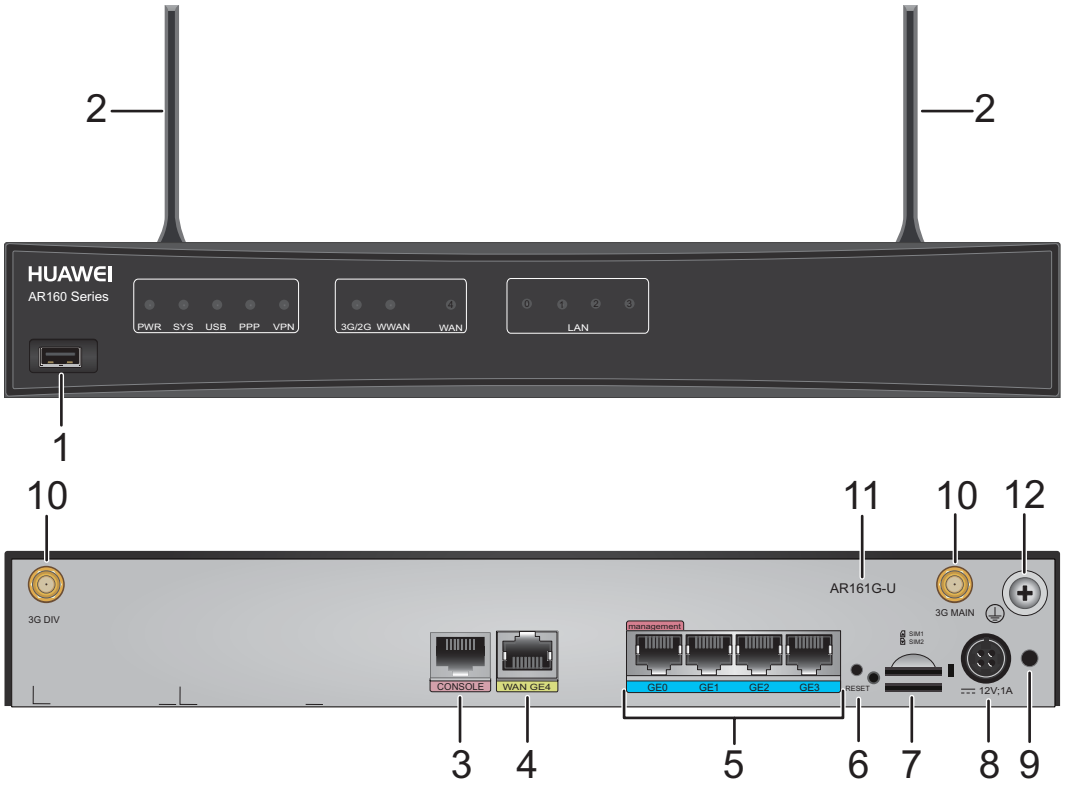
Figure 2-134 AR161G-U appearance



1	**USB interface (host)**	2	Two **3G antennas**
3	**CONSOLE interface**	4	WAN interface: **GE electrical interface**
5	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Two SIM card slots **NOTE** The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.	8	Power jack **NOTE** Use a **24 W power adapter** to connect the router to a power source.
9	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	10	**3G-U antenna interface**

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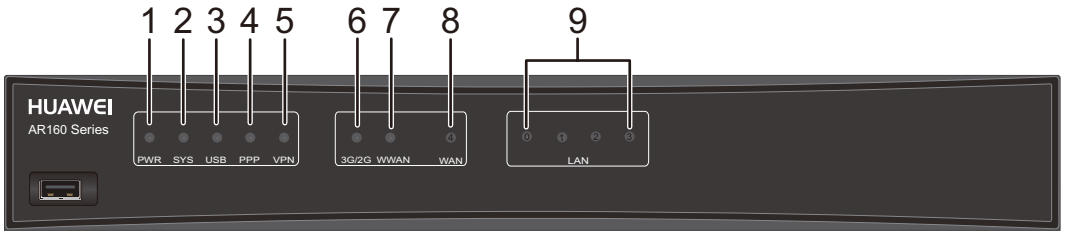
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-135 shows indicators on the AR161G-U.

Figure 2-135 Indicators on the AR161G-U



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

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Number	Indicator	Color	Description
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	3G/2G	Green	Steady on: The 3G/2G signal strength is high.
			Fast blinking: The 3G/2G signal strength is medium.
			Slow blinking: The 3G/2G signal strength is low.
			Off: No 3G/2G signal is available.
7	WWAN	Green	Steady on: Steady on: A 3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 3G/2G connection.
			Off: The 3G/2G connection has not been established or is inactive.
8	WAN	Green	Steady on: A WAN link has been established.
			Blinking: Data is being transmitted or received on the WAN link.
			Off: No WAN link is established.
9	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-372** lists attributes of a console interface.

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Table 2-372 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-373** lists attributes of a USB interface.

Table 2-373 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-374** lists attributes of a GE electrical interface.

Table 2-374 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

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Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

3G-U Antenna Interface

3G-U antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, and the secondary antenna helps improve the quality of received 3G signals. **Table 2-375** lists attributes of a 3G-U antenna interface.

Table 2-375 3G-U antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● UMTS/HSPA: 900/2100 (MHz) ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
Cable type	**3G Antenna**

Power Supply System

The AR161G-U has no built-in power modules and uses a 24 W power adapter for power supply.

24 W Power Adapter

The 24 W power adapter uses AC input and DC output. **Figure 2-136** shows its appearance.

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Figure 2-136 24 W power adapter appearance

Table 2-376 provides the functions of the 24 W power adapter.

Table 2-376 Functions of 24 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-377 provides the specifications of the 24 W power adapter.

Table 2-377 Specifications of 24 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz

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Item	Description
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	2 A
Maximum output power	24 W

Heat Dissipation

AR161G-U has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-378 lists technical specifications of the AR161G-U.

Table 2-378 Technical specifications of the AR161G-U

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash Memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Physical specifications	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz

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Item	Specification
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	2 A
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	11.5 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface, and two 3G antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

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2.6 AR200 Series

2.6.1 AR201

Version Mapping

Table 2-379 lists the mapping between the AR201 router and software versions.

Table 2-379 Mapping between the AR201 router and software versions

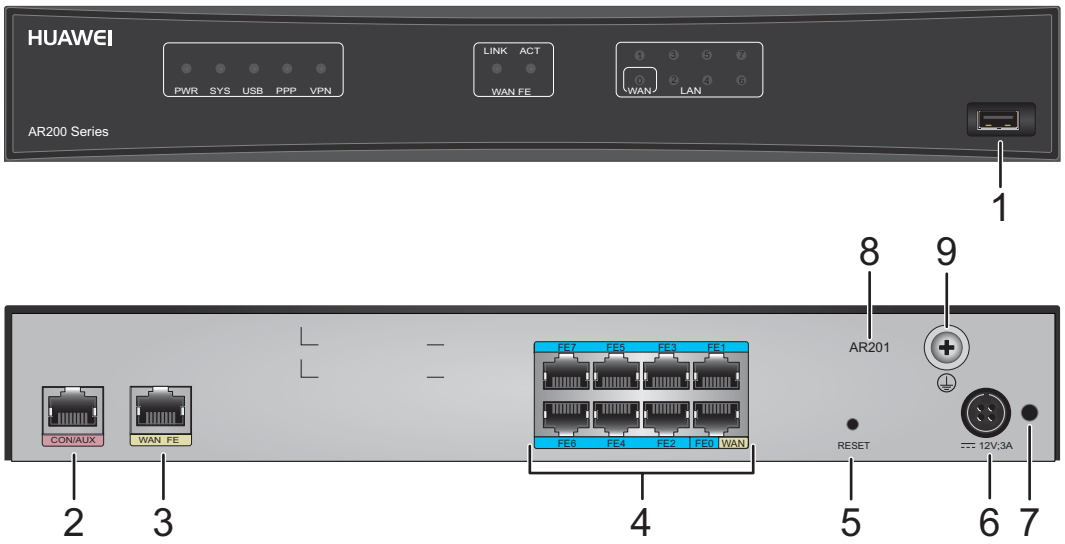
Router Model	Software Version
AR201	V200R002C00 and later versions

Appearance and Structure

Appearance

Figure 2-137 shows the appearance of the AR201 router.

Figure 2-137 AR201 appearance



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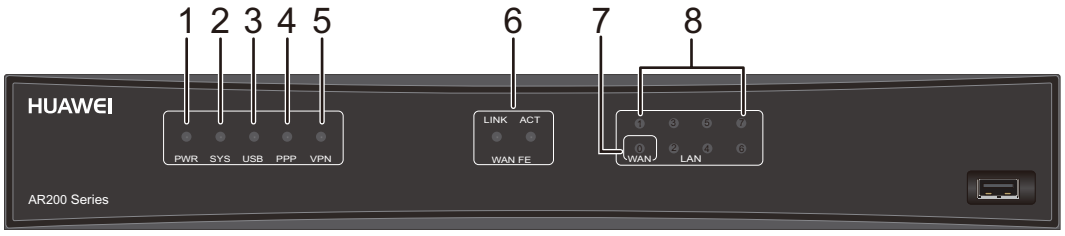
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR201 does not support AUX login.
3	WAN interface: **FE electrical interface**	4	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-138 shows the locations of AR201 indicators.

Figure 2-138 Indicators on the AR201



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: The WAN interface is not transmitting or receiving data.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-380** lists the CON/AUX interface attributes.

Table 2-380 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-381** lists attributes of an FE electrical interface.

Table 2-381 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-382** lists attributes of a USB interface.

Table 2-382 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR201 has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-139** shows its appearance.

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Figure 2-139 36 W power adapter appearance

Table 2-383 describes functions of the 36 W power adapter.

Table 2-383 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-384 lists technical specifications of the 36 W power adapter.

Table 2-384 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	

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Item	Description
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

Heat Dissipation

The AR201 routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-385 lists technical specifications of the AR201 routers.

Table 2-385 AR201 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)

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Item	Specification
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	12.3 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one FE electrical interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.6.2 AR206

Version Mapping

Table 2-386 lists the mapping between the AR206 router and software versions.

Table 2-386 Mapping between the AR206 router and software versions

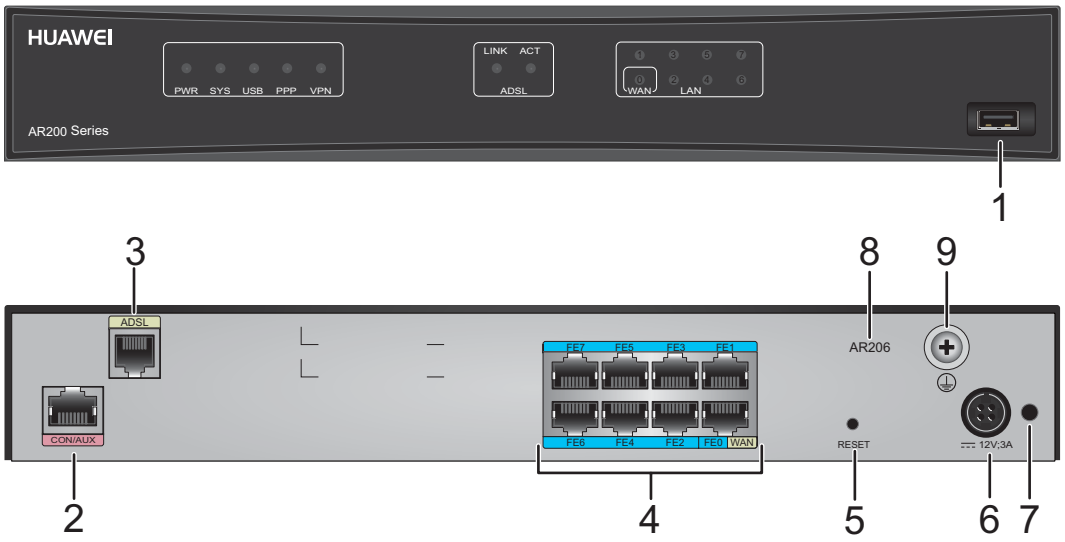
Router Model	Software Version
AR206	V200R002C00 and later versions

Appearance and Structure

Appearance

Figure 2-140 shows the appearance of the AR206 router.

Figure 2-140 AR206 appearance



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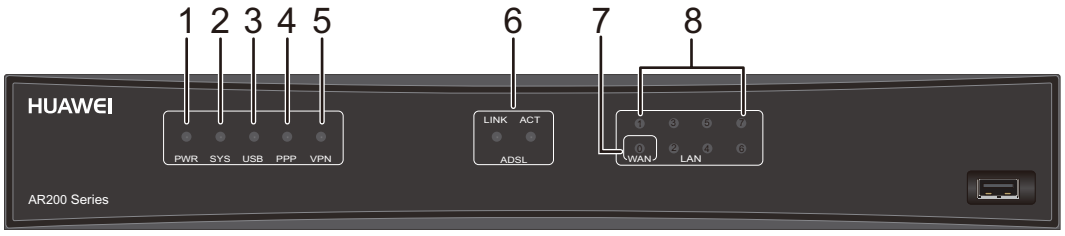
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR206 does not support AUX login.
3	WAN interface: **ADSL-B/J interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-141 shows the locations of AR206 indicators.

Figure 2-141 Indicators on the AR206



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-387** lists the CON/AUX interface attributes.

Table 2-387 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-388** lists attributes of an FE electrical interface.

Table 2-388 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-389** lists attributes of a USB interface.

Table 2-389 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

ADSL-B/J Interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-390** lists attributes of an ADSL-B/J interface.

Table 2-390 ADSL-B/J interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.992.1 G.DMT ● ITU-T G.992.3 ● ITU-T G.992.5

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Attribute	Description
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ Annex J mode: a downlink rate of 24 Mbit/s and an uplink rate of 3 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR206 has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-142** shows its appearance.

Figure 2-142 36 W power adapter appearance

Table 2-391 describes functions of the 36 W power adapter.

Table 2-391 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function	Description
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-392 lists technical specifications of the 36 W power adapter.

Table 2-392 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

Heat Dissipation

The AR206 routers have no fans and use natural heat dissipation.

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Technical Specifications

Table 2-393 lists technical specifications of the AR206 routers.

Table 2-393 AR206 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16.1 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None

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Item	Specification
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-B/J interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.6.3 AR207

Version Mapping

Table 2-394 lists the mapping between the AR207 router and software versions.

Table 2-394 Mapping between the AR207 router and software versions

Router Model	Software Version
AR207	V200R002C00 and later versions

Appearance and Structure

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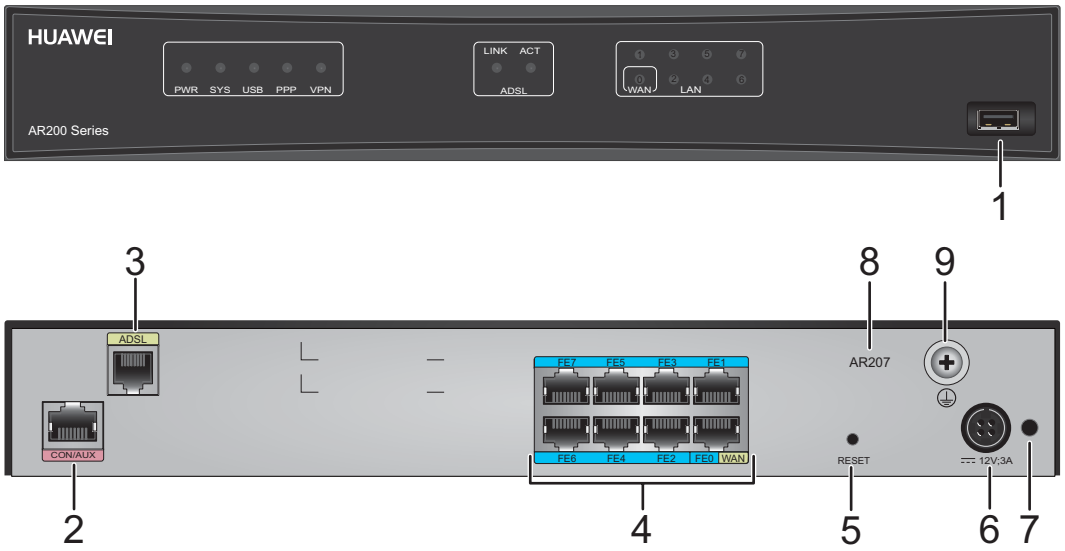
Appearance

Figure 2-143 shows the appearance of the AR207 router.

Figure 2-143 AR207 appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR207 does not support AUX login.
3	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen

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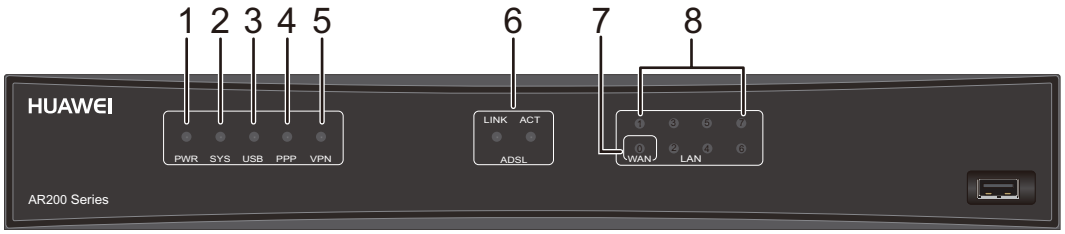
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-144 shows the locations of AR207 indicators.

Figure 2-144 Indicators on the AR207



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

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Number	Indicator	Color	Description
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-395** lists the CON/AUX interface attributes.

Table 2-395 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-396** lists attributes of an FE electrical interface.

Table 2-396 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-397** lists attributes of a USB interface.

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Table 2-397 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-398** lists attributes of an ADSL-A/M interface.

Table 2-398 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR207 has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-145** shows its appearance.

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Figure 2-145 36 W power adapter appearance

Table 2-399 describes functions of the 36 W power adapter.

Table 2-399 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-400 lists technical specifications of the 36 W power adapter.

Table 2-400 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	

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Item	Description
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

Heat Dissipation

The AR207 routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-401 lists technical specifications of the AR207 routers.

Table 2-401 AR207 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)

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Item	Specification
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	16.1 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.6.4 AR207V

Version Mapping

Table 2-402 lists the mapping between the AR207V router and software versions.

Table 2-402 Mapping between the AR207V router and software versions

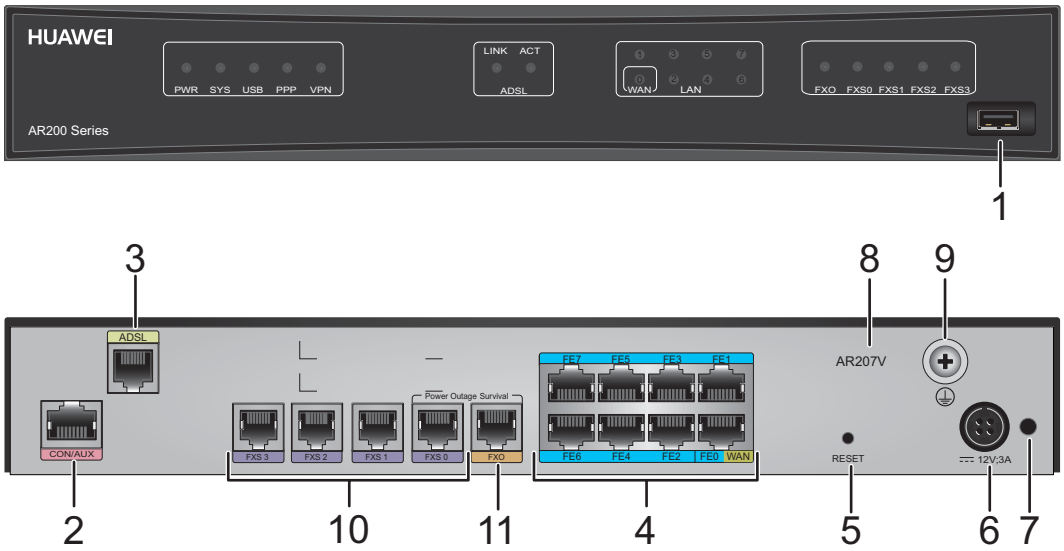
Router Model	Software Version
AR207V	V200R002C00 and later versions

Appearance and Structure

Appearance

Figure 2-146 shows the appearance of the AR207V router.

Figure 2-146 AR207V appearance



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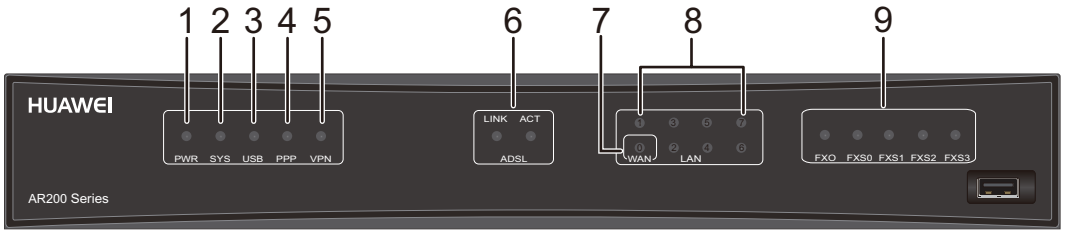
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR207V does not support AUX login.
3	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	10	Four **FXS interfaces** **NOTE** The FXS interfaces can be connected to analog telephones using **standard telephone cables**.
11	One **FXO interface** **NOTE** The FXO interface can be connected to a public switched telephone network (PSTN) using a **standard telephone cable**.	-	-

Indicator Description

Figure 2-147 shows the locations of AR207V indicators.

Figure 2-147 Indicators on the AR207V



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
9	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-403** lists the CON/AUX interface attributes.

Table 2-403 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-404** lists attributes of an FE electrical interface.

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Table 2-404 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-405** lists attributes of a USB interface.

Table 2-405 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-406** lists attributes of an ADSL-A/M interface.

Table 2-406 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 2-407** lists attributes of a FXS interface.

Table 2-407 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO Interface

A foreign exchange office (FX0) interface is a loop trunk interface and can connect to a PSTN network. **Table 2-408** lists attributes of a FXO interface.

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Table 2-408 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

Power Supply System

The AR207V has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-148** shows its appearance.

Figure 2-148 36 W power adapter appearance

Table 2-409 describes functions of the 36 W power adapter.

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Table 2-409 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-410 lists technical specifications of the 36 W power adapter.

Table 2-410 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

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Heat Dissipation

The AR207V routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-411 lists technical specifications of the AR207V routers.

Table 2-411 AR207V routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	22.8 W

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Item	Specification
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface Voice interfaces: four FXS interfaces and one FX0 interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.6.5 AR207V-P

Version Mapping

Table 2-412 lists the mapping between the AR207V-P router and software versions.

Table 2-412 Mapping between the AR207V-P router and software versions

Router Model	Software Version
AR207V-P	V200R002C00 and later versions

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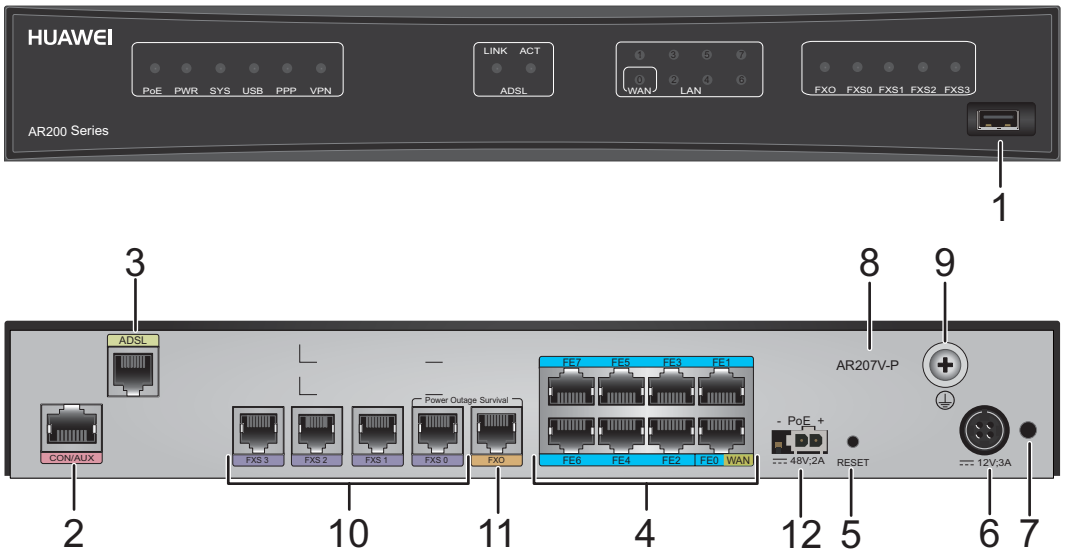
Appearance and Structure

Appearance

Figure 2-149 shows the appearance of the AR207V-P router.

Figure 2-149 AR207V-P appearance



1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR207V-P does not support AUX login.
3	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.

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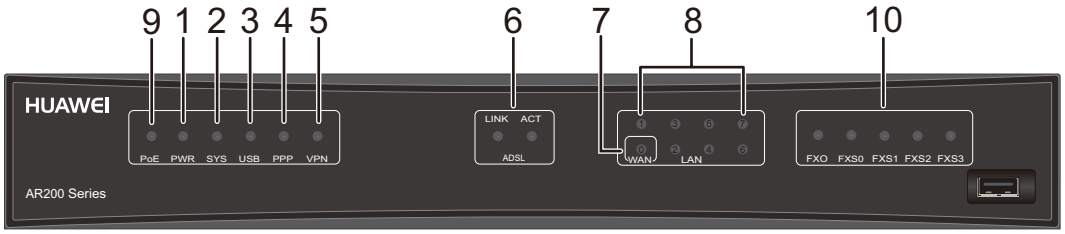
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	10	Four **FXS interfaces** **NOTE** The FXS interfaces can be connected to analog telephones using **standard telephone cables**.
11	One **FXO interface** **NOTE** The FXO interface can be connected to a public switched telephone network (PSTN) using a **standard telephone cable**.	12	PoE power jack **NOTE** The PoE power jack connects to a 100 W AC PoE power module to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.

Indicator Description

Figure 2-150 shows the locations of AR207V-P indicators.

Figure 2-150 Indicators on the AR207V-P



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
9	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.

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Number	Indicator	Color	Description
10	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-413** lists the CON/AUX interface attributes.

Table 2-413 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-414** lists attributes of an FE electrical interface.

Table 2-414 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-415** lists attributes of a USB interface.

Table 2-415 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-416** lists attributes of an ADSL-A/M interface.

Table 2-416 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 2-417** lists attributes of a FXS interface.

Table 2-417 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO Interface

A foreign exchange office (FX0) interface is a loop trunk interface and can connect to a PSTN network. **Table 2-418** lists attributes of a FXO interface.

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Table 2-418 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

Power Supply System

The AR207V-P has no built-in power modules and uses a 36 W power adapter for power supply. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its FE electrical interfaces.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-151** shows its appearance.

Figure 2-151 36 W power adapter appearance

Table 2-419 describes functions of the 36 W power adapter.

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Table 2-419 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-420 lists technical specifications of the 36 W power adapter.

Table 2-420 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

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100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-152** shows its appearance.

Figure 2-152 Appearance of the 100 W AC PoE power module

Table 2-421 describes functions of the 100 W AC PoE power module.

Table 2-421 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-422 lists the specifications of the 100 W AC PoE power module.

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Table 2-422 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR207V-P routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-423 lists technical specifications of the AR207V-P routers.

Table 2-423 AR207V-P routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	

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Item	Specification
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Supported (FE0-FE7)
Power consumption	
Maximum power consumption	22.6 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface Voice interfaces: four FXS interfaces and one FX0 interface
Extended slots	Not supported
Environment parameters	

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Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.6.6 AR208E

Version Mapping

Table 2-424 lists the mapping between the AR208E router and software versions.

Table 2-424 Mapping between the AR208E router and software versions

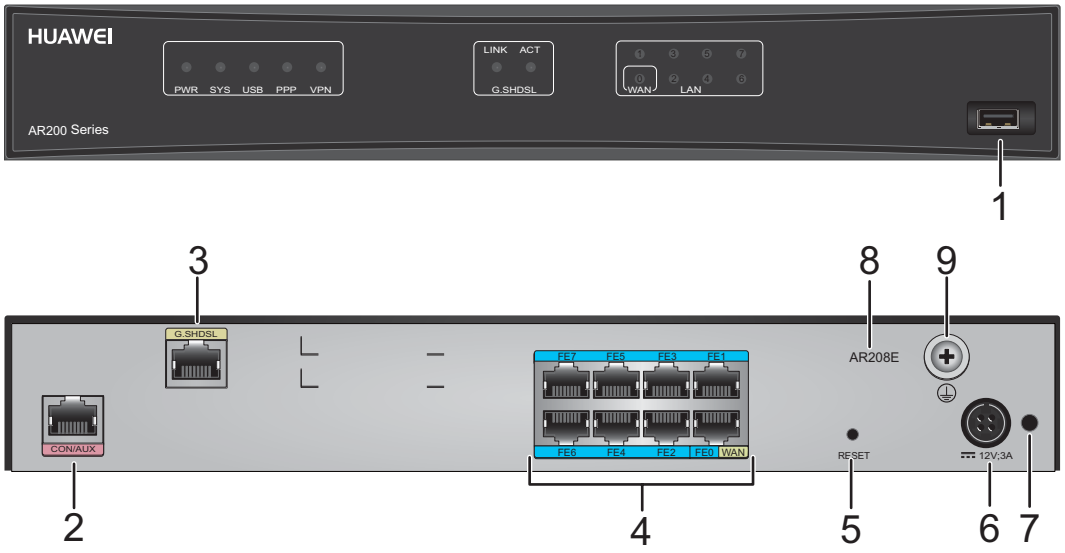
Router Model	Software Version
AR208E	V200R002C00 and later versions

Appearance and Structure

Appearance

Figure 2-153 shows the appearance of the AR208E router.

Figure 2-153 AR208E appearance



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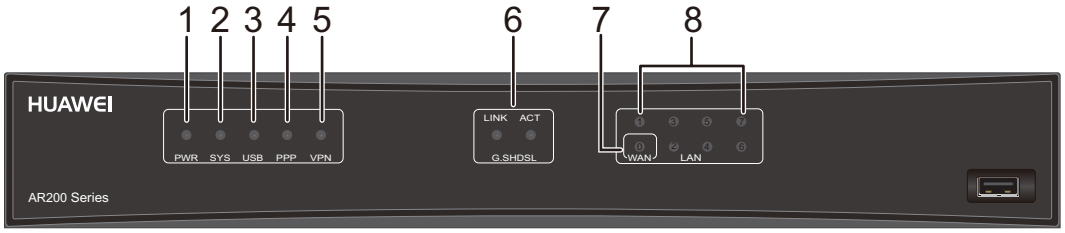
1	**USB interface (host)**	2	**CON/AUX interface** **NOTE** The AR208E does not support AUX login.
3	WAN interface: **G.SHDSL interface** **NOTE** This interface supports the dying gasp function.	4	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-154 shows the locations of AR208E indicators.

Figure 2-154 Indicators on the AR208E



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	G.SHDSL: LINK	Green	Steady on: A link has been established on the G.SHDSL interface. Off: No link is established on the G.SHDSL interface.
	G.SHDSL: ACT	Green	Blinking: Data is being transmitted or received on the G.SHDSL interface. Off: No data is being transmitted or received on the G.SHDSL interface.
7	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
8	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-425** lists the CON/AUX interface attributes.

Table 2-425 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-426** lists attributes of an FE electrical interface.

Table 2-426 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-427** lists attributes of a USB interface.

Table 2-427 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

G.SHDSL Interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. **Table 2-428** lists attributes of a G.SHDSL interface.

Table 2-428 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2

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Attribute	Description
Rate	5.696 Mbit/s per pair
Cable type	**4.1.13 G.SHDSL Cable** or **4.1.7 Ethernet Cable**

Power Supply System

The AR208E has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-155** shows its appearance.

Figure 2-155 36 W power adapter appearance

Table 2-429 describes functions of the 36 W power adapter.

Table 2-429 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.

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Function	Description
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-430 lists technical specifications of the 36 W power adapter.

Table 2-430 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

Heat Dissipation

The AR208E routers have no fans and use natural heat dissipation.

Technical Specifications

Table 2-431 lists technical specifications of the AR208E routers.

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Table 2-431 AR208E routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	14.7 W
Heat dissipation	
Fan module	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one G.SHDSL interface LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.6.7 AR207G-HSPA+7

Version Mapping

Table 2-432 lists the mapping between the AR207G-HSPA+7 router and software versions.

Table 2-432 Mapping between the AR207G-HSPA+7 router and software versions

Router Model	Software Version
AR207G-HSPA+7	V200R002C01 and later versions

Appearance and Structure

Appearance

Figure 2-156 shows the appearance of the AR207G-HSPA+7 router.

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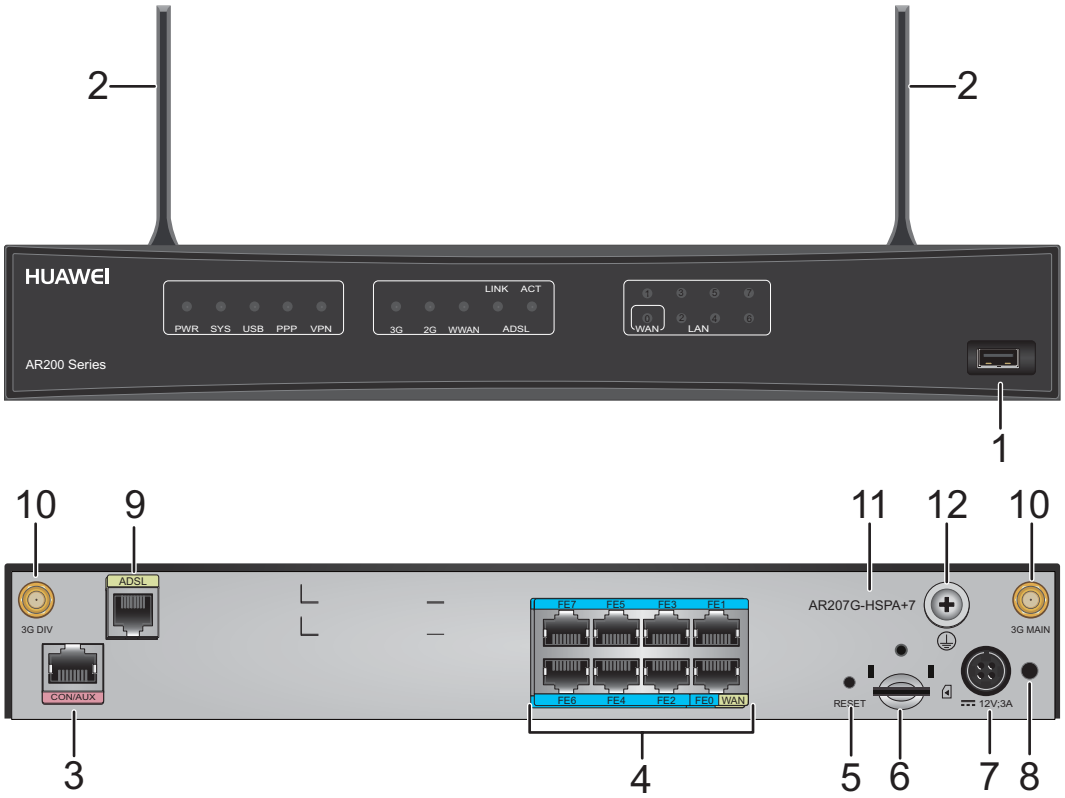
Figure 2-156 AR207G-HSPA+7 appearance



1	**USB interface (host)**	2	Two **3G antennas**
3	**CON/AUX interface** **NOTE** The AR207G-HSPA+7 does not support AUX login.	4	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	SIM card slot **NOTE** The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
7	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.

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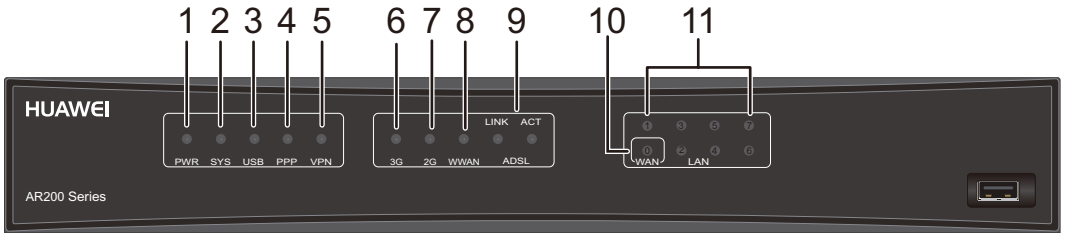
9	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.	10	**3G-HSPA+7 antenna interface**
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-157 shows the locations of AR207G-HSPA+7 indicators.

Figure 2-157 Indicators on the AR207G-HSPA+7



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	3G	Green	Steady on: The 3G signal strength is high.
			Fast blinking: The 3G signal strength is medium.
			Slow blinking: The 3G signal strength is low.
			Off: No 3G signal is available.
7	2G	Green	Steady on: The 2G signal strength is high.
			Fast blinking: The 2G signal strength is medium.
			Slow blinking: The 2G signal strength is low.
			Off: No 2G signal is available.
8	WWAN	Green	Steady on: A 3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the 3G/2G connection.
			Off: The 3G/2G connection has not been established or is inactive.
9	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: No data is being transmitted or received on the ADSL interface.
10	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
			Off: No link is established on the corresponding LAN/WAN interface.
11	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-433** lists the CON/AUX interface attributes.

Table 2-433 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-434** lists attributes of an FE electrical interface.

Table 2-434 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-435** lists attributes of a USB interface.

Table 2-435 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

3G-HSPA+7 Interface

3G-HSPA+7 antenna interfaces of a router include a 3G MAIN interface (for the primary antenna) and a 3G DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G signals, whereas the secondary antenna assists the primary antenna in signal receiving. **Table 2-436** lists attributes of a 3G-HSPA+7 antenna interface.

Table 2-436 3G-HSPA+7 antenna interface attributes

Attribute	Description
Connector type	SMA RF

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Attribute	Description
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● HSPA+/HSUPA/HSDPA/WCDMA: 850/900/1900/2100 (MHz)
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 9.6 kbit/s and downlink rate of 9.6 kbit/s ● GPRS/EDGE: Multi-slot Class 12, Class B ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access (HSPA): uplink rate of 5.76 Mbit/s and downlink rate of 14.4 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21 Mbit/s
Cable type	**3G Antenna**

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-437** lists attributes of an ADSL-A/M interface.

Table 2-437 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5

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Attribute	Description
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Power Supply System

The AR207G-HSPA+7 has no built-in power modules and uses a 36 W power adapter for power supply.

36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-158** shows its appearance.

Figure 2-158 36 W power adapter appearance

Table 2-438 describes functions of the 36 W power adapter.

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Table 2-438 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-439 lists technical specifications of the 36 W power adapter.

Table 2-439 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

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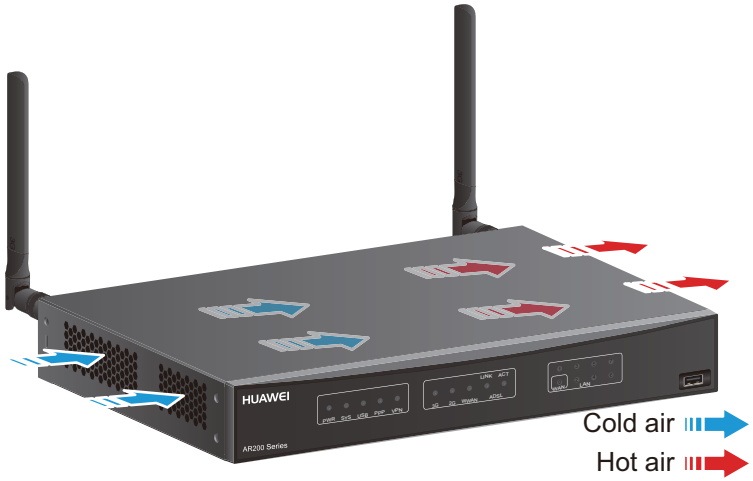
Heat Dissipation

The AR207G-HSPA+7 router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-159**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-159 Airflow



Technical Specifications

Table 2-440 lists technical specifications of the AR207G-HSPA+7 routers.

Table 2-440 AR207G-HSPA+7 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)

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Item	Specification
Weight	2.8 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	17.1 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one ADSL-A/M interface and two 3G-HSPA+7 antenna interfaces LAN interfaces: eight FE electrical interfaces, in which LAN interface FE0 can be used as a WAN interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.

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Item	Specification
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.6.8 AR201VW-P

Version Mapping

Table 2-441 lists the mapping between the AR201VW-P router and software versions.

Table 2-441 Mapping between the AR201VW-P router and software versions

Router Model	Software Version
AR201VW-P	V200R003C00 and later versions

Appearance and Structure

Appearance

Figure 2-160 shows the appearance of the AR201VW-P router.

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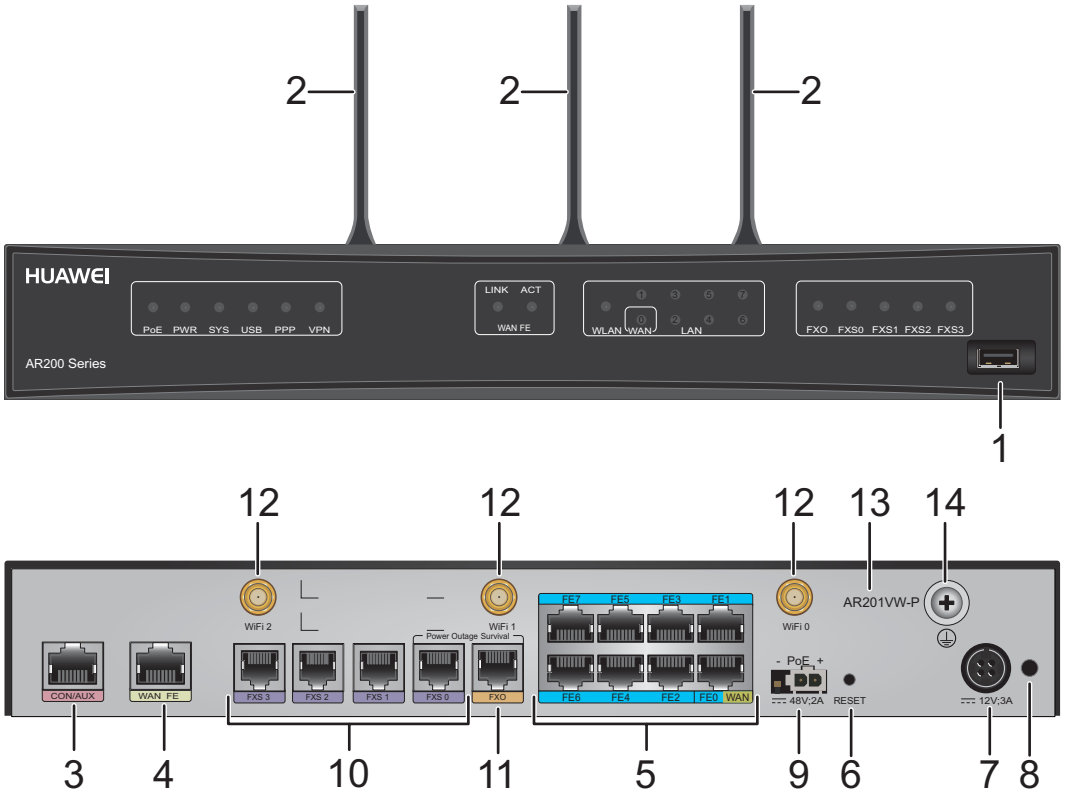
Figure 2-160 AR201VW-P appearance



1	**USB interface (host)**	2	Three **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR201VW-P does not support AUX login.	4	WAN interface: **FE electrical interface**
5	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack **NOTE** Use a **36 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.

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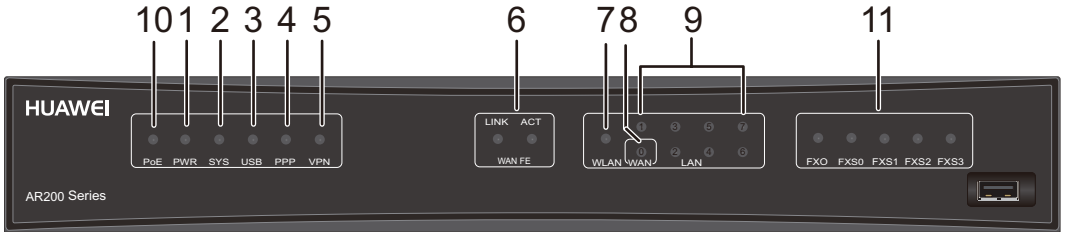
9	PoE power jack **NOTE** The PoE power jack connects to a 100 W AC PoE power module to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.	10	Four **FXS interfaces** **NOTE** The FXS interfaces can be connected to analog telephones using **standard telephone cables**.
11	One **FXO interface** **NOTE** The FXO interface can be connected to a public switched telephone network (PSTN) using a **standard telephone cable**.	12	Three **Wi-Fi antenna interfaces**
13	Product model silkscreen	14	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Indicator Description

Figure 2-161 shows indicators on the AR201VW-P router.

Figure 2-161 Indicators on the AR201VW-P



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	WAN: LINK	Green	Steady on: A link has been established on the WAN interface. Off: No link is established on the WAN interface.
	WAN: ACT	Green	Blinking: Data is being transmitted or received on the WAN interface. Off: The WAN interface is not transmitting or receiving data.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

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Number	Indicator	Color	Description
10	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
11	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-442** lists the CON/AUX interface attributes.

Table 2-442 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-443** lists attributes of an FE electrical interface.

Table 2-443 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-444** lists attributes of a USB interface.

Table 2-444 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-445** lists attributes of an ADSL-A/M interface.

Table 2-445 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 2-446** lists attributes of a FXS interface.

Table 2-446 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO Interface

A foreign exchange office (FX0) interface is a loop trunk interface and can connect to a PSTN network. **Table 2-447** lists attributes of a FXO interface.

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Table 2-447 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-448** lists attributes of a Wi-Fi antenna interface.

Table 2-448 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**Wi-Fi Antenna**

Power Supply System

The AR201VW-P has no built-in power modules and uses a 36 W power adapter for power supply. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its FE electrical interfaces.

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36 W Power Adapter

The 36 W power adapter supports AC input and DC output. **Figure 2-162** shows its appearance.

Figure 2-162 36 W power adapter appearance

Table 2-449 describes functions of the 36 W power adapter.

Table 2-449 Functions of a 36 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-450 lists technical specifications of the 36 W power adapter.

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Table 2-450 The technical specifications of the 36 W power adapter

Item	Description
Type	External, independent module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	3 A
Maximum output power	36 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-163** shows its appearance.

Figure 2-163 Appearance of the 100 W AC PoE power module

Table 2-451 describes functions of the 100 W AC PoE power module.

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Table 2-451 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-452 lists the specifications of the 100 W AC PoE power module.

Table 2-452 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

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Heat Dissipation

The AR201VW-P router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-453 lists technical specifications of the AR201VW-P router.

Table 2-453 AR201VW-P technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
RPS power supply	Not supported
PoE power supply	Supported (FE0-FE7)
Power consumption	
Maximum power consumption	23 W

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Item	Specification
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: 1 FE electrical interface LAN interfaces: eight FE electrical interfaces, in which FE0 can be configured as a WAN interface and three Wi-Fi antenna interfaces Voice interfaces: four FXS interfaces and one FXO interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.6.9 AR207VW

Version Mapping

Table 2-454 lists the mapping between the AR207VW router and software versions.

Table 2-454 Mapping between the AR207VW router and software versions

Router Model	Software Version
AR207VW	V200R003C00 and later versions

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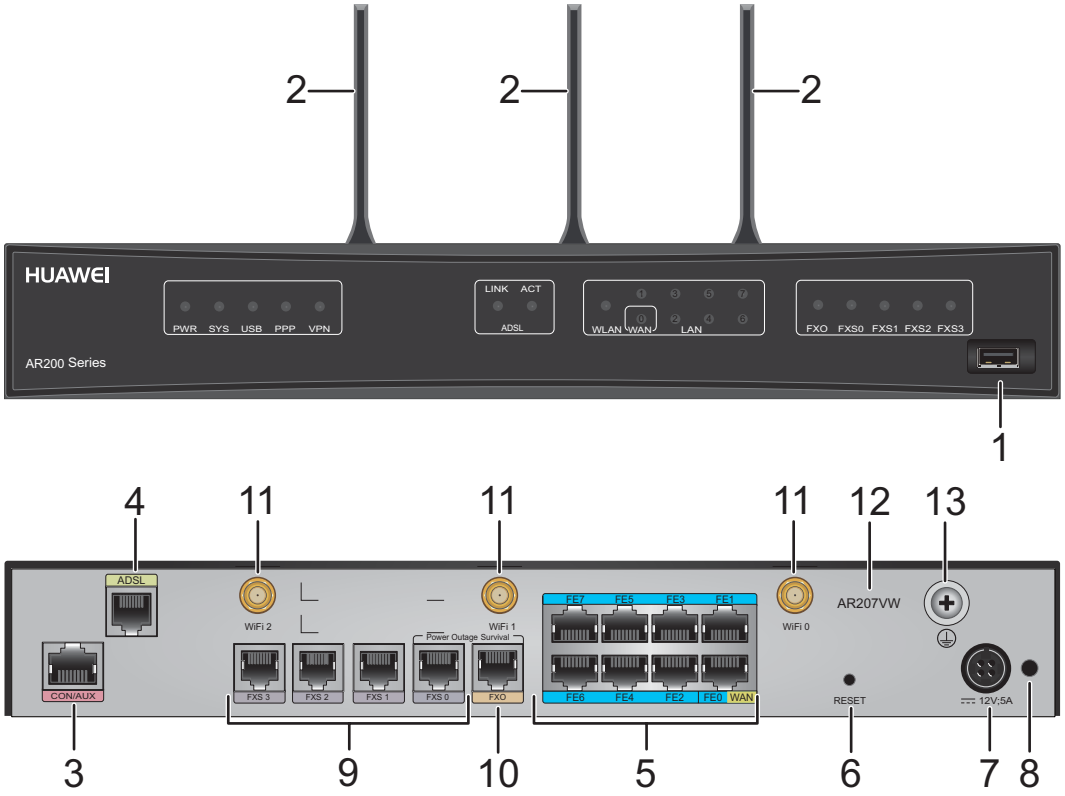
Appearance and Structure

Appearance

Figure 2-164 shows the appearance of the AR207VW router.

Figure 2-164 AR207VW appearance



1	**USB interface (host)**	2	Three **Wi-Fi antennas**
3	**CON/AUX interface** **NOTE** The AR207VW does not support AUX login.	4	WAN interface: **ADSL-A/M interface** **NOTE** This interface supports the dying gasp function.

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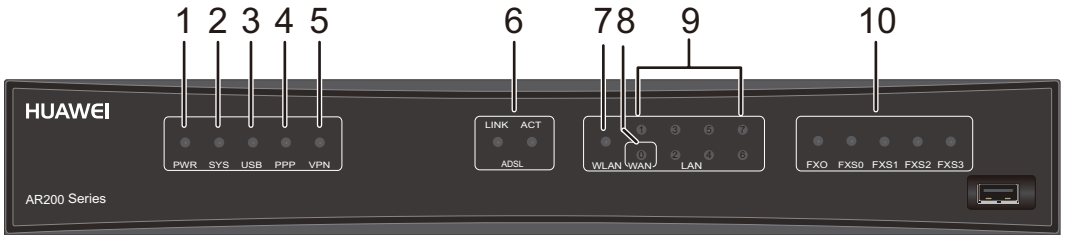
5	LAN interfaces: eight **FE electrical interfaces** **NOTE** ● LAN interface FE0 can be configured as a WAN interface. ● FE6 is a management interface and is used to upgrade the router.	6	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	Power jack **NOTE** Use a **60 W power adapter** to connect the router to a power source.	8	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
9	Four **FXS interfaces** **NOTE** The FXS interfaces can be connected to analog telephones using **standard telephone cables**.	10	One **FXO interface** **NOTE** The FXO interface can be connected to a public switched telephone network (PSTN) using a **standard telephone cable**.
11	Three **Wi-Fi antenna interfaces**	12	Product model silkscreen
13	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Indicator Description

Figure 2-165 shows indicators on the AR207VW router.

Figure 2-165 Indicators on the AR207VW



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

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Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	PPP	Green	Steady on: A PPP connection has been set up. Off: No PPP connection is set up.
5	VPN	Green	Steady on: The VPN service is running normally. Off: The VPN service is unavailable.
6	ADSL: LINK	Green	Steady on: A link has been established on the ADSL interface. Off: No link is established on the ADSL interface.
	ADSL: ACT	Green	Blinking: Data is being transmitted or received on the ADSL interface. Off: The ADSL interface is not transmitting or receiving data.
7	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.
8	LAN/WAN (FE0)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface.
			Blinking: Data is being transmitted or on the corresponding LAN/WAN interface.

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Number	Indicator	Color	Description
			Off: No link is established on the corresponding LAN/WAN interface.
9	LAN (FE1 to FE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
10	FXS0 to FXS3	Green	Steady on: The FXS channel is being occupied by a call. Off: The FXS channel is idle.
	FXO	Green	Steady on: The FXO channel is being occupied by a call. Off: The FXO channel is idle.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-455** lists the CON/AUX interface attributes.

Table 2-455 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-456** lists attributes of an FE electrical interface.

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Table 2-456 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-457** lists attributes of a USB interface.

Table 2-457 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

ADSL-A/M Interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-458** lists attributes of an ADSL-A/M interface.

Table 2-458 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

FXS Interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 2-459** lists attributes of a FXS interface.

Table 2-459 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO Interface

A foreign exchange office (FX0) interface is a loop trunk interface and can connect to a PSTN network. **Table 2-460** lists attributes of a FXO interface.

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Table 2-460 FXO interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for the FXO interface ITU K.20 for overcurrent protection and overvoltage protection
Dialing mode	● Dual tone multiple frequency (DTMF) in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-461** lists attributes of a Wi-Fi antenna interface.

Table 2-461 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**Wi-Fi Antenna**

Power Supply System

The AR207VW has no built-in power modules and uses a 60 W power adapter for power supply.

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60 W Power Adapter

The 60 W power adapter uses AC input and DC output. **Figure 2-166** shows its appearance.

Figure 2-166 60 W power adapter appearance

Table 2-462 provides the functions of the 60 W power adapter.

Table 2-462 Functions of 60 W power adapter

Function	Description
Input overcurrent protection	In this protection state, the power adapter stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output current limiting protection	In this protection state, the power adapter supplies power intermittently. When the output current is limited within a range, the power adapter automatically resumes power supply.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output short-circuit protection	In this protection state, the power adapter supplies power intermittently. When the short circuit is removed, the power adapter automatically resumes power supply.
Heat dissipation	The power adapter does not have a built-in fan. It adopts nature heat dissipation.

Table 2-463 provides the specifications of the 60 W power adapter.

Table 2-463 Specifications of 60 W power adapter

Item	Specification
Type	External, independent module
Input	

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Item	Specification
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W

Heat Dissipation

The AR207VW router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-464 lists technical specifications of the AR207VW router.

Table 2-464 AR207VW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 300.0 mm x 216.4 mm x 44.0 mm (11.81 in. x 8.52 in. x 1.73 in.) ● With mounting brackets installed: 482.6 mm x 216.4 mm x 44.0 mm (19.0 in. x 8.52 in. x 1.73 in.)

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Item	Specification
Weight	2.8 kg (6.17 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	20.7 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interface: one ADSL-A/M interface LAN interfaces: eight FE electrical interfaces, in which FE0 can be configured as a WAN interface and three Wi-Fi antenna interfaces Voice interfaces: four FXS interfaces and one FXO interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.

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Item	Specification
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.7 AR500 Series

2.7.1 AR503GW-LM7

Version Mapping

Table 2-465 lists the mapping between the AR503GW-LM7 router and software versions.

Table 2-465 Mapping between the AR503GW-LM7 router and software versions

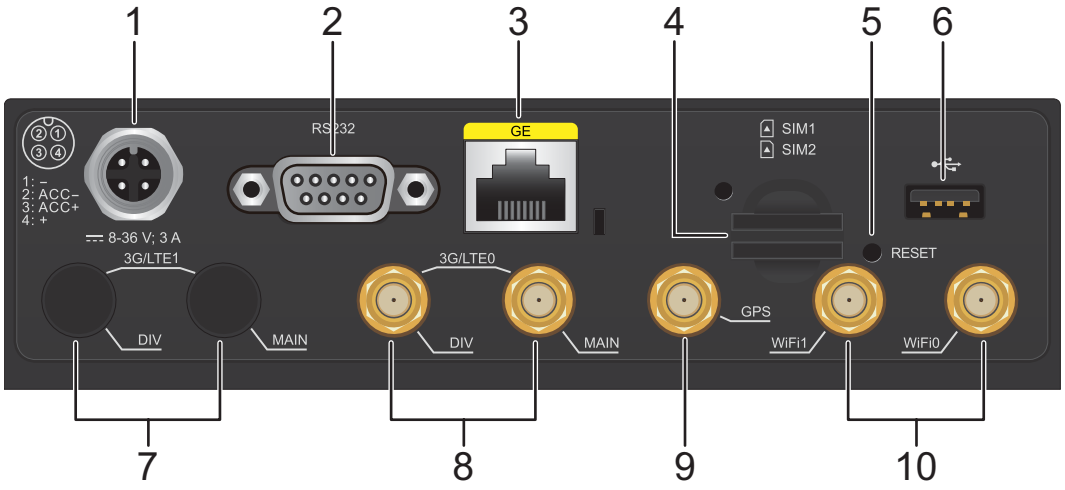
Router Model	Software Version
AR503GW-LM7	V200R006C12 and later versions

Appearance and Structure

Appearance

Figure 2-167 shows the appearance of the AR503GW-LM7 router.

Figure 2-167 AR503GW-LM7 appearance



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1	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	2	**RS232 interface** **NOTE** The RS232 interface can be used as a console interface to configure the router.
3	WAN interface: **GE electrical interface**	4	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	**USB interface (host)**
7	Reserved 3G/LTE antenna interface	8	**3G/LTE antenna interface**
9	**GPS antenna interface**	10	Two **Wi-Fi antenna interfaces**

Indicator Description

Figure 2-168 shows indicators on the AR503GW-LM7 router.

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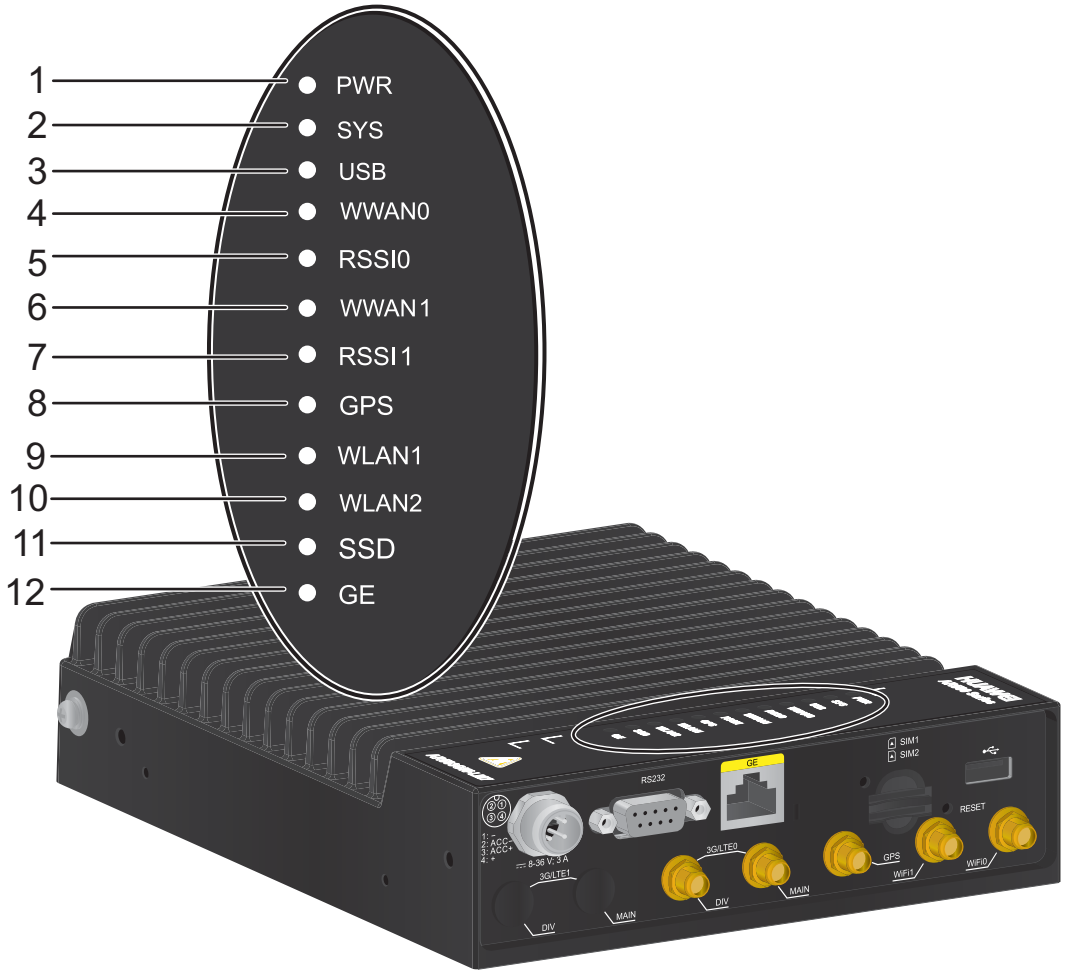
Figure 2-168 Indicators on the AR503GW-LM7



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	WWAN1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
7	RSSI1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
8	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
9	WLAN1 (working at	Green	Blinking: Data is being transmitted on the WLAN link.

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Number	Indicator	Color	Description
	the 2.4 GHz frequency band)		Off: The WLAN link is shut down.
10	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
11	SSD	Red and green	Steady green: A solid state drive (SSD) card is available and accessible. Blinking green: The system is performing read-write operation on the SSD card.
			Steady red: The SSD does not work normally.
			Off: No SSD card is available.
12	GE electrical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

RS232 Interface

The RS232 interface of a router can connect to an operation terminal for onsite configuration. **Table 2-466** lists attributes of the RS232 interface.

Table 2-466 RS232 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Cable type	**4.1.6 Console Cable**

3G/LTE Antenna Interface

3G/LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work

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together. The primary antenna transmits and receives 3G/LTE signals, and the secondary antenna helps improve the quality of received 3G/LTE signals. **Table 2-467** lists attributes of a 3G/LTE antenna interface.

Table 2-467 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● FDD LTE: Band 1/3/8 ● TDD LTE: Band 38/39/40/41 ● HSPA+: Band 1/2/5/8 ● TD-SCDMA: Band 34/39 ● GSM/GPRS/EDGE: 900/1800/1900 (MHz)
Rate	● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● LTE Time Division Duplexing (LTE TDD): uplink rate of 18 Mbit/s and downlink rate of 61 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● TD-HSPA+: uplink rate of 2.2 Mbit/s and downlink rate of 4.2 Mbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	● LTE primary antenna interface: **Primary LTE remote antenna** ● LTE diversity antenna interface: **GPS+LTE remote diversity antenna**

GPS Antenna Interface

A GPS antenna interface can connect to a GPS+LTE remote diversity antenna to provide the GPS positioning function. **Table 2-468** lists attributes of a GPS antenna interface.

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Table 2-468 GPS antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	1575 MHz
Cable type	**GPS+LTE remote diversity antenna**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-469** lists attributes of a GE electrical interface.

Table 2-469 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-470** lists attributes of a USB interface.

Table 2-470 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0

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Attribute	Description
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-471** lists attributes of a Wi-Fi antenna interface.

Table 2-471 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n/ac
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**4.2.6 Wi-Fi Strip-shaped Antenna**

Heat Dissipation

The AR503GW-LM7 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-472 lists technical specifications of the AR503GW-LM7 router.

Table 2-472 AR503GW-LM7 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB

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Item	Specification
Flash memory	256 MB
Micro SD card (default: sd1)	None
Hard disk	mSATA hard disk supported
Dimensions and weight	
Dimensions (W x D x H)	200 mm x 160 mm x 44 mm (7.87 in. x 6.30 in. x 1.73 in.)
Weight	1.4 kg (3.09 lb)
Power specifications	
Rated input voltage (DC)	12 V/24 V
Maximum input voltage (DC)	8 V to 36 V
Maximum output current	3 A
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	13 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None
RS232 interfaces	1 (DB9)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and two 3G/LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia service interface: one GPS antenna interface
Extended slots	Not supported

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Item	Specification
Environment parameters	
Operating temperature	0°C to +50°C (32°F to 122°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.7.2 AR503GW-LcM7

Version Mapping

Table 2-473 lists the mapping between the AR503GW-LcM7 router and software versions.

Table 2-473 Mapping between the AR503GW-LcM7 router and software versions

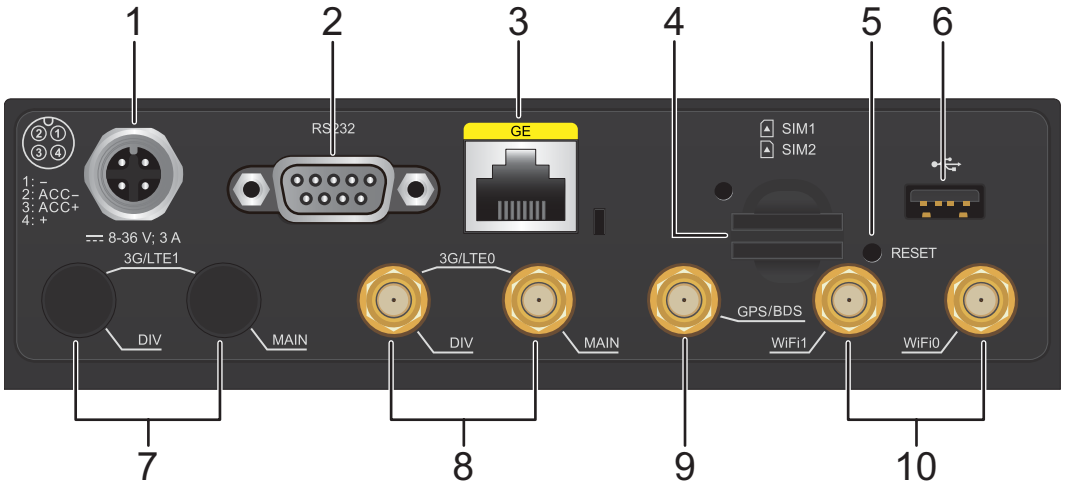
Router Model	Software Version
AR503GW-LcM7	V200R006C15 and later versions

Appearance and Structure

Appearance

Figure 2-169 shows the appearance of the AR503GW-LcM7 router.

Figure 2-169 AR503GW-LcM7 appearance



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1	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	2	**RS232 interface** **NOTE** The RS232 interface can be used as a console interface to configure the router.
3	WAN interface: **GE electrical interface**	4	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
5	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	**USB interface (host)**
7	Reserved 3G/LTE antenna interface	8	**3G/LTE antenna interface**
9	**GPS/BDS antenna interface**	10	Two **Wi-Fi antenna interfaces**

Indicator Description

Figure 2-170 shows indicators on the AR503GW-LcM7 router.

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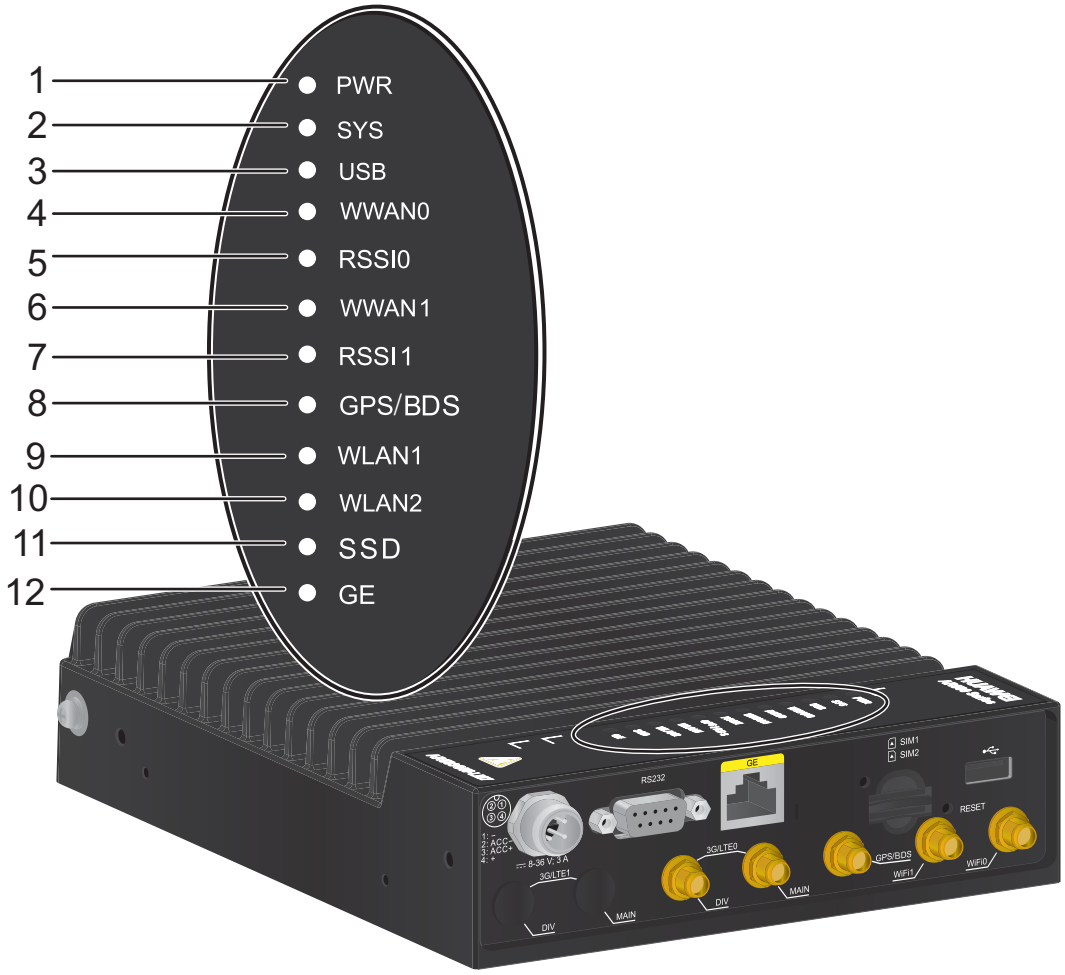
Figure 2-170 Indicators on the AR503GW-LcM7



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	WWAN1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
7	RSSI1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
8	GPS/BDS	Green	Steady on: The GPS/BDS function is enabled.
			Off: The GPS/BDS function is disabled.
9	WLAN1 (working at	Green	Blinking: Data is being transmitted on the WLAN link.

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Number	Indicator	Color	Description
	the 2.4 GHz frequency band)		Off: The WLAN link is shut down.
10	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
11	SSD	Red and green	Steady green: A solid state drive (SSD) card is available and accessible. Blinking green: The system is performing read-write operation on the SSD card.
			Steady red: The SSD does not work normally.
			Off: No SSD card is available.
12	GE electrical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

RS232 Interface

The RS232 interface of a router can connect to an operation terminal for onsite configuration. **Table 2-474** lists attributes of the RS232 interface.

Table 2-474 RS232 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Cable type	**4.1.6 Console Cable**

3G/LTE Antenna Interface

3G/LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work

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together. The primary antenna transmits and receives 3G/LTE signals, and the secondary antenna helps improve the quality of received 3G/LTE signals. **Table 2-475** lists attributes of a 3G/LTE antenna interface.

Table 2-475 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● FDD LTE: Band 1/3/8 ● TDD LTE: Band 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: Band 1/5/8/9 ● TD-SCDMA: Band 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● LTE Time Division Duplexing (LTE TDD): uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 384 kbit/s and downlink rate of 2.8 Mbit/s ● TD-HSPA: uplink rate of 2.2 Mbit/s and downlink rate of 2.8 Mbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	● LTE primary antenna interface: **Primary LTE remote antenna** ● LTE diversity antenna interface: **GPS+LTE remote diversity antenna**

GPS/BDS Antenna Interface

A GPS/BDS antenna interface can connect to a GPS/BDS+LTE remote diversity antenna to provide the GPS/BDS positioning function. **Table 2-476** lists attributes of a GPS/BDS antenna interface.

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Table 2-476 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	1575.42 MHz, 1561.098 MHz
Cable type	**GPS/BDS+LTE remote diversity antenna**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-477** lists attributes of a GE electrical interface.

Table 2-477 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-478** lists attributes of a USB interface.

Table 2-478 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0

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Attribute	Description
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-479** lists attributes of a Wi-Fi antenna interface.

Table 2-479 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n/ac
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**4.2.6 Wi-Fi Strip-shaped Antenna**

Heat Dissipation

The AR503GW-LcM7 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-480 lists technical specifications of the AR503GW-LcM7 router.

Table 2-480 AR503GW-LcM7 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB

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Item	Specification
Flash memory	256 MB
Micro SD card (default: sd1)	None
Hard disk	mSATA hard disk supported
Dimensions and weight	
Dimensions (W x D x H)	200 mm x 160 mm x 44 mm (7.87 in. x 6.30 in. x 1.73 in.)
Weight	1.4 kg (3.09 lb)
Power specifications	
Rated input voltage (DC)	12 V/24 V
Maximum input voltage (DC)	8 V to 36 V
Maximum output current	3 A
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	13 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None
RS232 interfaces	1 (DB9)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and two 3G/LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia service interface: one GPS/BDS antenna interface
Extended slots	Not supported

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Item	Specification
Environment parameters	
Operating temperature	0°C to +50°C (32°F to 122°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.7.3 AR509G-L-D-H

Version Mapping

Table 2-481 lists the mapping between the AR509G-L-D-H router and software versions.

Table 2-481 Mapping between the AR509G-L-D-H router and software versions

Router Model	Software Version
AR509G-L-D-H	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-171 shows the appearance of the AR509G-L-D-H router.

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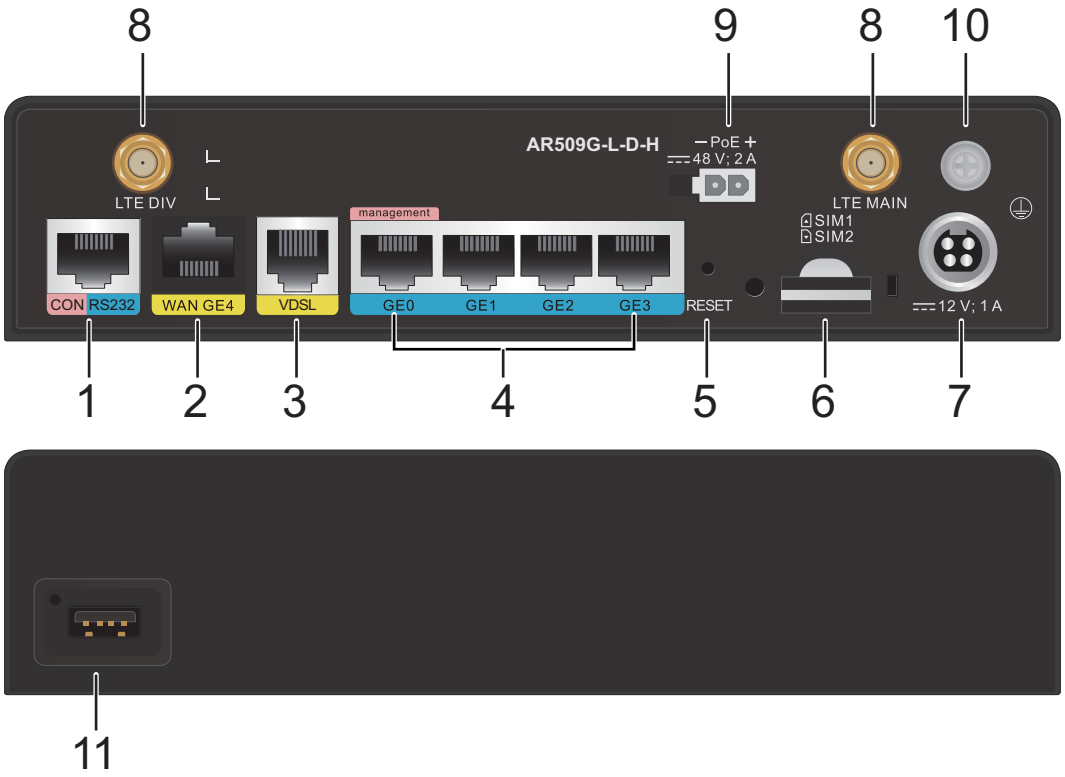
Figure 2-171 AR509G-L-D-H appearance



1	**CON/RS232 interface**	2	WAN interface: **GE electrical interface**
3	WAN interface: **VDSL interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To reset the system, press the button. ● To restore the factory settings, hold down the button for a period longer than 3 seconds and shorter than 10 seconds. ● To enable the RS232 function, hold down the button for 10 seconds or longer. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.
7	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	8	**LTE antenna interface**

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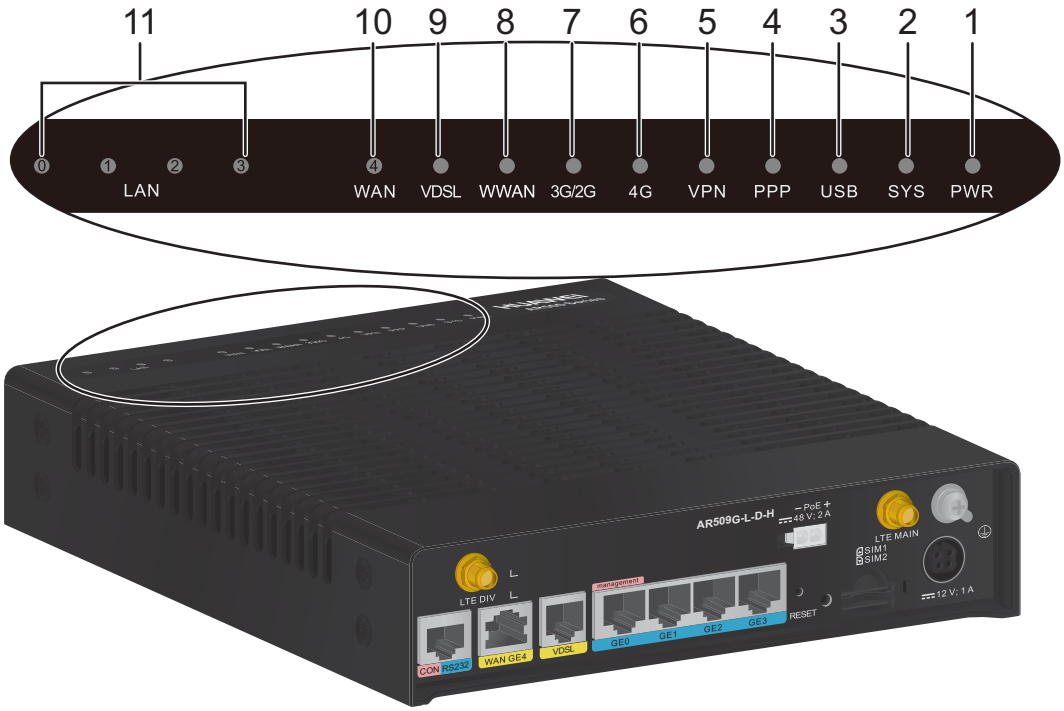
9	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	**USB interface (host)**	-	-

Indicator Description

Figure 2-172 shows the indicators on the AR509G-L-D-H router.

Figure 2-172 Indicators on the AR509G-L-D-H



Number	Indicator	Color	Description
1	PWR	Green	● Steady on: The system power supply is normal. ● Off: The system power is off.

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Number	Indicator	Color	Description
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking: The system is running properly. ● Fast blinking: The system is powering on or restarting. ● Steady red: A system fault has occurred and requires manual intervention.
3	USB	Red and green	● Off: No USB flash drive is connected to the router, the USB interface has failed, or the USB indicator has failed. ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Blinking green: The system is reading data from the USB flash drive. ● Steady red: The router fails to connect to or register with the network management system. ● Blinking red: An error has occurred when the system is executing the configuration file or reading data from the USB flash drive.
4	PPP	Green	● Steady on: A PPP connection has been set up. ● Off: No PPP connection is established.
5	VPN	Green	● Steady on: A VPN connection has been established. ● Off: The VPN service is unavailable.
6	4G	Green	● Steady on: The 4G signal strength is high. ● Fast blinking: The 4G signal strength is medium. ● Slow blinking: The 4G signal strength is low. ● Off: No 4G signal is available.
7	3G/2G	Green	● Steady on: The 3G/2G signal strength is high. ● Fast blinking: The 3G/2G signal strength is medium. ● Slow blinking: The 3G/2G signal strength is low. ● Off: No 3G/2G signal is available.
8	WWAN	Green	● Steady on: A 4G/3G/2G connection has been established and is active. ● Blinking: Data is being transmitted or received over the 4G/3G/2G connection. ● Off: The 4G/3G/2G connection has not been established or is inactive.

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Number	Indicator	Color	Description
9	VDSL	Green	● Steady on: A link has been established on the VDSL interface. ● Blinking: Data is being transmitted or received on the VDSL interface. ● Off: No link is established on the VDSL interface.
10	WAN	Green	● Steady on: A link has been established on the WAN interface. ● Blinking: Data is being transmitted or received on the WAN interface. ● Off: No link is established on the WAN interface.
11	LAN	Green	● Steady on: A link is established on the LAN interface. ● Blinking: Data is being transmitted or received on the LAN interface. ● Off: No link is established on the corresponding LAN interface.

Interface Description

CON/RS232 Interface

The CON/RS232 interface of a router can connect to an operation terminal for onsite configuration. **Table 2-482** lists attributes of the CON/RS232 interface.

Table 2-482 CON/RS232 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-483** lists attributes of a GE electrical interface.

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Table 2-483 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-484** lists attributes of a USB interface.

Table 2-484 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-485** lists attributes of an LTE antenna interface.

Table 2-485 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF

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Attribute	Description
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/4/5/7/8/20
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	**LTE Antenna**

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-486** lists attributes of a VDSL interface.

Table 2-486 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

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Attribute	Description
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Heat Dissipation

The AR509G-L-D-H router has no fans and use natural heat dissipation.

Technical Specifications

Table 2-487 lists technical specifications of the AR509G-L-D-H router.

Table 2-487 AR509G-L-D-H technical specification

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	190 mm x 220 mm x 44 mm (7.5 in. x 8.7 in. x 1.73 in.)
Weight	1.52 kg (3.35 lb)
Power specifications	
Rated input voltage (DC)	12 V
Maximum input voltage (DC)	10.8 V to 13.2 V

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Item	Specification
Maximum output current	1 A
RPS power supply	Not supported
PoE power supply	Supported
Power consumption	
Maximum power consumption	12 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/RS232 Interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface, one VDSL interface and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	● PoE power supply used: 0°C to +40°C (32°F to 104°F) ● PoE power supply not used: -25°C to +60°C (-13°F to +140°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.7.4 AR509G-Lc

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Version Mapping

Table 2-488 lists the mapping between the AR509G-Lc router and software versions.

Table 2-488 Mapping between the AR509G-Lc router and software versions

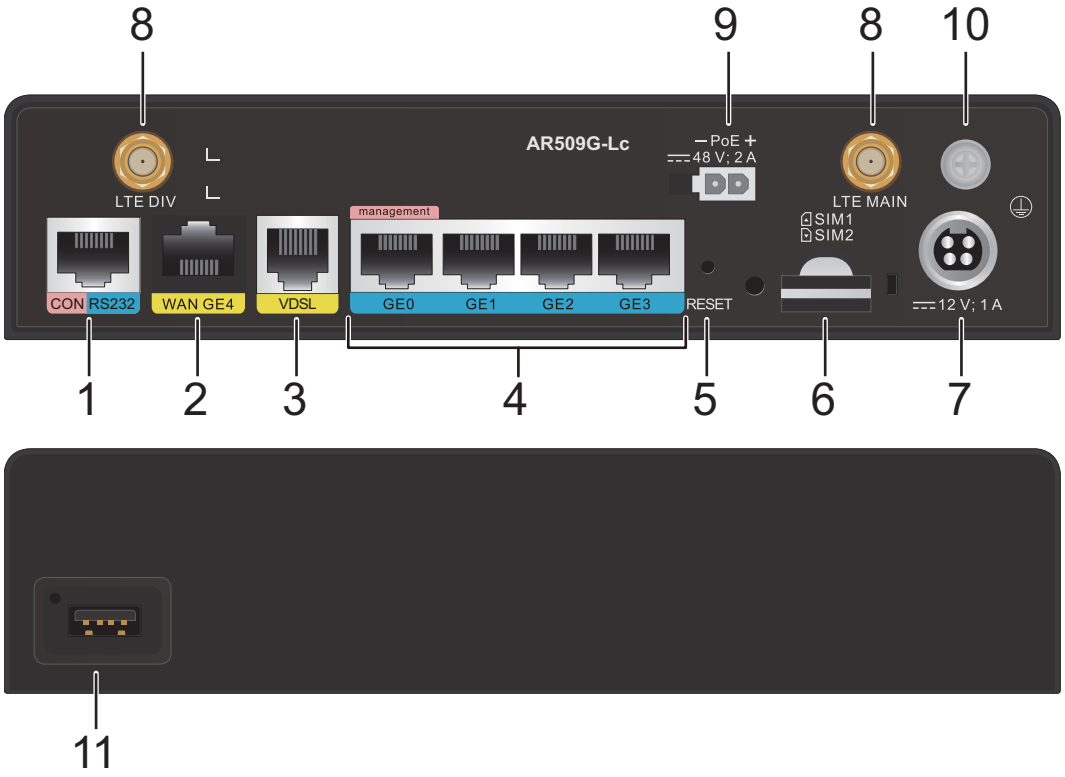
Router Model	Software Version
AR509G-Lc	V200R006C17 version

Appearance and Structure

Appearance

Figure 2-173 shows the appearance of the AR509G-Lc router.

Figure 2-173 AR509G-Lc appearance



1	**CON/RS232 interface**	2	WAN interface: **GE electrical interface**

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3	WAN interface: **VDSL interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To reset the system, press the button. ● To restore the factory settings, hold down the button for a period longer than 3 seconds and shorter than 10 seconds. ● To enable the RS232 function, hold down the button for 10 seconds or longer. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.
7	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	8	**LTE antenna interface**
9	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	**USB interface (host)**	-	-

Indicator Description

Figure 2-174 shows the locations of AR509G-Lc indicators.

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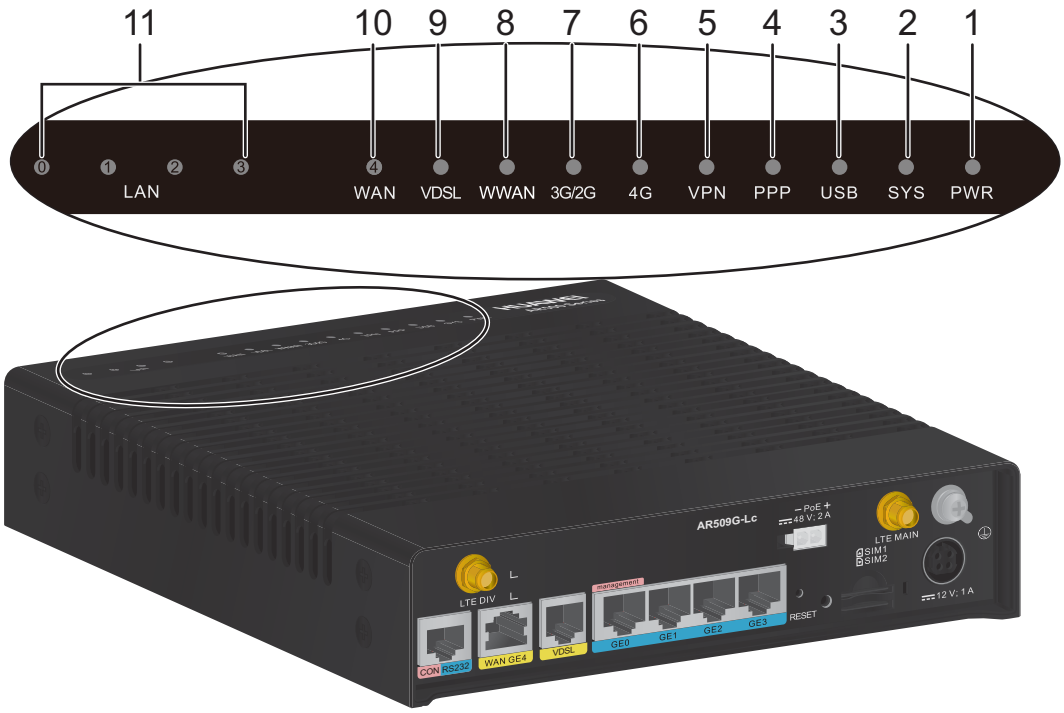
Figure 2-174 Indicators on the AR509G-Lc



Number	Indicator	Color	Description
1	PWR	Green	● Steady on: The system power supply is normal. ● Off: The system power is off.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is powering on or is restarting. ● Steady red: A system fault has occurred and requires manual intervention.

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Number	Indicator	Color	Description
3	USB	Red and green	● Off: No USB flash drive is connected to the router, the USB interface has failed, or the USB indicator has failed. ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Blinking green: The system is reading data from the USB flash drive. ● Steady red: The router fails to connect to or register with the network management system. ● Blinking red: An error has occurred when the system is executing the configuration file or reading data from the USB flash drive.
4	PPP	Green	● Steady on: A PPP connection has been established. ● Off: No PPP connection is established.
5	VPN	Green	● Steady on: A VPN connection has been established. ● Off: No VPN connection is established.
6	4G	Green	● Steady on: The 4G signal strength is high. ● Fast blinking: The 4G signal strength is medium. ● Slow blinking: The 4G signal strength is low. ● Off: No 4G signal is available.
7	3G/2G	Green	● Steady on: The 3G/2G signal strength is high. ● Fast blinking: The 3G/2G signal strength is medium. ● Slow blinking: The 3G/2G signal strength is low. ● Off: No 3G/2G signal is available.
8	WWAN	Green	● Steady on: A 4G/3G/2G connection has been established and is active. ● Blinking: Data is being transmitted or received over the 4G/3G/2G connection. ● Off: The 4G/3G/2G connection has not been established or is inactive.
9	VDSL	Green	● Steady on: A link has been established on the VDSL interface. ● Blinking: Data is being transmitted or received on the VDSL interface. ● Off: No link is established on the VDSL interface.

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Number	Indicator	Color	Description
10	WAN	Green	● Steady on: A link has been established on the WAN interface. ● Blinking: Data is being transmitted or received on the WAN interface. ● Off: No link is established on the WAN interface.
11	LAN	Green	● Steady on: A link has been established on the LAN interface. ● Blinking: Data is being transmitted or received on the LAN interface. ● Off: No link is established on the LAN interface.

Interface Description

CON/RS232 Interface

The CON/RS232 interface of a router can connect to an operation terminal for onsite configuration. **Table 2-489** lists attributes of the CON/RS232 interface.

Table 2-489 CON/RS232 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-490** lists attributes of a GE electrical interface.

Table 2-490 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-491** lists attributes of a USB interface.

Table 2-491 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

LTE Antenna Interface

3G/LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G/LTE signals, and the secondary antenna helps improve the quality of received 3G/LTE signals. **Table 2-492** lists attributes of a 3G/LTE antenna interface.

Table 2-492 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF

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Attribute	Description
Standards compliance and frequency bands supported	● FDD LTE: Band 1/3/8 ● TDD LTE: Band 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: Band 1/5/8/9 ● TD-SCDMA: Band 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● LTE Time Division Duplexing (LTE TDD): uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 384 kbit/s and downlink rate of 2.8 Mbit/s ● TD-HSPA: uplink rate of 2.2 Mbit/s and downlink rate of 2.8 Mbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.8 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	**LTE whip antenna**

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-493** lists attributes of a VDSL interface.

Table 2-493 VDSL interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Heat Dissipation

The AR509G-Lc router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-494 lists technical specifications of the AR509G-Lc router.

Table 2-494 AR509G-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	190 mm x 220 mm x 44 mm (7.5 in. x 8.7 in. x 1.7 in.)
Weight	1.52 kg (3.35 lb)

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Item	Specification
Power specifications	
Rated input voltage (DC)	12 V
Maximum input voltage (DC)	10.8 V to 13.2 V
Maximum output current	1 A
RPS power supply	Not supported
PoE power supply	Supported
Power consumption	
Maximum power consumption	12 W
Heat dissipation	
Fan module	None
Airflow	N/A
Interface density	
Management interfaces	1 (RJ45)
CON/RS232 interfaces	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface, one VDSL interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating environment temperature	● PoE power supply used: 0°C to +40°C (32°F to 104°F) ● PoE power supply not used: -25°C to +60°C (-13°F to +140°F) **NOTE** When the altitude is between 1800 m (5905 ft.) and 5000 m (16404 ft.), the highest operating temperature reduces by 1°C every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing

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Item	Specification
Operating altitude	< 5000 m (16404 ft.)

2.7.5 AR509GW-L-D-H

Version Mapping

Table 2-495 lists the mapping between the AR509GW-L-D-H router and software versions.

Table 2-495 Mapping between the AR509GW-L-D-H router and software version

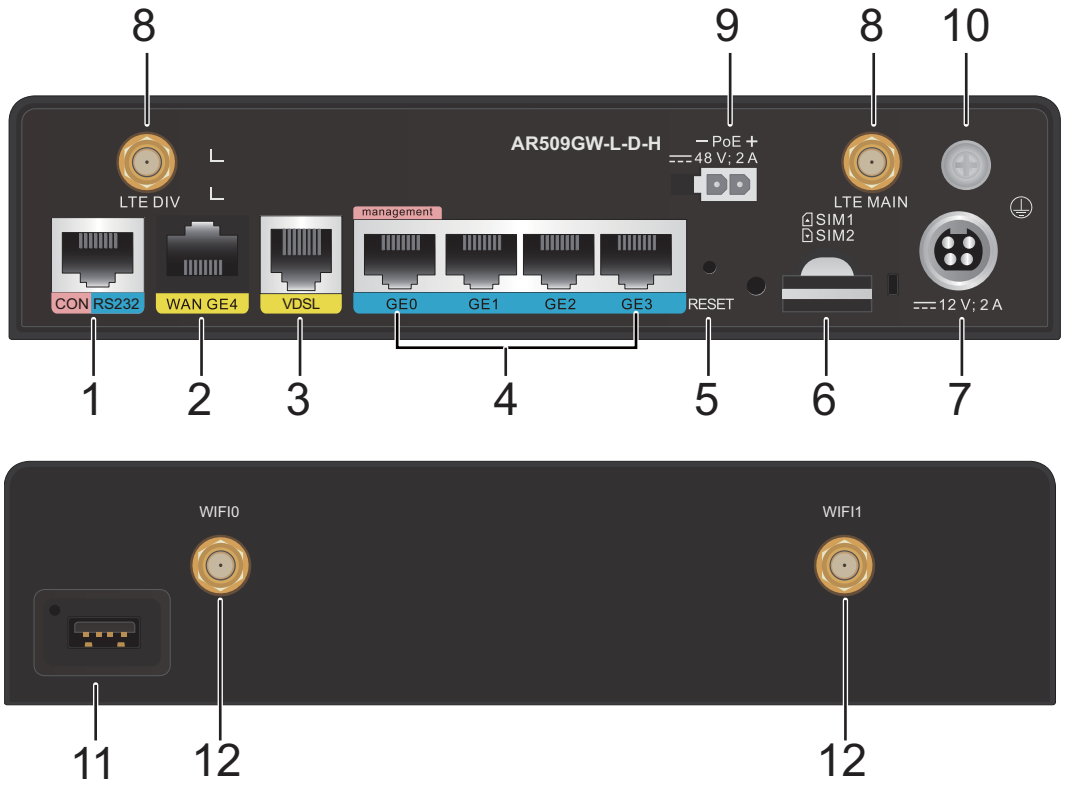
Router Model	Software Version
AR509GW-L-D-H	V200R007C02

Appearance and Structure

Appearance

Figure 2-175 shows the appearance of the AR509GW-L-D-H router.

Figure 2-175 AR509GW-L-D-H appearance



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1	**CON/RS232 interface**	2	WAN interface: **GE electrical interface**
3	WAN interface: **VDSL interface**	4	LAN interfaces: four **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
5	RST button **NOTE** This button is used to reset the router. ● To reset the system, press the button. ● To restore the factory settings, hold down the button for a period longer than 3 seconds and shorter than 10 seconds. ● To enable the RS232 function, hold down the button for 10 seconds or longer. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting holes at two sides of the SIM card slots are used to fix the SIM card cover with screws.
7	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	8	**LTE antenna interface**
9	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	**USB interface (host)**	12	Two **Wi-Fi antenna interfaces**

Indicator Description

Figure 2-176 shows the indicators on the AR509GW-L-D-H router.

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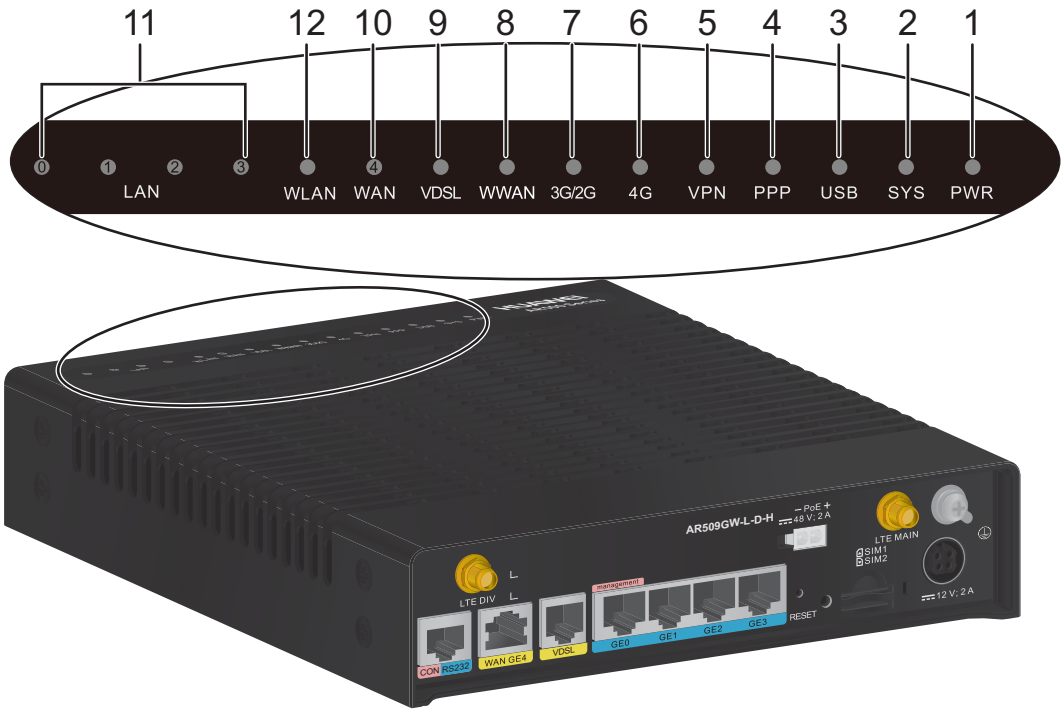
Figure 2-176 Indicators on the AR509GW-L-D-H



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Off: The system software is not running or is resetting. Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or is restarting. Steady red: A system fault has occurred and requires manual intervention.

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Number	Indicator	Color	Description
3	USB	Red and green	Off: No USB flash drive is connected to the router, the USB interface has failed, or the USB indicator has failed. Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is reading data from the USB flash drive. Steady red: The router fails to connect to or register with the network management system. Blinking red: An error has occurred when the system is executing the configuration file or reading data from the USB flash drive.
4	PPP	Green	Steady on: A PPP connection has been established. Off: No PPP connection is established.
5	VPN	Green	Steady on: A VPN connection has been established. Off: No VPN connection is established.
6	4G	Green	Steady on: The 4G signal strength is high. Fast blinking: The 4G signal strength is medium. Slow blinking: The 4G signal strength is low. Off: No 4G signal is available.
7	3G/2G	Green	Steady on: The 3G/2G signal strength is high. Fast blinking: The 3G/2G signal strength is medium. Slow blinking: The 3G/2G signal strength is low. Off: No 3G/2G signal is available.
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active. Blinking: Data is being transmitted or received over the 4G/3G/2G connection. Off: The 4G/3G/2G connection has not been established or is inactive.
9	VDSL	Green	Steady on: A link has been established on the VDSL interface. Blinking: Data is being transmitted or received on the VDSL interface. Off: No link is established on the VDSL interface.

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Number	Indicator	Color	Description
10	WAN	Green	Steady on: A link has been established on the WAN interface. Blinking: Data is being transmitted or received on the WAN interface. Off: No link is established on the WAN interface.
11	LAN	Green	Steady on: A link has been established on the LAN interface. Blinking: Data is being transmitted or received on the LAN interface. Off: No link is established on the LAN interface.
12	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The WLAN link is shut down.

Interface Description

CON/RS232 Interface

The CON/RS232 interface of a router can connect to an operation terminal for onsite configuration. **Table 2-496** lists attributes of the CON/RS232 interface.

Table 2-496 CON/RS232 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-497** lists attributes of a GE electrical interface.

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Table 2-497 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-498** lists attributes of a USB interface.

Table 2-498 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

LTE Antenna Interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives LTE signals, and the secondary antenna helps improve the quality of received LTE signals. **Table 2-499** lists attributes of an LTE antenna interface.

Table 2-499 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF

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Attribute	Description
Standards compliance and frequency bands supported	● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● LTE FDD: Band 1/2/3/4/5/7/8/20
Rate	● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate 14.4 kbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	**LTE Antenna**

VDSL Interface

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 2-500** lists attributes of a VDSL interface.

Table 2-500 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

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Attribute	Description
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 2-501** lists attributes of a Wi-Fi antenna interface.

Table 2-501 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n/ac
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	867 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi/3.0 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**Wi-Fi Antenna**

Heat Dissipation

The AR509GW-L-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-502 lists technical specifications of the AR509GW-L-D-H router.

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Table 2-502 AR509GW-L-D-H technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	190 mm x 220 mm x 44 mm (7.5 in. x 8.7 in. x 1.7 in.)
Weight	1.52 kg (3.35 lb)
Power specifications	
Rated input voltage (DC)	12 V
Maximum input voltage (DC)	10.8 V to 13.2 V
Maximum output current	2 A
RPS power supply	Not supported
PoE power supply	Supported
Power consumption	
Maximum power consumption	12 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/RS232 interfaces	1 (RJ45)
USB 2.0 interfaces	1

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Item	Specification
Service interfaces	WAN interfaces: one GE electrical interface, one VDSL interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating environment temperature	● PoE power supply used: 0°C to +40°C (32°F to 104°F) ● PoE power supply not used: -25°C to +60°C (-13°F to +140°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to 185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.8 AR510 Series

2.8.1 AR511GW-LAV2M3

Version Mapping

Table 2-503 lists the mapping between the AR511GW-LAV2M3 router and software versions.

Table 2-503 Mapping between the AR511GW-LAV2M3 router and software versions

Router Model	Software Version
AR511GW-LAV2M3	V200R005C30 and later versions

Appearance and Structure

Appearance

Figure 2-177 shows the appearance of the AR511GW-LAV2M3 router.

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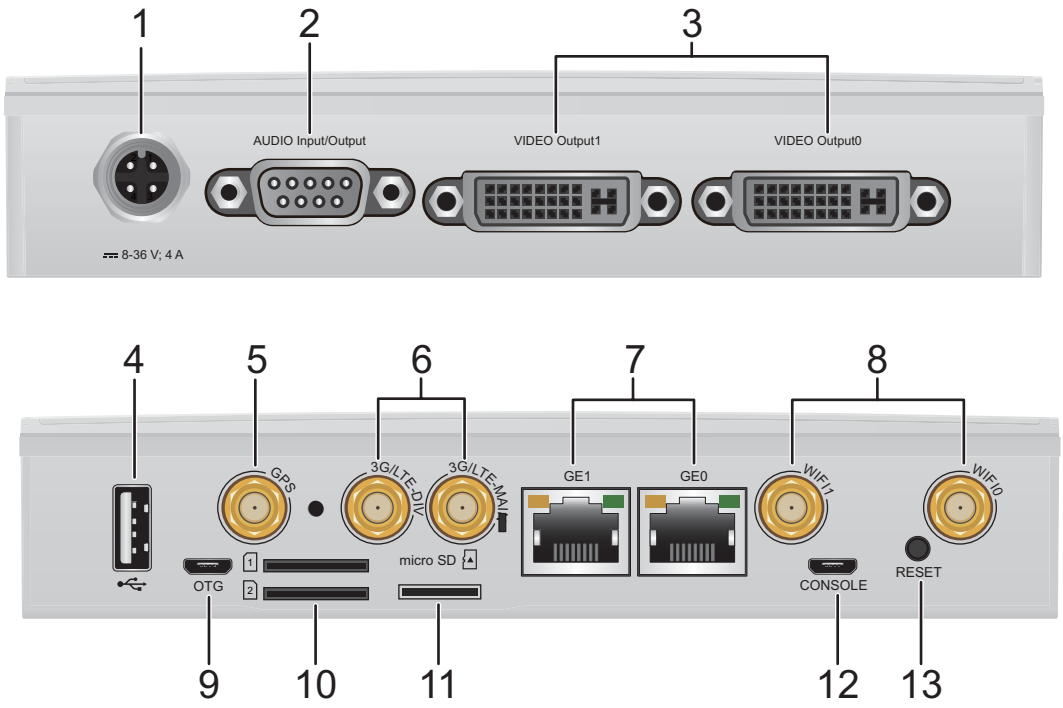
Figure 2-177 AR511GW-LAV2M3 appearance



1	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	2	**Audio interface**
3	Two **video interfaces**	4	**USB interface (host)**
5	**GPS antenna interface**	6	**3G/LTE antenna interface**
7	WAN interfaces: two **GE electrical interfaces**	8	Two **Wi-Fi antenna interfaces**
9	**USB interface (OTG)**	10	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
11	Micro SD card slot	12	**CONSOLE interface**

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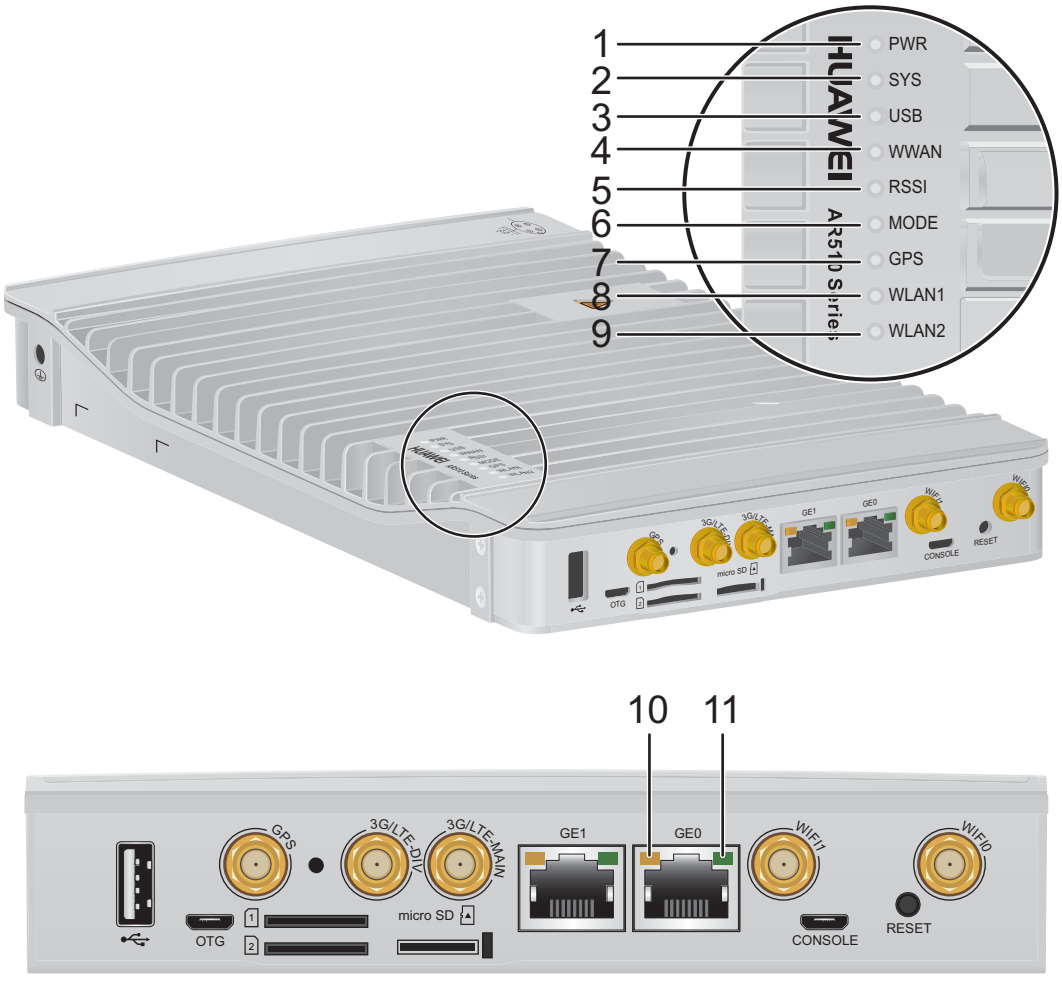
13	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-

Indicator Description

Figure 2-178 shows indicators on the AR511GW-LAV2M3 router.

Figure 2-178 Indicators on the AR511GW-LAV2M3



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	MODE	Green	Steady on: An LTE connection has been established.
			Slow blinking: A 3G/2G connection has been established.
			Off: No LTE, 3G, or 2G connection is available.

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Number	Indicator	Color	Description
7	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: ● 10: ACT indicator ● 11: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

Audio Interface

An audio interface provides two stereo audio outputs (one of which is the internal amplifier) and one stereo audio input. **Table 2-504** lists attributes of an audio interface.

Table 2-504 Audio interface attributes

Attribute	Description
Connector type	DB9 angle socket
Interface definition	Two audio outputs and one audio input
Cable type	**Audio cable**

Video Interface

A video interface supports three formats of video outputs: HDMI, CVBS, and YPrPb. **Table 2-505** lists attributes of a video interface.

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Table 2-505 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	● HDMI signal ● CVBS (composite video) signal ● YPbPr (analog component) signal
Cable type	**Video cable**

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 2-506** lists attributes of the console interface.

Table 2-506 Console interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB 2.0
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Cable type	Micro USB data cable

3G/LTE Antenna Interface

3G/LTE antenna interfaces of a router include a primary antenna interface and a diversity antenna interface. The primary antenna interface receives and transmits 3G/LTE signals, and the diversity antenna interface helps improve quality of received 3G/LTE signals. **Table 2-507** lists attributes of a 3G/LTE antenna interface.

Table 2-507 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	● LTE FDD: Band 1/2/3/5/7/8/20 ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)

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Attribute	Description
Rate	● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
Cable type	● LTE primary antenna interface: **primary LTE remote antenna** ● LTE diversity antenna interface: **GPS+LTE remote diversity antenna**

GPS Antenna Interface

A GPS antenna interface can connect to a GPS+LTE remote diversity antenna to provide the GPS positioning function. **Table 2-508** lists attributes of a GPS antenna interface.

Table 2-508 GPS antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	1575 MHz
Cable type	**GPS+LTE remote diversity antenna**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-509** lists attributes of a GE electrical interface.

Table 2-509 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-510** lists attributes of a USB interface.

Table 2-510 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

USB Interface (OTG)

A USB interface (OTG) is also called a Micro USB interface. It can connect to an operation terminal for onsite configuration. **Table 2-511** lists attributes of a Micro USB interface.

Table 2-511 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB2.0
Working mode	OTG

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Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-512** lists attributes of a Wi-Fi antenna interface.

Table 2-512 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**4.2.5 Wi-Fi Button Remote Antenna**

Heat Dissipation

The AR511GW-LAV2M3 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-513 lists technical specifications of the AR511GW-LAV2M3 router.

Table 2-513 AR511GW-LAV2M3 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand flash memory	2 GB
EMMC flash memory	4 GB

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Item	Specification
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	275.0 mm x 160.0 mm x 30.0 mm (10.8 in. x 6.3 in. x 1.2 in.)
Weight	1.3 kg (2.87 lb)
Power specifications	
Rated input voltage (DC)	12 V/24 V **NOTE** The router has two power terminals for DC power supply and supports power supply control using a power key.
Maximum input voltage (DC)	8 V DC to 36 V DC
Maximum output current	4A
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	30 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and two 3G/LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia service interfaces: one GPS antenna interface, one audio interface, and two video interfaces

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Item	Specification
Extended slots	Not supported
Environment parameters	
Operating temperature	-10°C to +60°C (14°F to 140°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.8.2 AR511CGW-LAV2M3

Version Mapping

Table 2-514 lists the mapping between the AR511CGW-LAV2M3 router and software versions.

Table 2-514 Mapping between the AR511CGW-LAV2M3 router and software versions

Router Model	Software Version
AR511CGW-LAV2M3	V200R006C15 and later versions

Appearance and Structure

Appearance

Figure 2-179 shows the appearance of the AR511CGW-LAV2M3 router.

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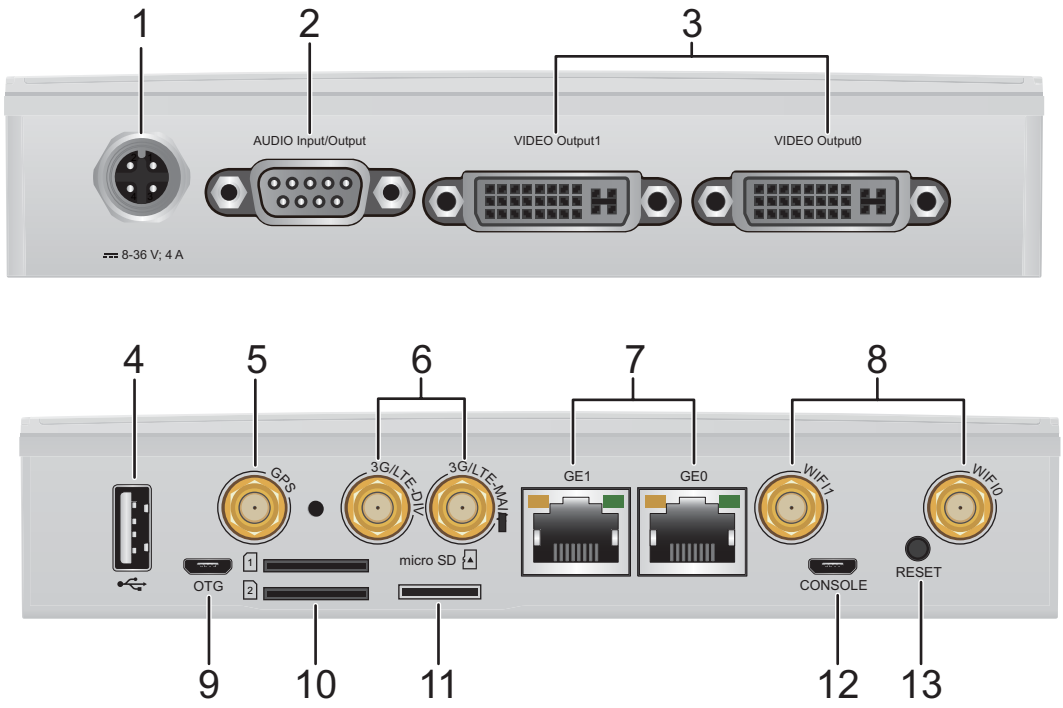
Figure 2-179 AR511CGW-LAV2M3 appearance



1	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	2	**Audio interface**
3	Two **video interfaces**	4	**USB interface (host)**
5	**GPS antenna interface**	6	**3G/LTE antenna interface**
7	WAN interfaces: two **GE electrical interfaces**	8	Two **Wi-Fi antenna interfaces**
9	**USB interface (OTG)**	10	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
11	Micro SD card slot	12	**CONSOLE interface**

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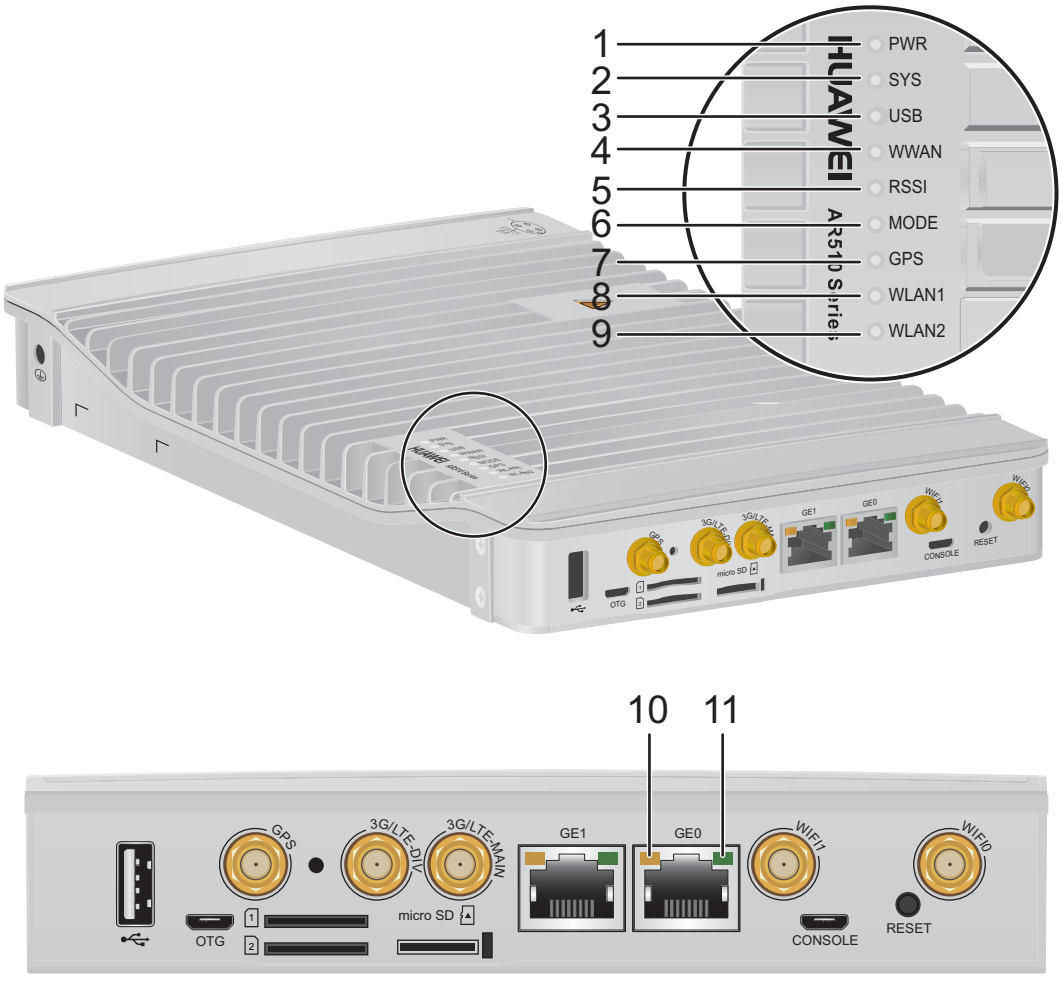
13	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-

Indicator Description

Figure 2-180 shows indicators on the AR511CGW-LAV2M3 router.

Figure 2-180 Indicators on the AR511CGW-LAV2M3



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	MODE	Green	Steady on: An LTE connection has been established.
			Slow blinking: A 3G/2G connection has been established.
			Off: No LTE, 3G, or 2G connection is available.

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Number	Indicator	Color	Description
7	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: ● 10: ACT indicator ● 11: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

Audio Interface

An audio interface provides two stereo audio outputs (one of which is the internal amplifier) and one stereo audio input. **Table 2-515** lists attributes of an audio interface.

Table 2-515 Audio interface attributes

Attribute	Description
Connector type	DB9 angle socket
Interface definition	Two audio outputs and one audio input
Cable type	**Audio cable**

Video Interface

A video interface supports three formats of video outputs: HDMI, CVBS, and YPrPb. **Table 2-516** lists attributes of a video interface.

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Table 2-516 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	● HDMI signal ● CVBS (composite video) signal ● YPbPr (analog component) signal
Cable type	**Video cable**

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 2-517** lists attributes of the console interface.

Table 2-517 Console interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB 2.0
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Cable type	Micro USB data cable

3G/LTE Antenna Interface

3G/LTE antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary and secondary antennas work together. The primary antenna transmits and receives 3G/LTE signals, and the secondary antenna helps improve the quality of received 3G/LTE signals. **Table 2-518** lists attributes of a 3G/LTE antenna interface.

Table 2-518 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	● FDD LTE: Band 1/3/8 ● TDD LTE: Band 38/39/40/41 ● HSPA+: Band 1/2/5/8 ● TD-SCDMA: Band 34/39 ● GSM/GPRS/EDGE: 900/1800/1900 (MHz)

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Attribute	Description
Rate	● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● LTE Time Division Duplexing (LTE TDD): uplink rate of 18 Mbit/s and downlink rate of 61 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● TD-HSPA+: uplink rate of 2.2 Mbit/s and downlink rate of 4.2 Mbit/s ● General packet radio service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 236.86 kbit/s and downlink rate of 236.86 kbit/s ● Wideband Code Division Multiple Access circuit switched (WCDMA CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● WCDMA packet switched (PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	● LTE primary antenna interface: **primary LTE remote antenna** ● LTE diversity antenna interface: **GPS+LTE remote diversity antenna**

GPS Antenna Interface

A GPS antenna interface can connect to a GPS+LTE remote diversity antenna to provide the GPS positioning function. **Table 2-519** lists attributes of a GPS antenna interface.

Table 2-519 GPS antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	1575 MHz
Cable type	**GPS+LTE remote diversity antenna**

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GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-520** lists attributes of a GE electrical interface.

Table 2-520 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-521** lists attributes of a USB interface.

Table 2-521 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

USB Interface (OTG)

A USB interface (OTG) is also called a Micro USB interface. It can connect to an operation terminal for onsite configuration. **Table 2-522** lists attributes of a Micro USB interface.

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Table 2-522 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB2.0
Working mode	OTG

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-523** lists attributes of a Wi-Fi antenna interface.

Table 2-523 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**4.2.5 Wi-Fi Button Remote Antenna**

Heat Dissipation

The AR511CGW-LAV2M3 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-524 lists technical specifications of the AR511CGW-LAV2M3 router.

Table 2-524 AR511CGW-LAV2M3 technical specifications

Item	Specification
System parameters	

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Item	Specification
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand flash memory	1 GB
EMMC flash memory	4 GB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	275.0 mm x 160.0 mm x 30.0 mm (10.8 in. x 6.3 in. x 1.2 in.)
Weight	1.3 kg (2.87 lb)
Power specifications	
Rated input voltage (DC)	12 V/24 V **NOTE** The router has two power terminals for DC power supply and supports power supply control using a power key.
Maximum input voltage (DC)	8 V DC to 36 V DC
Maximum output current	4A
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	30 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None
Console interfaces	1 (Micro USB)

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Item	Specification
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and two 3G/LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia service interfaces: one GPS antenna interface, one audio interface, and two video interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	-10°C to +60°C (14°F to 140°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.8.3 AR511GW-LM7

Version Mapping

Table 2-525 lists the mapping between the AR511GW-LM7 router and software versions.

Table 2-525 Mapping between the AR511GW-LM7 router and software versions

Router Model	Software Version
AR511GW-LM7	V200R005C31 and later versions

Appearance and Structure

Appearance

Figure 2-181 shows the appearance of the AR511GW-LM7 router.

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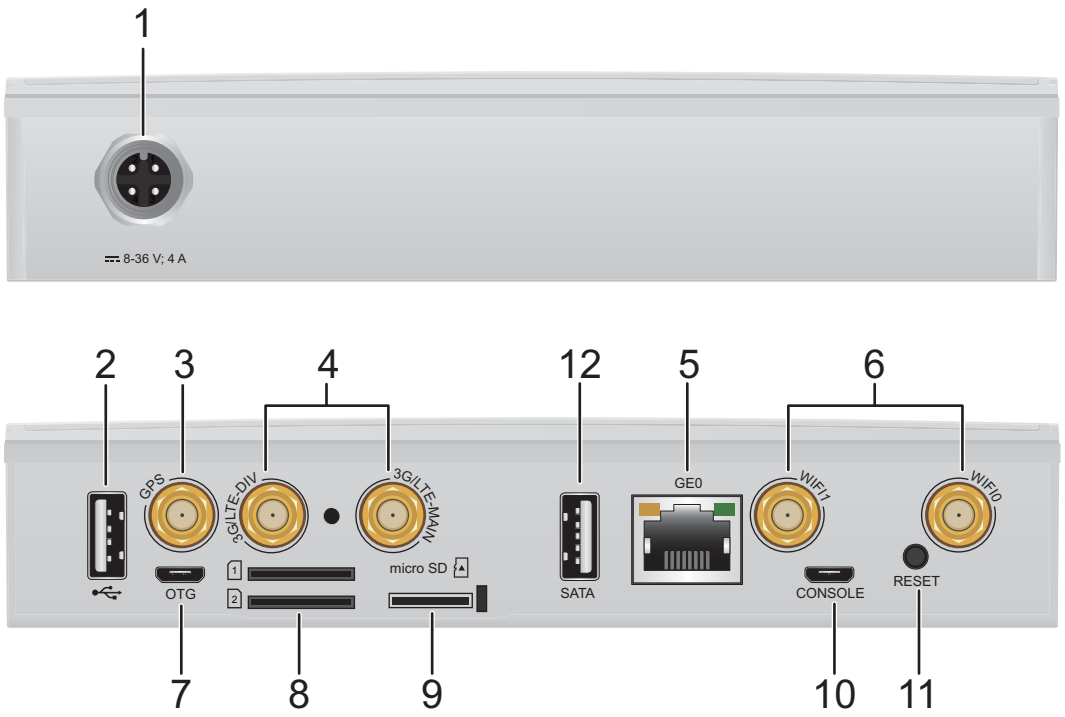
Figure 2-181 AR511GW-LM7 appearance



1	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	2	**USB interface (host)**
3	**GPS antenna interface**	4	**3G/LTE antenna interface**
5	WAN interface: one **GE electrical interface**	6	Two **Wi-Fi antenna interfaces**
7	**USB interface (OTG)**	8	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
9	Micro SD card slot	10	**CONSOLE interface**

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11	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	12	**mSATA Interface** **NOTE** This interface can have a mini SATA (mSATA) hard disk connected but the mSATA hard disk is not hot swappable.

Indicator Description

Figure 2-182 shows indicators on the AR511GW-LM7 router.

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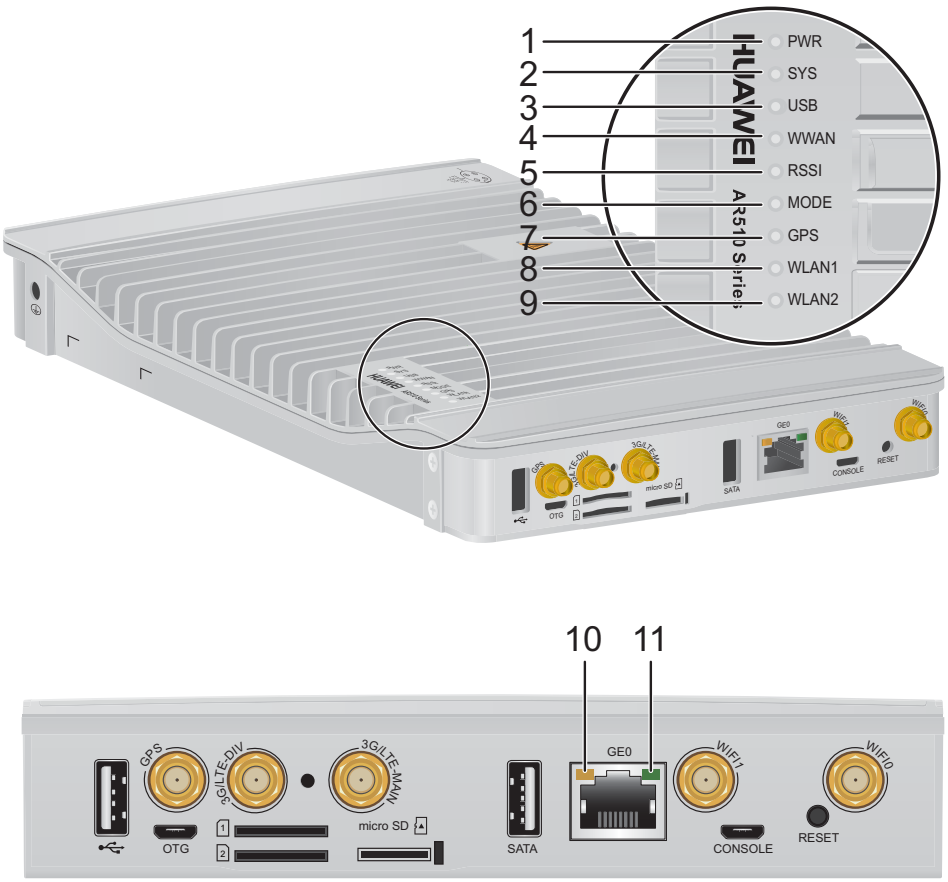
Figure 2-182 Indicators on the AR511GW-LM7



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	MODE	Green	Steady on: An LTE connection has been established.
			Slow blinking: A 3G/2G connection has been established.
			Off: No LTE, 3G, or 2G connection is available.

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Number	Indicator	Color	Description
7	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: ● 10: ACT indicator ● 11: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 2-526 lists attributes of the console interface.

Table 2-526 Console interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB 2.0
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Cable type	Micro USB data cable

3G/LTE Antenna Interface

3G/LTE antenna interfaces of a router include a primary antenna interface and a diversity antenna interface. The primary antenna interface receives and transmits 3G/LTE signals, and

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the diversity antenna interface helps improve quality of received 3G/LTE signals. **Table 2-527** lists attributes of a 3G/LTE antenna interface.

Table 2-527 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	● LTE FDD: Band 1/2/3/5/7/8/20 ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
Cable type	● LTE primary antenna interface: **primary LTE remote antenna** ● LTE diversity antenna interface: **GPS+LTE remote diversity antenna**

GPS Antenna Interface

A GPS antenna interface can connect to a GPS+LTE remote diversity antenna to provide the GPS positioning function. **Table 2-528** lists attributes of a GPS antenna interface.

Table 2-528 GPS antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	1575 MHz
Cable type	**GPS+LTE remote diversity antenna**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-529** lists attributes of a GE electrical interface.

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Table 2-529 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-530** lists attributes of a USB interface.

Table 2-530 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

USB Interface (OTG)

A USB interface (OTG) is also called a Micro USB interface. It can connect to an operation terminal for onsite configuration. **Table 2-531** lists attributes of a Micro USB interface.

Table 2-531 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB2.0
Working mode	OTG

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Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-532** lists attributes of a Wi-Fi antenna interface.

Table 2-532 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**4.2.5 Wi-Fi Button Remote Antenna**

mSATA Interface

The mSATA interface of a router can connect to a mini Serial Advanced Technology Attachment (mSATA) hard disk to provide a large storage space. **Table 2-533** lists attributes of the mSATA interface.

Table 2-533 mSATA interface attributes

Attribute	Description
Connector type	USB3.0
Standards compliance	● AHCI ● NCQ
Hard disk type	mSATA hard disk

Heat Dissipation

The AR511GW-LM7 router has no fans and uses natural heat dissipation.

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Technical Specifications

Table 2-534 lists technical specifications of the AR511GW-LM7 router.

Table 2-534 AR511GW-LM7 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand flash memory	2 GB
EMMC flash memory	4 GB
Micro SD card (default: sd1)	None
Hard disk	Supported
Dimensions and weight	
Dimensions (W x D x H)	275.0 mm x 160.0 mm x 30.0 mm (10.8 in. x 6.3 in. x 1.2 in.)
Weight	1.3 kg (2.87 lb)
Power specifications	
Rated input voltage (DC)	12 V/24 V **NOTE** The router has two power terminals for DC power supply and supports power supply control using a power key.
Maximum input voltage (DC)	8 V DC to 36 V DC
Maximum output current	4 A
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	25 W
Heat dissipation	
Fans	None

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Item	Specification
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and two 3G/LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia interface: mSATA interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to +50°C (32°F to 122°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.8.4 AR511GW-L-B3

Version Mapping

Table 2-535 lists the mapping between the AR511GW-L-B3 router and software versions.

Table 2-535 Mapping between the AR511GW-L-B3 router and software versions

Router Model	Software Version
AR511GW-L-B3	V200R005C32 and later versions

Appearance and Structure

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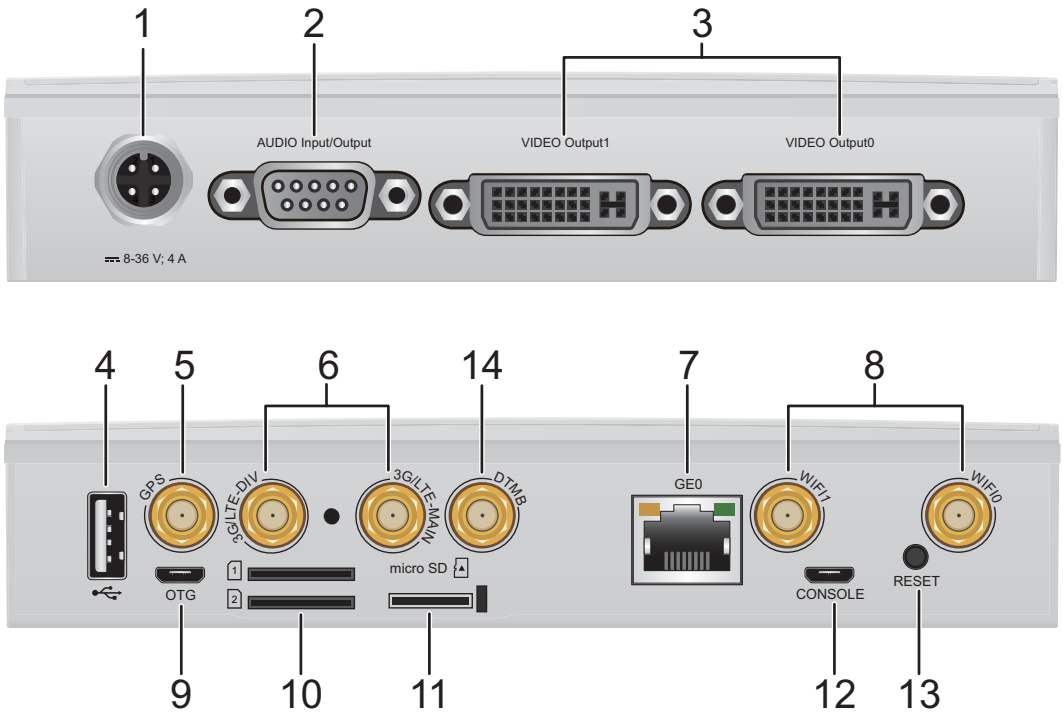
Appearance

Figure 2-183 shows the appearance of the AR511GW-L-B3 router.

Figure 2-183 AR511GW-L-B3 appearance



1	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	2	**Audio interface**
3	Two **video interfaces**	4	**USB interface (host)**
5	**GPS antenna interface**	6	**3G/LTE antenna interface**
7	WAN interface: one **GE electrical interface**	8	Two **Wi-Fi antenna interfaces**
9	**USB interface (OTG)**	10	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● Industrial SIM cards are recommended for the router. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
11	Micro SD card slot	12	**CONSOLE interface**

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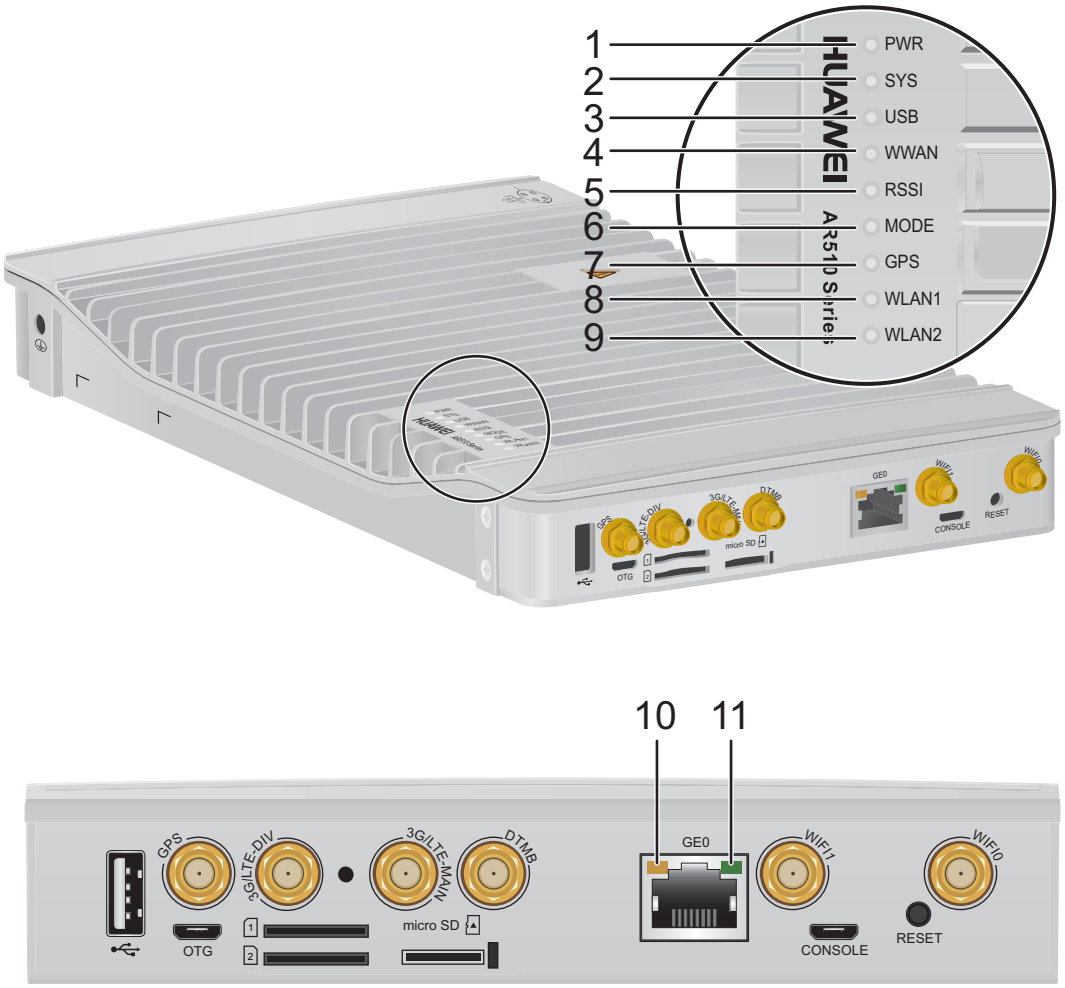
13	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	14	**DTMB interface**

Indicator Description

Figure 2-184 shows indicators on the AR511GW-L-B3 router.

Figure 2-184 Indicators on the AR511GW-L-B3



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	MODE	Green	Steady on: An LTE connection has been established.
			Slow blinking: A 3G/2G connection has been established.
			Off: No LTE, 3G, or 2G connection is available.

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Number	Indicator	Color	Description
7	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: ● 10: ACT indicator ● 11: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

Audio Interface

An audio interface provides two stereo audio outputs (one of which is the internal amplifier) and one stereo audio input. **Table 2-536** lists attributes of an audio interface.

Table 2-536 Audio interface attributes

Attribute	Description
Connector type	DB9 angle socket
Interface definition	Two audio outputs and one audio input
Cable type	**Audio cable**

Video Interface

A video interface supports three formats of video outputs: HDMI, CVBS, and YPrPb. **Table 2-537** lists attributes of a video interface.

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Table 2-537 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	● HDMI signal ● CVBS (composite video) signal ● YPbPr (analog component) signal
Cable type	**Video cable**

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 2-538** lists attributes of the console interface.

Table 2-538 Console interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB 2.0
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Cable type	Micro USB data cable

3G/LTE Antenna Interface

3G/LTE antenna interfaces of a router include a primary antenna interface and a diversity antenna interface. The primary antenna interface receives and transmits 3G/LTE signals, and the diversity antenna interface helps improve quality of received 3G/LTE signals. **Table 2-539** lists attributes of a 3G/LTE antenna interface.

Table 2-539 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	● LTE FDD: Band 1/2/3/5/7/8/20 ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)

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Attribute	Description
Rate	● LTE Frequency Division Duplexing (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● Dual Carrier High Speed Packet Access Plus (DC-HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
Cable type	● LTE primary antenna interface: **primary LTE remote antenna** ● LTE diversity antenna interface: **GPS+LTE remote diversity antenna**

GPS Antenna Interface

A GPS antenna interface can connect to a GPS+LTE remote diversity antenna to provide the GPS positioning function. **Table 2-540** lists attributes of a GPS antenna interface.

Table 2-540 GPS antenna interface attributes

Attribute	Description
Connector type	SMA RF
Frequency bands supported	1575 MHz
Cable type	**GPS+LTE remote diversity antenna**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-541** lists attributes of a GE electrical interface.

Table 2-541 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-542** lists attributes of a USB interface.

Table 2-542 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

USB Interface (OTG)

A USB interface (OTG) is also called a Micro USB interface. It can connect to an operation terminal for onsite configuration. **Table 2-543** lists attributes of a Micro USB interface.

Table 2-543 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB2.0
Working mode	OTG

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Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-544** lists attributes of a Wi-Fi antenna interface.

Table 2-544 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**4.2.5 Wi-Fi Button Remote Antenna**

DTMB Interface

A DTMB antenna interface connects to a DTMB remote antenna to receive and send digital TV signals. **Table 2-545** lists attributes of a DTMB antenna interface.

Table 2-545 DTMB antenna interface attributes

Attribute	Description
Connector type	SMA-K
Frequency bands supported	● All channels in the very high frequency (VHF) band ● All channels in the ultra high frequency (UHF) band
Standards compliance	GB20600-2006
Cable type	**DTMB remote antenna**

Heat Dissipation

The AR511GW-L-B3 router has no fans and uses natural heat dissipation.

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Technical Specifications

Table 2-546 lists technical specifications of the AR511GW-L-B3 router.

Table 2-546 AR511GW-L-B3 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand flash memory	1 GB
EMMC flash memory	4 GB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	275.0 mm x 160.0 mm x 30.0 mm (10.8 in. x 6.3 in. x 1.2 in.)
Weight	1.3 kg (2.87 lb)
Power specifications	
Rated input voltage (DC)	12 V/24 V **NOTE** The router has two power terminals for DC power supply and supports power supply control using a power key.
Maximum input voltage (DC)	8 V DC to 36 V DC
Maximum output current	4 A
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	30 W
Heat dissipation	
Fans	None

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Item	Specification
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and two 3G/LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia service interfaces: one GPS antenna interface, one audio interface, two video interfaces, and one DTMB interface
Extended slots	Not supported
Environment parameters	
Operating temperature	-10°C to +60°C (14°F to 140°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.8.5 AR513W-V3M8

Version Mapping

Table 2-547 lists the mapping between the AR513W-V3M8 router and software versions.

Table 2-547 Mapping between the AR513W-V3M8 router and software versions

Router Model	Software Version
AR513W-V3M8	V200R005C32 and later versions

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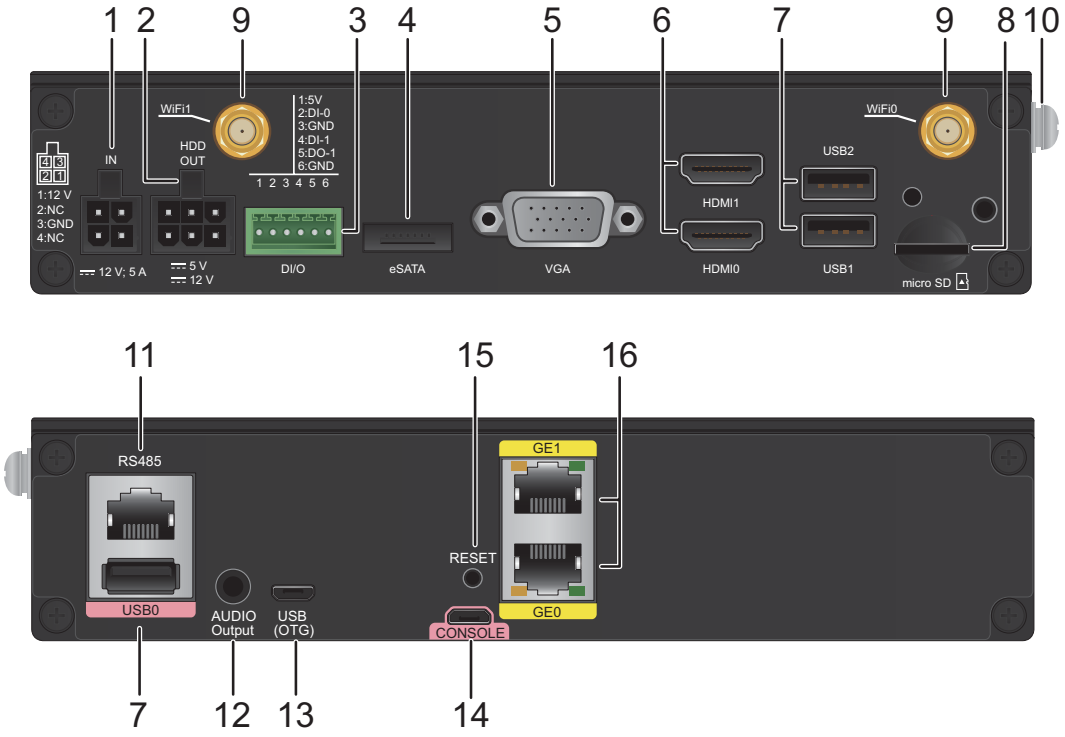
Appearance and Structure

Appearance

Figure 2-185 shows the appearance of the AR513W-V3M8 router.

Figure 2-185 AR513W-V3M8 appearance



1	Power jack **NOTE** Use a DC power cable to connect the router to a power source.	2	SATA hard disk power jack
3	**DI/O interface** **NOTE** Connect cables according to the signal types identified above the DI/O interfaces.	4	**eSATA interface** **NOTE** This interface can have an external SATA (eSATA) hard disk connected. The eSATA hard disk and its data cable and power cable are hot swappable.
5	**VGA interface**	6	**HDMI video interface**
7	Three **USB interfaces (host)**	8	Micro SD card slot

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9	Two **Wi-Fi antenna interfaces**	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	RS485 interface **NOTE** The router does not support RS485 serial interface functions. This interface is reserved for future use.	12	**Audio interface (output)**
13	**USB interface (OTG)**	14	**CONSOLE interface**
15	RST button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	16	WAN interfaces: two **GE electrical interfaces**

Indicator Description

Figure 2-186 shows indicators on the AR513W-V3M8 router.

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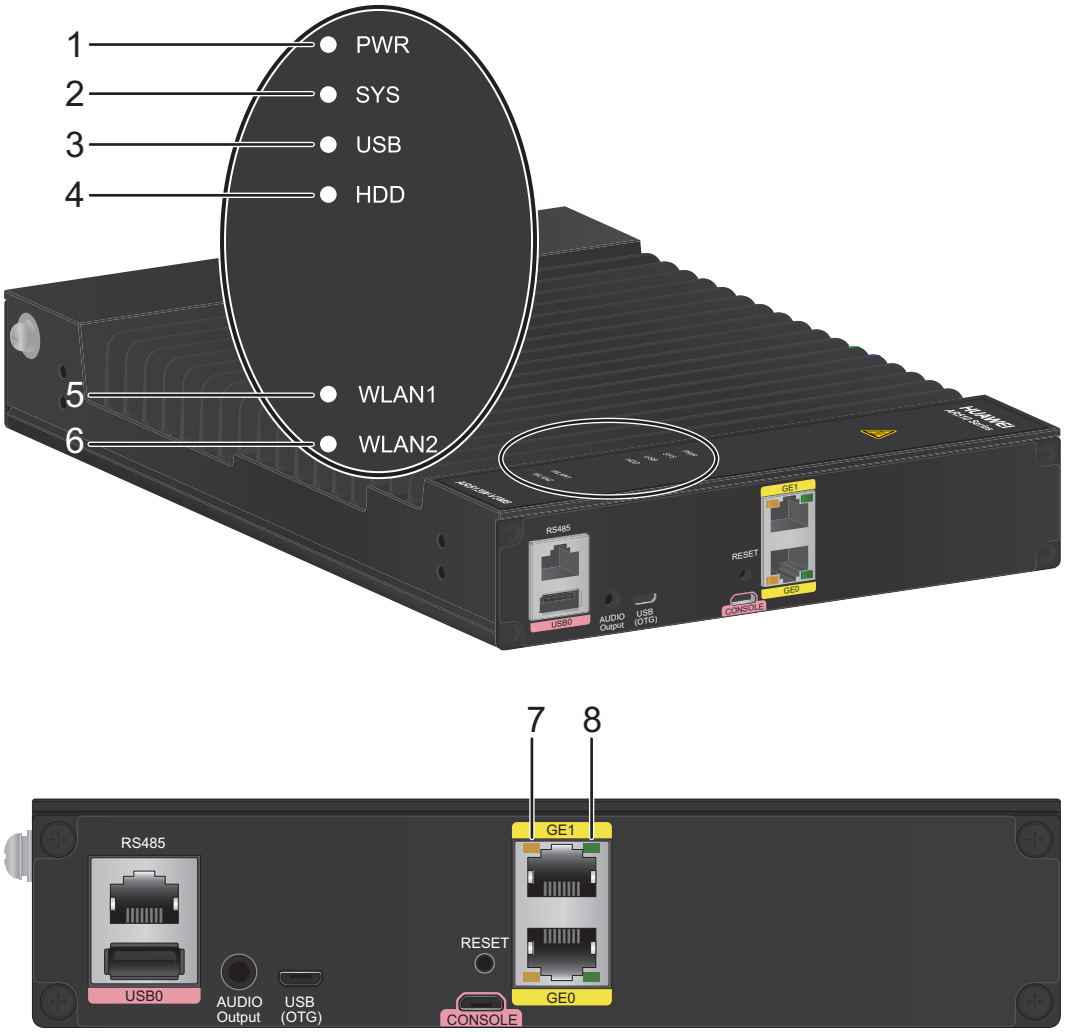
Figure 2-186 Indicators on the AR513W-V3M8



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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Number	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	HDD	Green	Steady on: A hard disk has been connected to the router.
			Blinking: The hard disk is transmitting data.
			Off: No hard disk is connected to the router.
5	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
6	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
7 and 8	GE electrical interface indicators: ● 7: ACT indicator ● 8: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

DI/O Interface

DI/O interfaces of a router can connect to door status sensors and infrared sensors. **Table 2-548** lists attributes of DI/O interfaces.

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Table 2-548 DI/DO interface attributes

Attribute	Description
Connector type	Phoenix terminal block
Level	5 V

eSATA Interface

An external SATA (eSATA) interface can connect to a SATA hard disk to provide a large storage space. **Table 2-549** lists attributes of an eSATA interface.

Table 2-549 eSATA interface attributes

Attribute	Description
Connector type	eSATA connector
Standards compliance	eSATA
Hard disk type	HDD
Cable type	**eSATA power and signal cable**

Audio Interface (Output)

An audio interface provides one stereo audio output. **Table 2-550** lists attributes of an audio interface.

Table 2-550 Audio interface attributes

Attribute	Description
Connector type	3.5 mm headset jack
Interface definition	One audio output
Cable type	**3.5 mm headset cable**

HDMI Video Interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. **Table 2-551** lists attributes of a HDMI interface.

Table 2-551 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector

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Attribute	Description
Signal types supported	HDMI signal
Cable type	**HDMI video cable**

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 2-552** lists attributes of the console interface.

Table 2-552 Console interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB 2.0
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Cable type	Micro USB data cable

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-553** lists attributes of a GE electrical interface.

Table 2-553 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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VGA Interface

A video graphics array (VGA) interface provides VGA video output. **Table 2-554** lists attributes of a VGA interface.

Table 2-554 VGA interface attributes

Attribute	Description
Connector type	VGA connector
Signal types supported	VGA signal
Cable type	**VGA video cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-555** lists attributes of a USB interface.

Table 2-555 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

USB Interface (OTG)

A USB interface (OTG) is also called a Micro USB interface. It can connect to an operation terminal for onsite configuration. **Table 2-556** lists attributes of a Micro USB interface.

Table 2-556 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB2.0
Working mode	OTG

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Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-557** lists attributes of a Wi-Fi antenna interface.

Table 2-557 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**4.2.5 Wi-Fi Button Remote Antenna**

Power Supply System

The AR513W-V3M8 has no built-in power modules and uses an external 60 W AC power module.

60 W AC Power Module

Figure 2-187 shows a 60 W AC power module.

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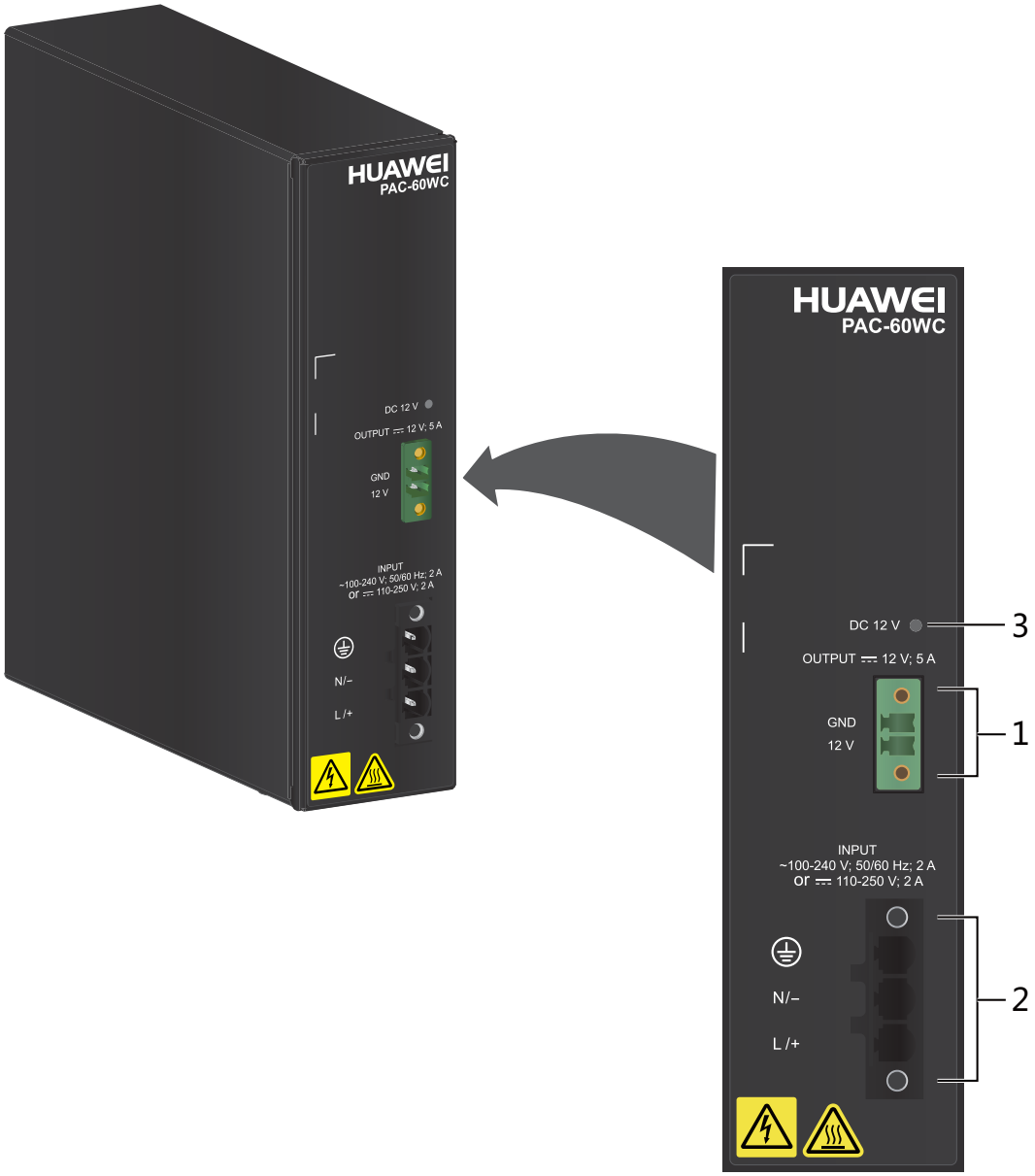
Figure 2-187 60 W AC power module



Number	Name	Description
1	2-pin DC output power socket	Connect a 2-pin DC power cable to this socket to supply power to the router.
2	AC/DC input power socket	Use a 3-pin AC/DC power cable to connect to power module to an external power source.
3	Power indicator (DC 12V)	● Steady green: The power output is normal. ● Off: The power output is abnormal. ● Blinking green: The power module is in hiccup protection state.

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Table 2-558 describes functions of the 60 W AC power module.

Table 2-558 Functions of the 60 W AC power module

Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	The power module provides input undervoltage protection, input overvoltage protection, and input overcurrent protection.
Output protection	The power module provides output overvoltage protection, output current limiting protection, and output short-circuit protection.
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overvoltage protection	The power module can automatically resume power supply from this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.

Table 2-559 lists technical specifications of the 60 W AC power module.

Table 2-559 Technical specifications of the 60 W AC power module

Item	Specification
Silkscreen	PAC-60WC
Dimensions (W x D x H)	40 mm x 133 mm x 150 mm (1.6 in. x 5.2 in. x 5.9 in.)
Weight	0.9 kg (15.2 lb)
Power input	
Rated input voltage range	● AC: -100 V to 240 V, 50/60 Hz ● DC: 110 V to 250 V

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Item	Specification
Maximum input voltage range	● AC: 90 V to 264 V ● DC: 88 V to 300 V
Power output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output current	5 A
Maximum output power	60 W

Heat Dissipation

The AR513W-V3M8 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-560 lists technical specifications of the AR513W-V3M8 router.

Table 2-560 AR513W-V3M8 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand flash memory	1 GB
EMMC flash memory	4 GB
Micro SD card (default: sd1)	None
Hard disk	Supported
Dimensions and weight	
Dimensions (W x D x H)	275.0 mm x 180.0 mm x 40.0 mm (10.9 in. x 7.1 in. x 1.6 in.)
Weight	2.3 kg (5.07 lb)

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Item	Specification
Power specifications	
Rated input voltage (DC)	12 V
Maximum input voltage (DC)	11.4 V DC to 12.6 V DC
Maximum output current	5 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	30 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	3
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia service interfaces: one DI/O interface, one VGA interface, two HDMI interfaces, and one eSATA hard disk interface
Extended slots	Not supported
Environment parameters	
Operating temperature	-10°C to +60°C (14°F to 140°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)

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Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9 AR1200 Series

2.9.1 AR1220-AC

Version Mapping

Table 2-561 lists the mapping between the AR1220-AC router and software versions.

Table 2-561 Mapping between the AR1220-AC router and software versions

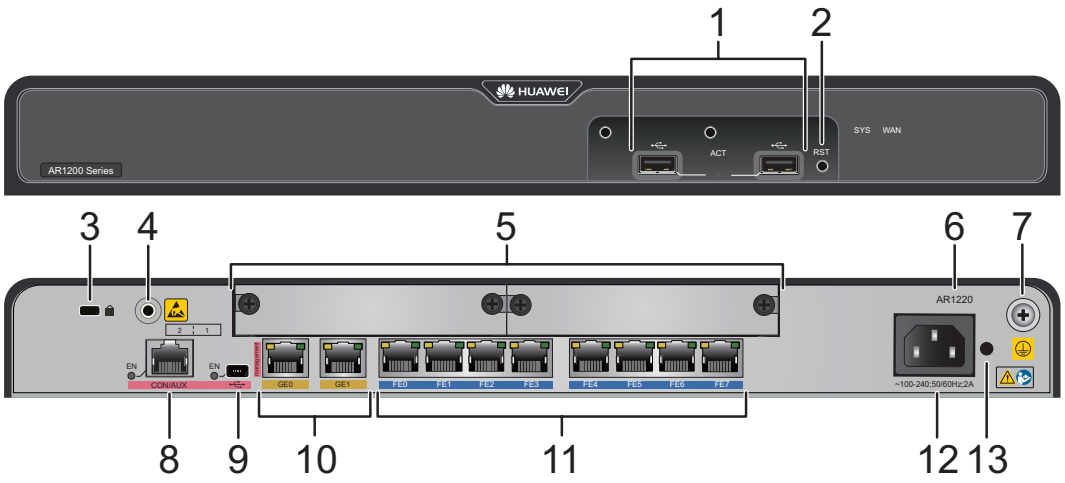
Router Model	Software Version
AR1220-AC	V200R001C00 and later versions

Appearance and Structure

Appearance

Figure 2-188 shows the appearance of the AR1220-AC router.

Figure 2-188 AR1220-AC appearance



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1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Security lock	4	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
5	Two SIC slots	6	Product model silkscreen
7	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	8	**CON/AUX interface** **NOTE** The AR1220-AC does not support AUX login.
9	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	10	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
11	LAN interfaces: eight **FE electrical interfaces**	12	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
13	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-189 shows the slots layout on the AR1220-AC router.

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Figure 2-189 Slot distribution of the AR1220-AC router

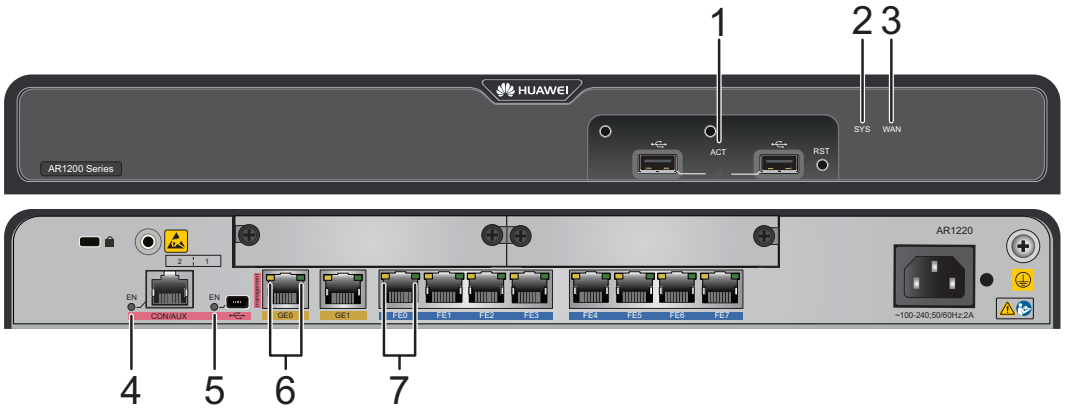
Device Model		Slot Distribution	Slot Combination
AR1220-AC	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-190 shows indicators on the AR1220-AC router.

Figure 2-190 Indicators on the AR1220-AC



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

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Number	Indicator	Color	Description
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (CON/AUX interface) **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.

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Number	Indicator	Color	Description
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-562** lists the CON/AUX interface attributes.

Table 2-562 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

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Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-563** lists attributes of a Mini USB interface.

Table 2-563 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-564** lists attributes of an FE electrical interface.

Table 2-564 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-565** lists attributes of a GE electrical interface.

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Table 2-565 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-566** lists attributes of a USB interface.

Table 2-566 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR1220-AC router has a built-in 60 W AC power module.

60 W AC Power Module

The 60 W AC power module of the AR1220-AC router is fixed in the chassis and cannot be removed. **Figure 2-191** shows the appearance of this power module.

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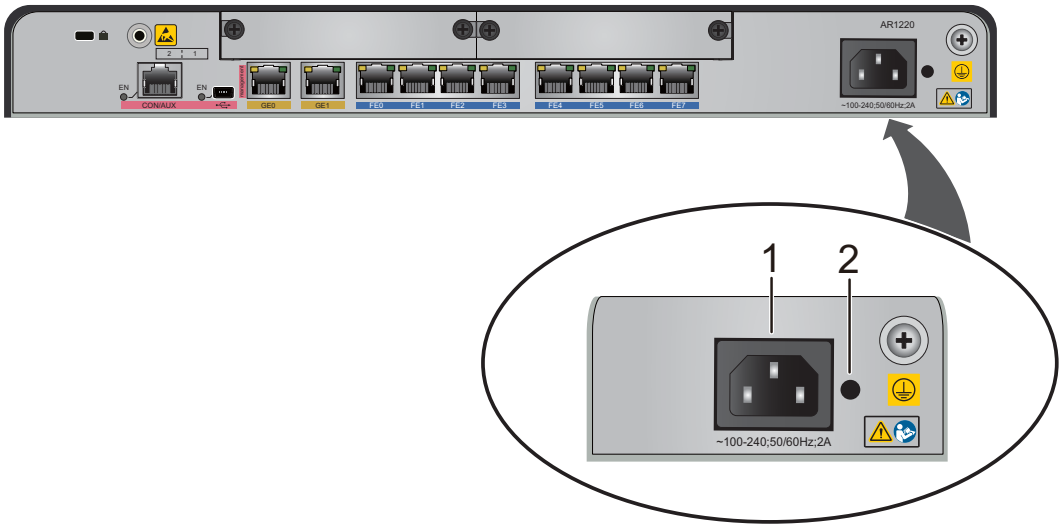
Figure 2-191 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-567 describes functions of the built-in 60 W AC power module.

Table 2-567 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-568 lists technical specifications of the 60 W AC power module.

Table 2-568 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

Heat Dissipation

The AR1220-AC router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in Figure 2-192. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

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Figure 2-192 Airflow

Technical Specifications

Table 2-569 lists technical specifications of the AR1220-AC router.

Table 2-569 AR1220-AC technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash memory	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	27 W
Maximum power consumption	32 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.2 AR1220V

Version Mapping

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Table 2-570 lists the mapping between the AR1220V router and software versions.

Table 2-570 Mapping between the AR1220V router and software versions

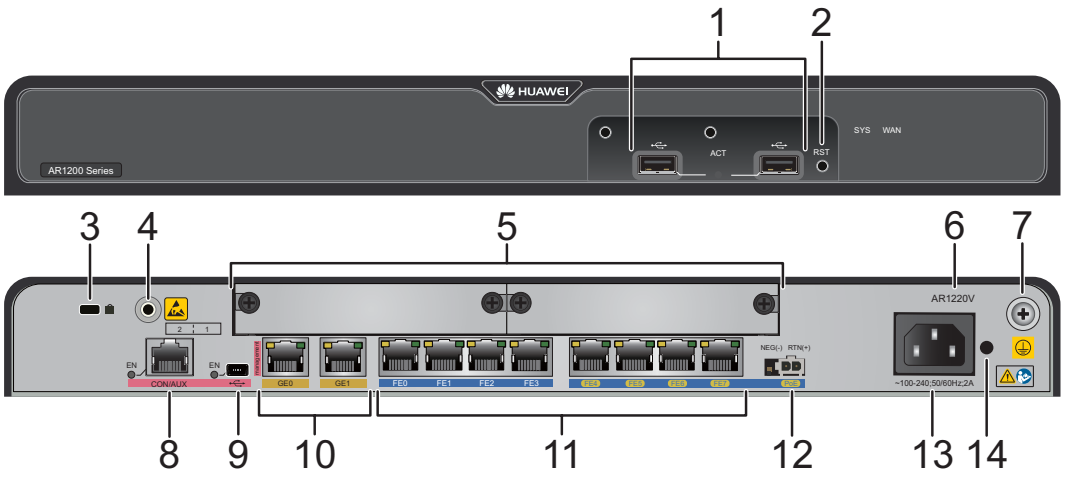
Router Model	Software Version
AR1220V	V200R001C00 and later versions

Appearance and Structure

Appearance

Figure 2-193 shows the appearance of the AR1220V router.

Figure 2-193 AR1220V appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.

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3	Security lock	4	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
5	Two SIC slots	6	Product model silkscreen
7	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	8	**CON/AUX interface** **NOTE** The AR1220V does not support AUX login.
9	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	10	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
11	LAN interfaces: eight **FE electrical interfaces**	12	PoE power jack **NOTE** The PoE power jack connects to a 100 W AC PoE power module to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.
13	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.	14	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-194 shows the slot distribution of the AR1220V router.

Figure 2-194 Slot distribution of the AR1220V router

Device Model		Slot Distribution	Slot Combination
AR1220V	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

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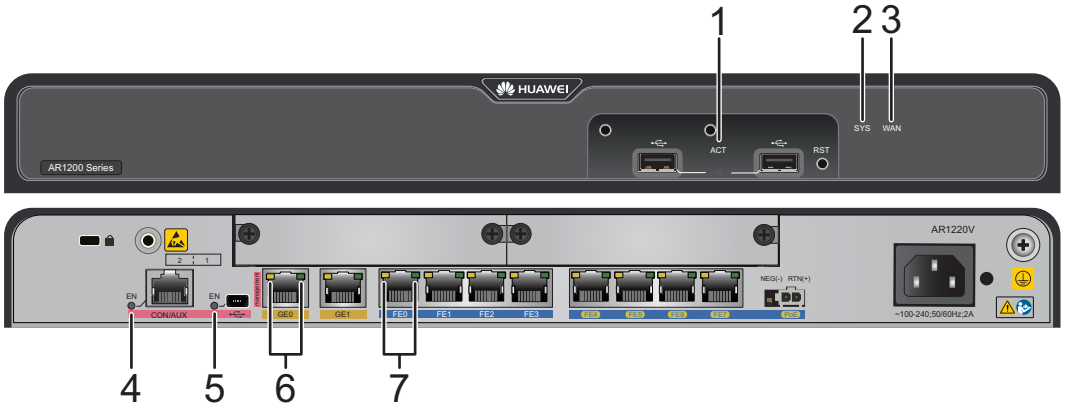
- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-195 shows indicators on the AR1220V router.

Figure 2-195 Indicators on the AR1220V



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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Number	Indicator	Color	Description
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (CON/AUX interface) **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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Number	Indicator	Color	Description
7	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-571** lists the CON/AUX interface attributes.

Table 2-571 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-572** lists attributes of a Mini USB interface.

Table 2-572 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0

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Attribute	Description
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-573** lists attributes of an FE electrical interface.

Table 2-573 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-574** lists attributes of a GE electrical interface.

Table 2-574 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-575** lists attributes of a USB interface.

Table 2-575 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR1220V router has a built-in 60 W AC power module. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its FE electrical interfaces.

60 W AC Power Module

The 60 W AC power module of the AR1220V router is fixed in the chassis and cannot be removed. **Figure 2-196** shows the appearance of this power module.

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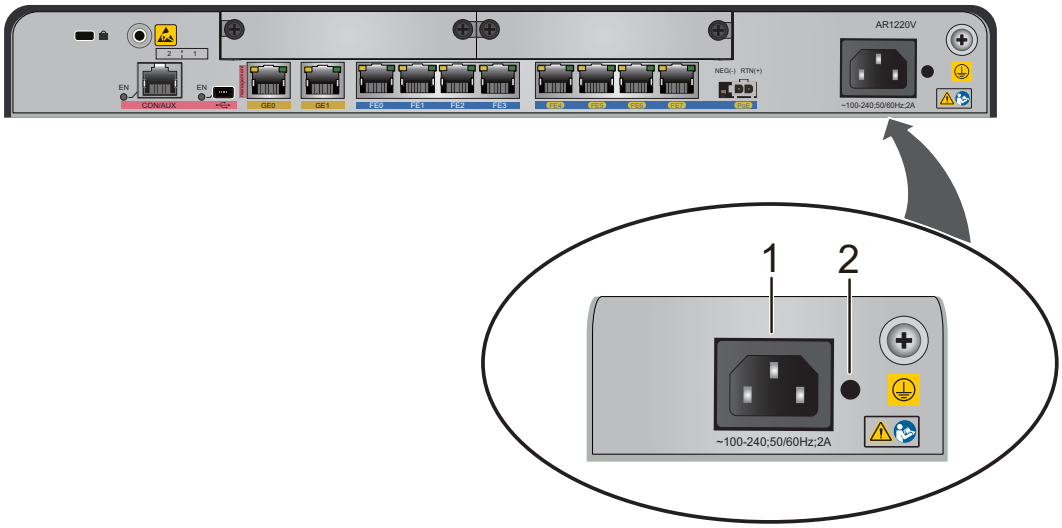
Figure 2-196 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-576 describes functions of the built-in 60 W AC power module.

Table 2-576 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-577 lists technical specifications of the 60 W AC power module.

Table 2-577 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. Figure 2-197 shows its appearance.

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Figure 2-197 Appearance of the 100 W AC PoE power module

Table 2-578 describes functions of the 100 W AC PoE power module.

Table 2-578 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-579 lists the specifications of the 100 W AC PoE power module.

Table 2-579 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz

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Item	Specification
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR1220V router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-198**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-198 Airflow

Technical Specifications

Table 2-580 lists technical specifications of the AR1220V router.

Table 2-580 AR1220V technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB

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Item	Specification
Flash Memory	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces FE4 to FE7)
Power consumption (empty chassis)	
Typical power consumption	29 W
Maximum power consumption	34 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)

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Item	Specification
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.3 AR1220-DC

Version Mapping

Table 2-581 lists the mapping between the AR1220-DC router and software versions.

Table 2-581 Mapping between the AR1220-DC router and software versions

Router Model	Software Version
AR1220-DC	V200R001C01, V200R002C02 and later versions **NOTE** V200R002C00 and V200R002C01

Appearance and Structure

Appearance

Figure 2-199 shows the appearance of the AR1220-DC router.

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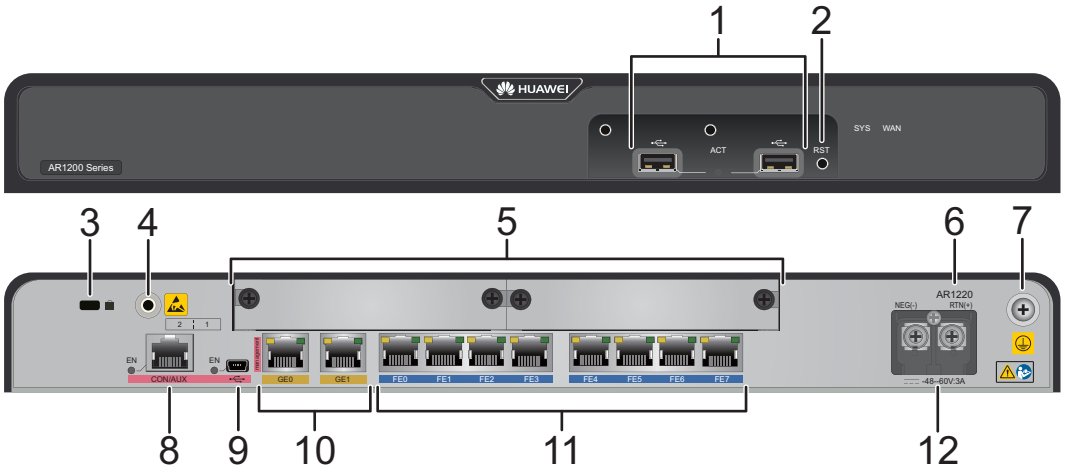
Figure 2-199 AR1220-DC appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Security lock	4	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
5	Two SIC slots	6	Product model silkscreen
7	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	8	**CON/AUX interface** **NOTE** The AR1220-DC does not support AUX login.
9	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	10	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.

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11	LAN interfaces: eight **FE electrical interfaces**	12	DC power terminals **NOTE** Use **DC power cables** to connect the router to an external power source.

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-200 shows the slot distribution of the AR1220-DC router.

Figure 2-200 Slot distribution of the AR1220-DC router

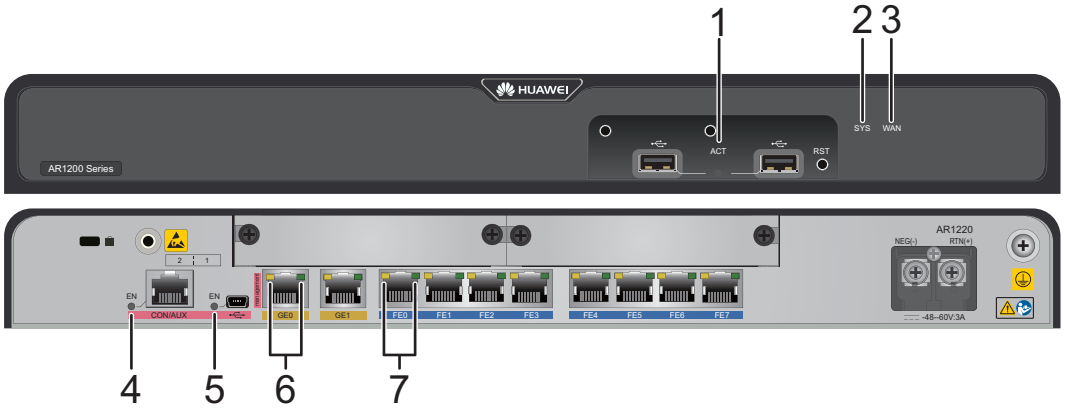
Device Model		Slot Distribution	Slot Combination
AR1220-DC	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-201 shows indicators on the AR1220-DC router.

Figure 2-201 Indicators on the AR1220-DC



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Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

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Number	Indicator	Color	Description
	NOTE ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The CON/AUX interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-582** lists the CON/AUX interface attributes.

Table 2-582 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-583** lists attributes of a Mini USB interface.

Table 2-583 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-584** lists attributes of an FE electrical interface.

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Table 2-584 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-585** lists attributes of a GE electrical interface.

Table 2-585 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-586** lists attributes of a USB interface.

Table 2-586 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

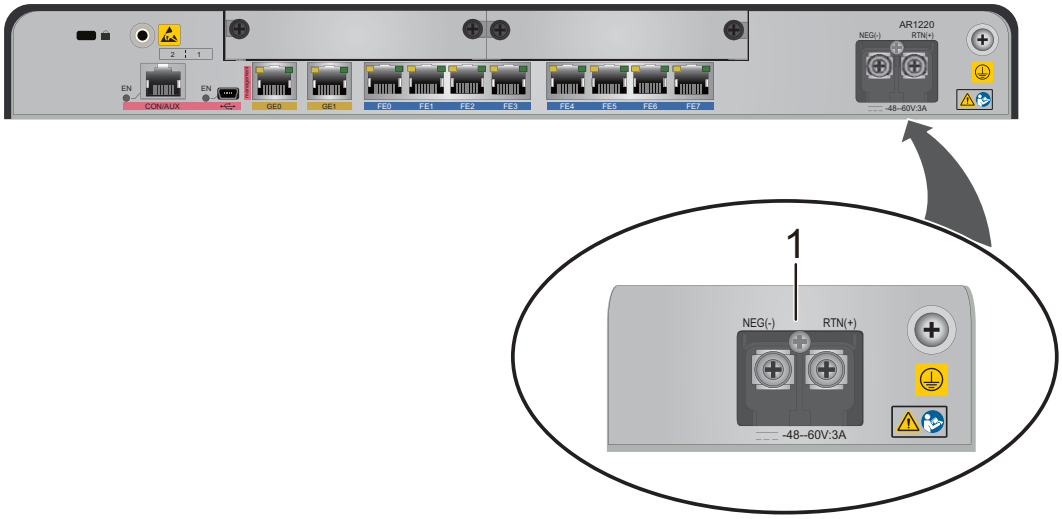
Power Supply System

The AR1220-DC router has a built-in 54 W AC power module.

54 W DC Power Module

The 54 W DC power module of the AR1220-DC router is fixed in the chassis and cannot be removed. **Figure 2-202** shows the appearance of this power module.

Figure 2-202 Appearance of the 54 W DC power module



Number	Name	Specification
1	DC power terminals	Use **DC power cables** to connect the router to an external power source.

Table 2-587 describes functions of the built-in 54 W DC power module.

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Table 2-587 Functions of the built-in 54 W DC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-588 lists technical specifications of the 54 W DC power module.

Table 2-588 Technical specifications of the 54 W DC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	-48 V DC to -60 V DC
Maximum input voltage range	-38.4 V DC to -72 V DC
Maximum input current	3 A
Output	

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Item	Specification
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	54 W

Heat Dissipation

The AR1220-DC router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-203**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-203 Airflow

Technical Specifications

Table 2-589 lists technical specifications of the AR1220-DC router.

Table 2-589 AR1220-DC technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash memory	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported

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Item	Specification
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum input voltage (DC)	-38.4 V DC to -72 V DC
Maximum input current	3 A
Maximum output power	54 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	27 W
Maximum power consumption	32 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces
Extended slots	2xSIC

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Item	Specification
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.4 AR1220W

Version Mapping

Table 2-590 lists the mapping between the AR1220W router and software versions.

Table 2-590 Mapping between the AR1220W router and software versions

Router Model	Software Version
AR1220W	V200R001C01 and later versions

Appearance and Structure

Appearance

Figure 2-204 shows the appearance of the AR1220W router.

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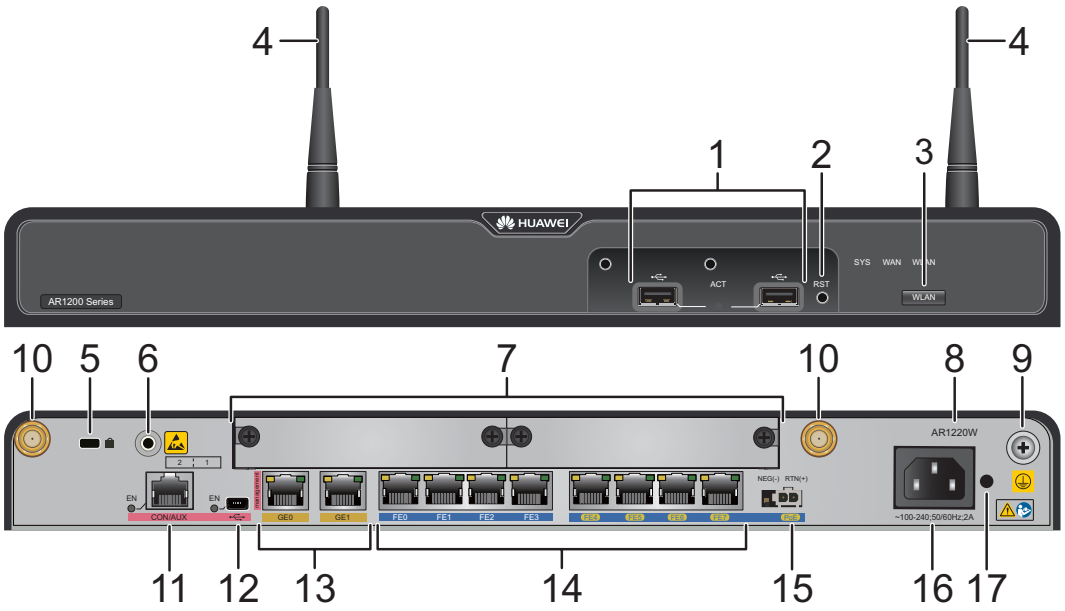
Figure 2-204 AR1220W appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	WLAN button **NOTE** This button is used to enable and disable the WLAN function.	4	Two **Wi-Fi antennas**
5	Security lock	6	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
7	Two SIC slots	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	10	Two **Wi-Fi antenna interfaces**

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11	**CON/AUX interface** **NOTE** The AR1220W does not support AUX login.	12	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.
13	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	14	LAN interfaces: eight **FE electrical interfaces**
15	PoE power jack **NOTE** The PoE power jack connects to a 100 W AC PoE power module to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.	16	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
17	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	-	-

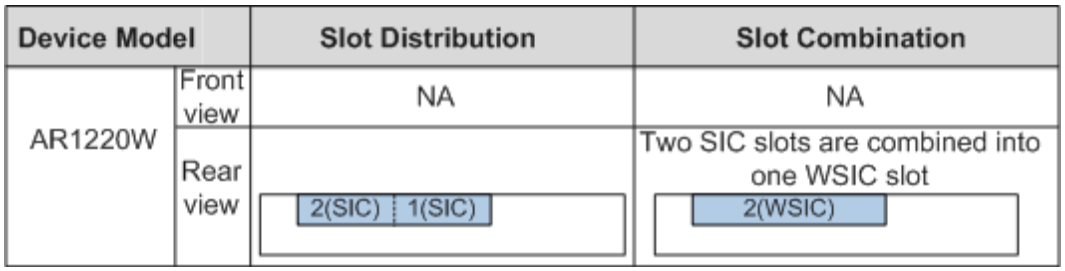
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-205 shows the slot distribution of the AR1220W router.

Figure 2-205 Slot distribution of the AR1220W router



- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-206 shows indicators on the AR1220W router.

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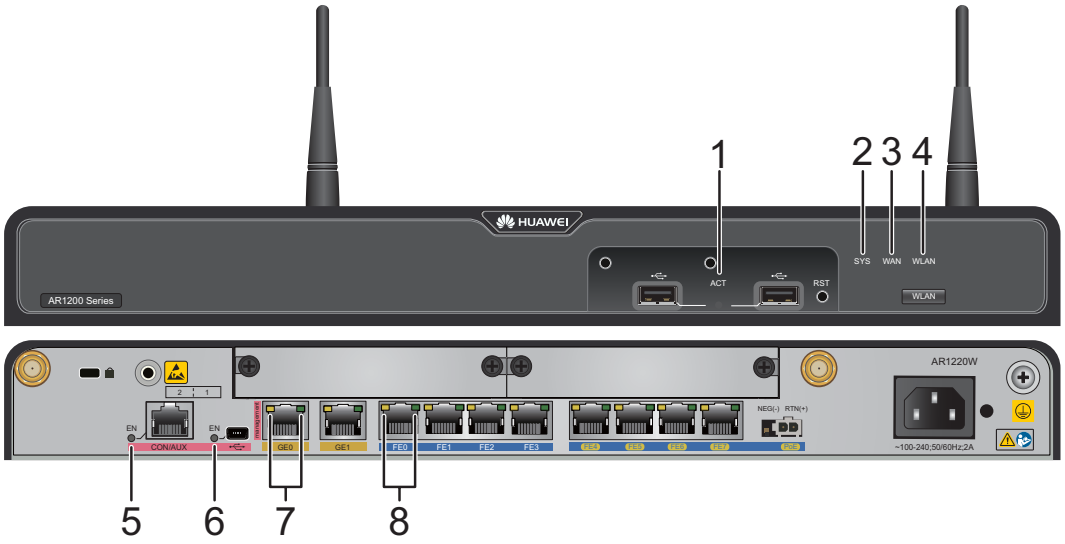
Figure 2-206 Indicators on the AR1220W



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.

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Number	Indicator	Color	Description
			Off: The two GE interfaces are both disconnected or inactive.
4	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link.
			Off: The WLAN link has not been established or is inactive.
5	EN (CON/AUX interface) **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
7	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.

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Number	Indicator	Color	Description
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-591** lists the CON/AUX interface attributes.

Table 2-591 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-592** lists attributes of a Mini USB interface.

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Table 2-592 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-593** lists attributes of an FE electrical interface.

Table 2-593 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-594** lists attributes of a GE electrical interface.

Table 2-594 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-595** lists attributes of a USB interface.

Table 2-595 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-596** lists attributes of a Wi-Fi antenna interface.

Table 2-596 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2

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Attribute	Description
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

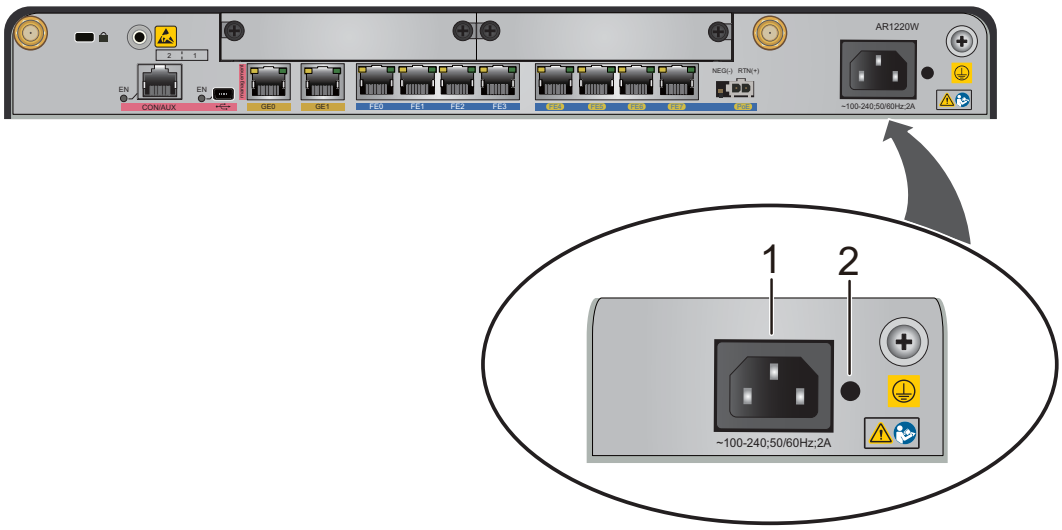
Power Supply System

The AR1220W router has a built-in AC power module. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its FE electrical interfaces.

60 W AC Power Module

The 60 W AC power module of the AR1220W router is fixed in the chassis and cannot be removed. **Figure 2-207** shows the appearance of this power module.

Figure 2-207 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

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Table 2-597 describes functions of the built-in 60 W AC power module.

Table 2-597 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-598 lists technical specifications of the 60 W AC power module.

Table 2-598 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A

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Item	Specification
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-208** shows its appearance.

Figure 2-208 Appearance of the 100 W AC PoE power module

Table 2-599 describes functions of the 100 W AC PoE power module.

Table 2-599 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-600 lists the specifications of the 100 W AC PoE power module.

Table 2-600 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR1220W router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in Figure 2-209. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

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Figure 2-209 Airflow

Technical Specifications

Table 2-601 lists technical specifications of the AR1220W router.

Table 2-601 AR1220W technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash memory	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Supported (interfaces FE4 to FE7)
Power consumption (empty chassis)	
Typical power consumption	36 W
Maximum power consumption	42 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.5 AR1220VW

Version Mapping

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Table 2-602 lists the mapping between the AR1220VW router and software versions.

Table 2-602 Mapping between the AR1220VW router and software versions

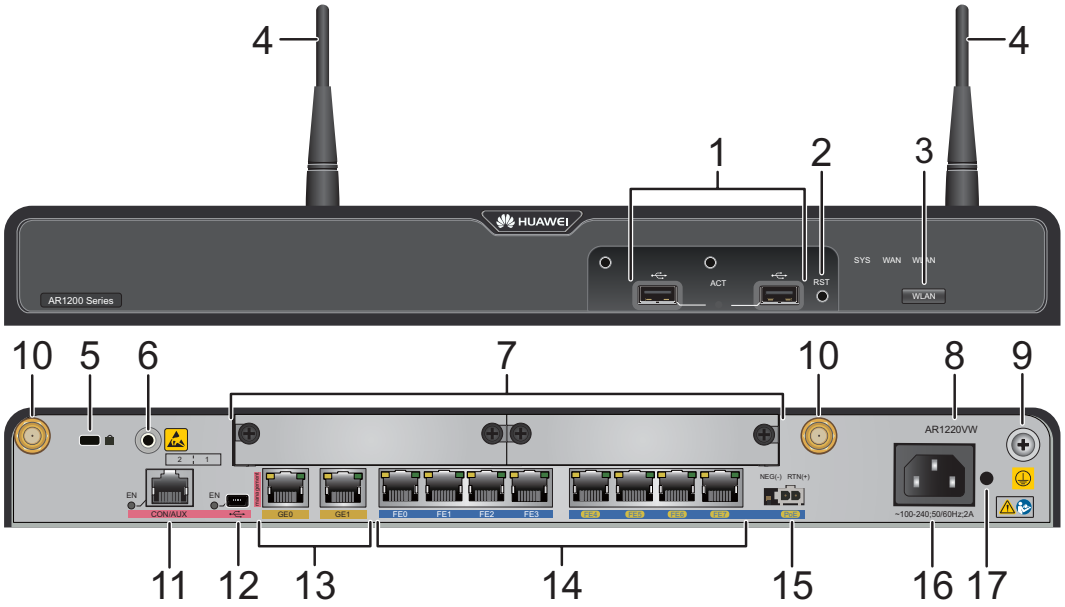
Router Model	Software Version
AR1220VW	V200R001C01 and later versions

Appearance and Structure

Appearance

Figure 2-210 shows the appearance of the AR1220VW router.

Figure 2-210 AR1220VW appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.

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3	WLAN button **NOTE** This button is used to enable and disable the WLAN function.	4	Two **Wi-Fi antennas**
5	Security lock	6	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
7	Two SIC slots	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	10	Two **Wi-Fi antenna interfaces**
11	**CON/AUX interface** **NOTE** The AR1220VW does not support AUX login.	12	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.
13	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	14	LAN interfaces: eight **FE electrical interfaces**
15	PoE power jack **NOTE** The PoE power jack connects to a 100 W AC PoE power module to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.	16	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
17	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-211 shows the slot distribution of the AR1220VW router.

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Figure 2-211 Slot distribution of the AR1220VW router

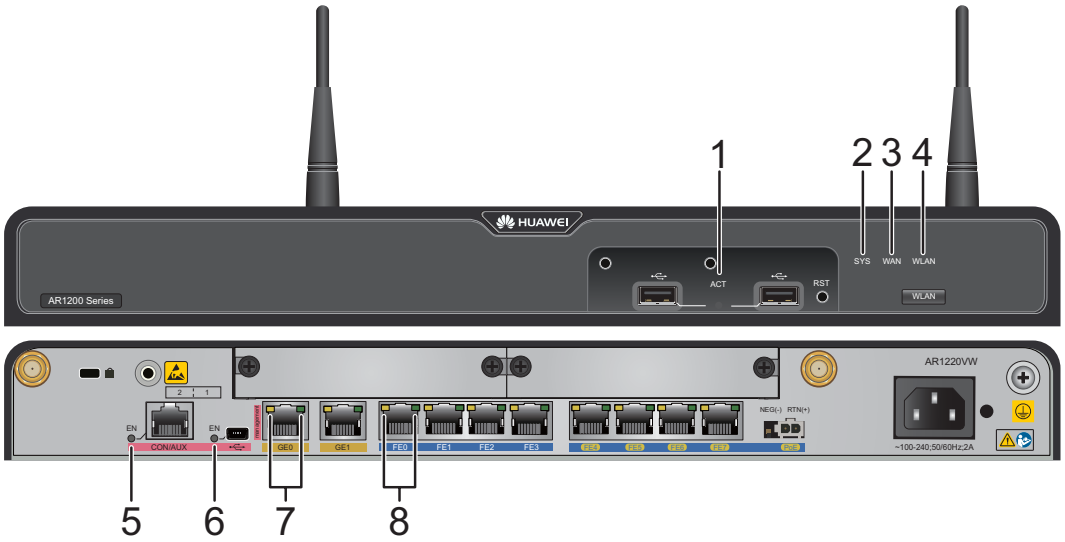
Device Model		Slot Distribution	Slot Combination
AR1220VW	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-212 shows indicators on the AR1220VW router.

Figure 2-212 Indicators on the AR1220VW



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link.
			Off: The WLAN link has not been established or is inactive.
5	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

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Number	Indicator	Color	Description
	NOTE ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The CON/AUX interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
7	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-603** lists the CON/AUX interface attributes.

Table 2-603 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-604** lists attributes of a Mini USB interface.

Table 2-604 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-605** lists attributes of an FE electrical interface.

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Table 2-605 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-606** lists attributes of a GE electrical interface.

Table 2-606 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-607** lists attributes of a USB interface.

Table 2-607 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-608** lists attributes of a Wi-Fi antenna interface.

Table 2-608 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR1220VW router has a built-in 60 W AC power module. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its FE electrical interfaces.

60 W AC Power Module

The 60 W AC power module of the AR1220VW router is fixed in the chassis and cannot be removed. **Figure 2-213** shows the appearance of this power module.

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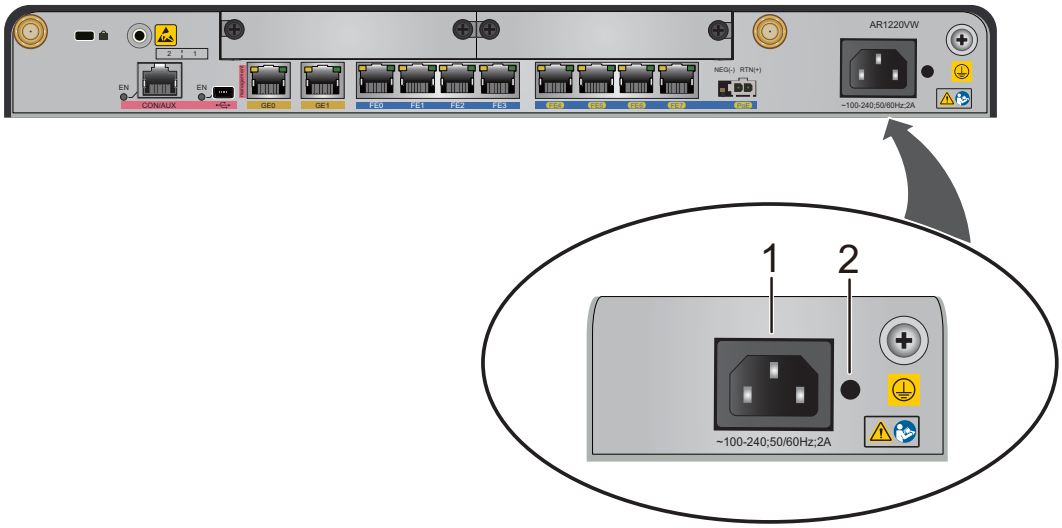
Figure 2-213 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-609 describes functions of the built-in 60 W AC power module.

Table 2-609 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-610 lists technical specifications of the 60 W AC power module.

Table 2-610 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. Figure 2-214 shows its appearance.

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Figure 2-214 Appearance of the 100 W AC PoE power module

Table 2-611 describes functions of the 100 W AC PoE power module.

Table 2-611 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-612 lists the specifications of the 100 W AC PoE power module.

Table 2-612 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz

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Item	Specification
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR1220VW router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-215**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-215 Airflow

Technical Specifications

Table 2-613 lists technical specifications of the AR1220VW router.

Table 2-613 AR1220VW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB

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Item	Specification
Flash Memory	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces FE4 to FE7)
Power consumption (empty chassis)	
Typical power consumption	37 W
Maximum power consumption	42 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)

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Item	Specification
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.6 AR1220L

Version Mapping

Table 2-614 lists the mapping between the AR1220L router and software versions.

Table 2-614 Mapping between the AR1220L router and software versions

Router Model	Software Version
AR1220L	V200R002C01 and later versions

Appearance and Structure

Appearance

Figure 2-216 shows the appearance of the AR1220L router.

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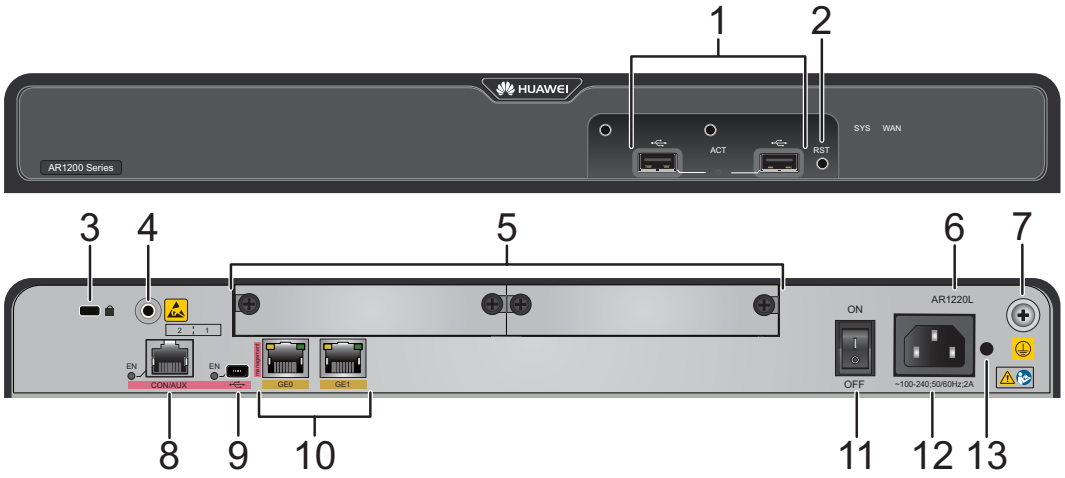
Figure 2-216 AR1220L appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Security lock	4	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
5	Two SIC slots	6	Product model silkscreen
7	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	8	**CON/AUX interface** **NOTE** The AR1220L does not support AUX login.
9	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	10	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.

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11	Power switch	12	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
13	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-217 shows the slot distribution of the AR1220L.

Figure 2-217 Slot distribution of the AR1220L router

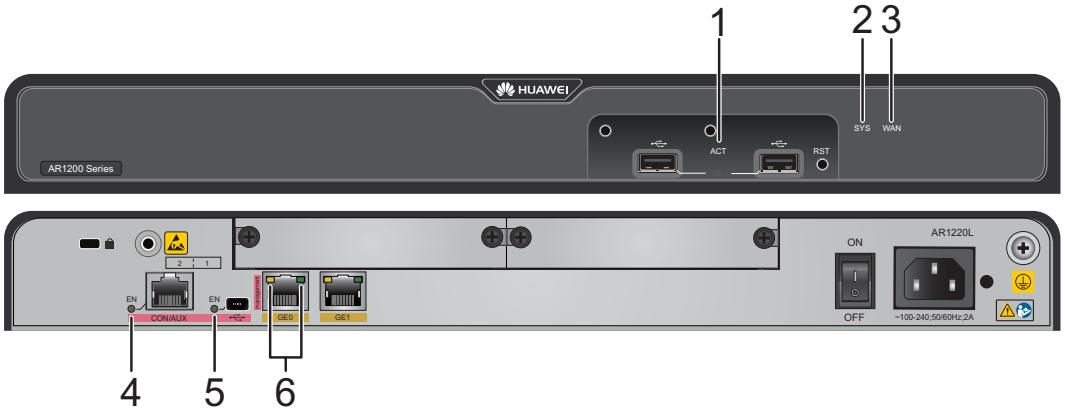
Device Model		Slot Distribution	Slot Combination
AR1220L	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-218 shows indicators on the AR1220L router.

Figure 2-218 Indicators on the AR1220L



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Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

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Number	Indicator	Color	Description
	NOTE ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The CON/AUX interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-615** lists the CON/AUX interface attributes.

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Table 2-615 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-616** lists attributes of a Mini USB interface.

Table 2-616 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-617** lists attributes of a GE electrical interface.

Table 2-617 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

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Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-618** lists attributes of a USB interface.

Table 2-618 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

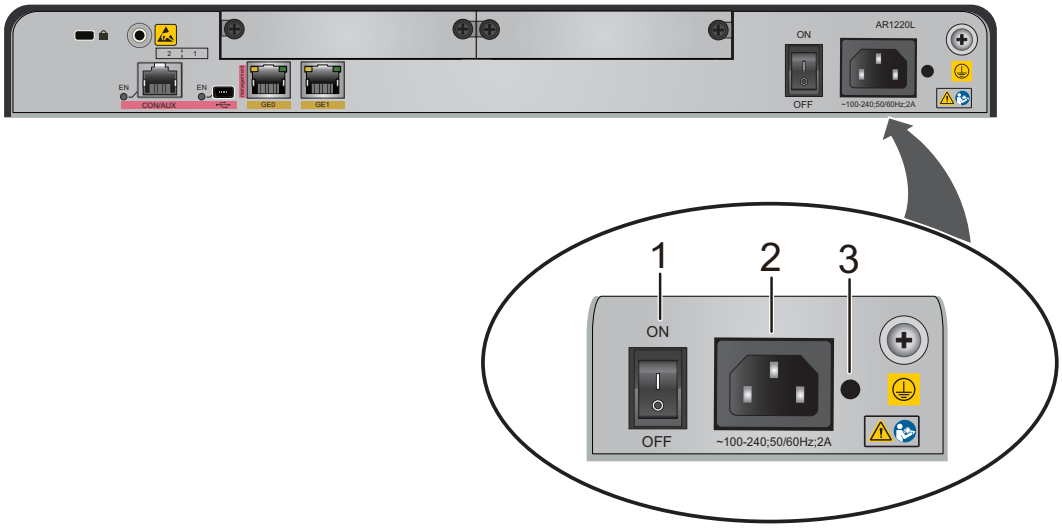
Power Supply System

The AR1220L router has a built-in 60 W AC power module.

60 W AC Power Module

The 60 W AC power module of the AR1220L router is fixed in the chassis and cannot be removed. **Figure 2-219** shows the appearance of this power module.

Figure 2-219 Appearance of the 60 W AC power module



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Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-619 describes functions of the built-in 60 W AC power module.

Table 2-619 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-620 lists technical specifications of the 60 W AC power module.

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Table 2-620 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

Heat Dissipation

The AR1220L router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-220**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-220 Airflow

Technical Specifications

Table 2-621 lists technical specifications of the AR1220L router.

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Table 2-621 AR1220L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 500 MHz
Memory	512 MB
Flash Memory	256 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	

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Item	Specification
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.7 AR1220F

Version Mapping

Table 2-622 lists the mapping between the AR1220F router and software versions.

Table 2-622 Mapping between the AR1220F router and software versions

Router Model	Software Version
AR1220F	V200R005C10 and later versions

Appearance and Structure

Appearance

Figure 2-221 shows the appearance of the AR1220F router.

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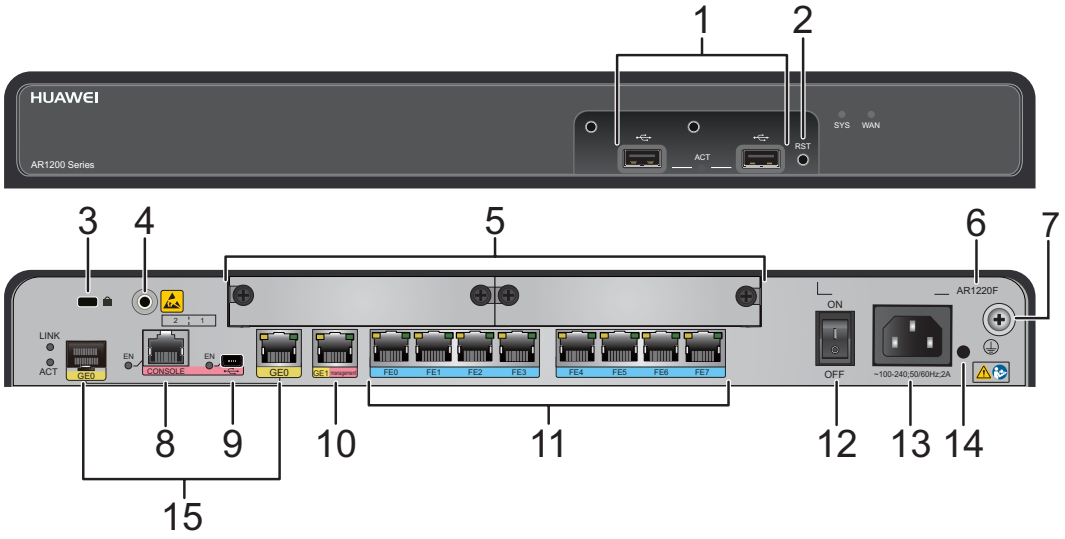
Figure 2-221 AR1220F appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Security lock	4	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
5	Two SIC slots	6	Product model silkscreen
7	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	8	**CONSOLE interface**
9	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	10	WAN interface: one **GE electrical interface**

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11	LAN interfaces: eight **FE electrical interfaces**	12	Power switch
13	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.	14	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
15	WAN interface: **GE combo interface**	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-222 shows the slot distribution of the AR1220F router.

Figure 2-222 Slot distribution of the AR1220F router

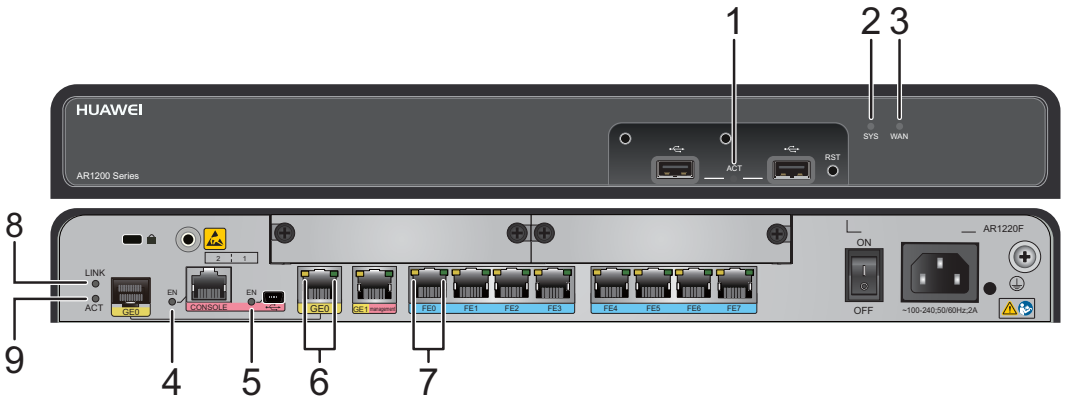
Device Model		Slot Distribution	Slot Combination
AR1220F	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-223 shows indicators on the AR1220F router.

Figure 2-223 Indicators on the AR1220F



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (console interface)	Green	Steady on: The console interface is enabled.

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Number	Indicator	Color	Description
	NOTE • The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. • By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The console interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	FE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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Number	Indicator	Color	Description
8 and 9	GE optical interface indicators ● 8: LINK indicator ● 9: ACT indicator	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-623** lists attributes of a console interface.

Table 2-623 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-624** lists attributes of a Mini USB interface.

Table 2-624 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

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FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-625** lists attributes of an FE electrical interface.

Table 2-625 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-626** lists attributes of a GE electrical interface.

Table 2-626 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

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Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-627** lists attributes of a USB interface.

Table 2-627 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR1220F router has a built-in 60 W AC power module.

60 W AC Power Module

The 60 W AC power module of the AR1220F router is fixed in the chassis and cannot be removed. **Figure 2-224** shows the appearance of this power module.

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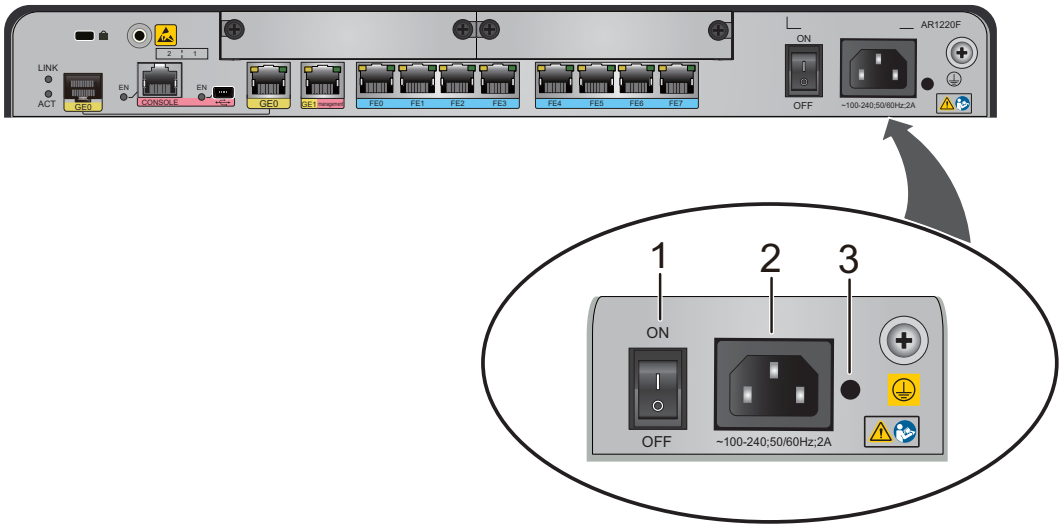
Figure 2-224 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-628 describes functions of the built-in 60 W AC power module.

Table 2-628 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-629 lists technical specifications of the 60 W AC power module.

Table 2-629 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

Heat Dissipation

The AR1220F router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in Figure 2-225. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

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Figure 2-225 Airflow

Technical Specifications

Table 2-630 lists technical specifications of the AR1220F router.

Table 2-630 AR1220F technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported

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Item	Specification
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	20 W
Maximum power consumption	25 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and one GE combo interface LAN interfaces: eight FE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.8 AR1220E

Version Mapping

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Table 2-631 lists the mapping between the AR1220E router and software versions.

Table 2-631 Mapping between the AR1220E router and software versions

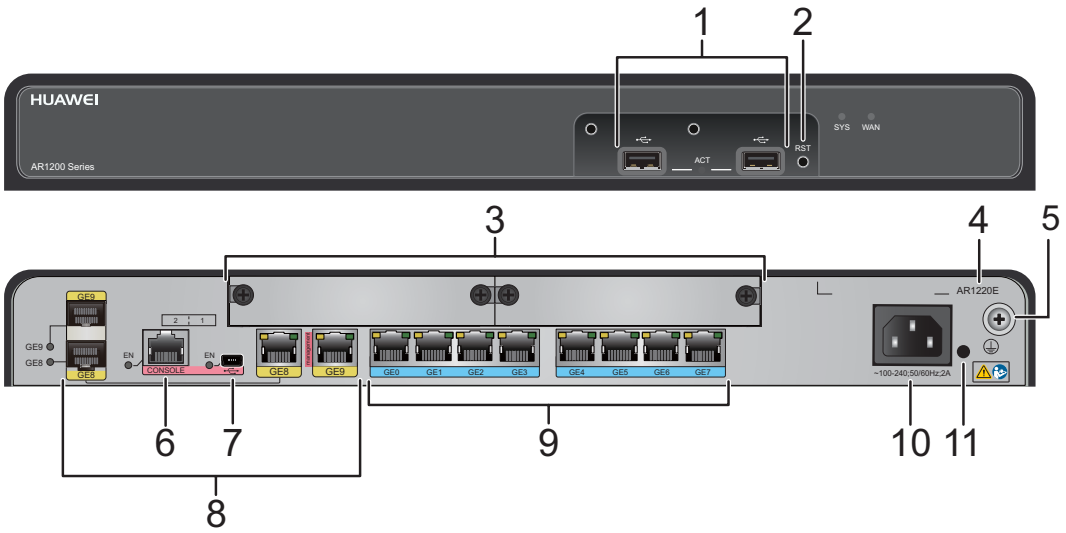
Router Model	Software Version
AR1220E	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-226 shows the appearance of the AR1220E router.

Figure 2-226 AR1220E appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Two SIC slots	4	Product model silkscreen

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5	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	6	**CONSOLE interface**
7	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	8	WAN interface: **GE combo interface**
9	LAN interfaces: eight **GE electrical interfaces**	10	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
11	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-227 shows the slot distribution of the AR1220E.

Figure 2-227 Slot distribution of the AR1220E router

Device Model		Slot Distribution	Slot Combination
AR1220E	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-228 shows indicators on the AR1220E router.

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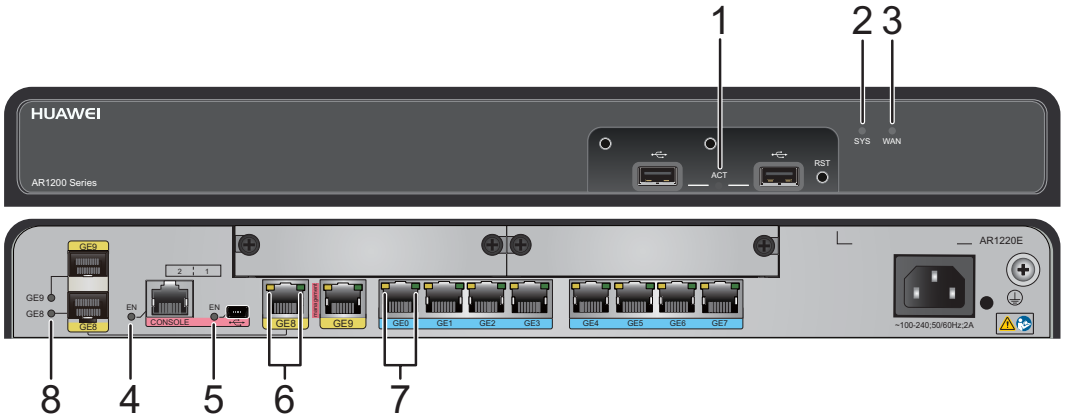
Figure 2-228 Indicators on the AR1220E



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.

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Number	Indicator	Color	Description
4	EN (console interface) **NOTE** ● The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The console interface is enabled.
			Off: The console interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.

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Number	Indicator	Color	Description
			Off: No data is being transmitted or received.
8	GE optical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-632** lists attributes of a console interface.

Table 2-632 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-633** lists attributes of a Mini USB interface.

Table 2-633 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

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GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-634** lists attributes of a GE electrical interface.

Table 2-634 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-635** lists attributes of a USB interface.

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Table 2-635 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

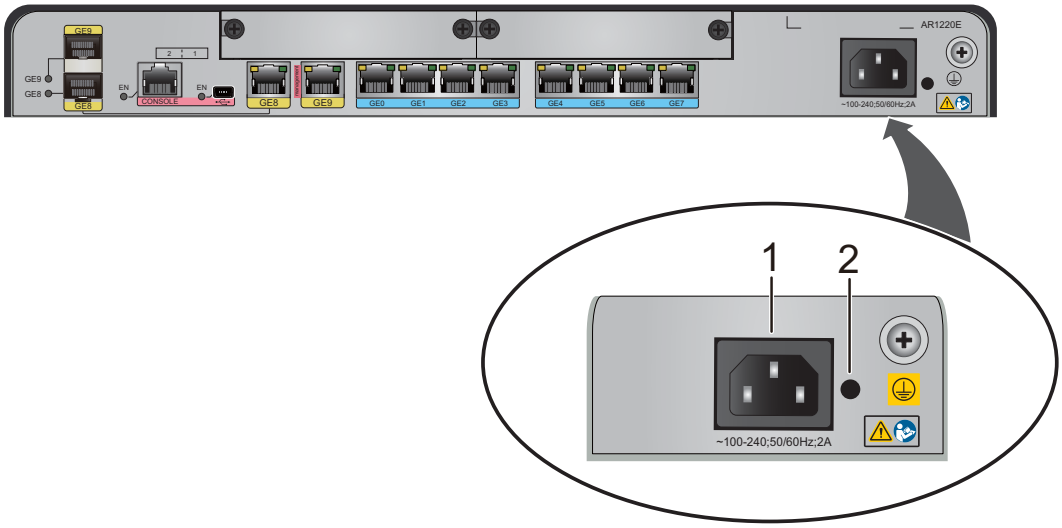
Power Supply System

The AR1220E router has a built-in 60 W AC power module.

60 W AC Power Module

The 60 W AC power module of the AR1220E router is fixed in the chassis and cannot be removed. **Figure 2-229** shows the appearance of this power module.

Figure 2-229 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-636 describes functions of the built-in 60 W AC power module.

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Table 2-636 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-637 lists technical specifications of the 60 W AC power module.

Table 2-637 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	

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Item	Specification
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

Heat Dissipation

The AR1220E router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-230**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-230 Airflow

Technical Specifications

Table 2-638 lists technical specifications of the AR1220E router.

Table 2-638 AR1220E technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported

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Item	Specification
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	18 W
Maximum power consumption	20 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces
Extended slots	2xSIC

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Item	Specification
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.9 AR1220EV

Version Mapping

Table 2-639 lists the mapping between the AR1220EV router and software versions.

Table 2-639 Mapping between the AR1220EV router and software versions

Router Model	Software Version
AR1220EV	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-231 shows the appearance of the AR1220EV router.

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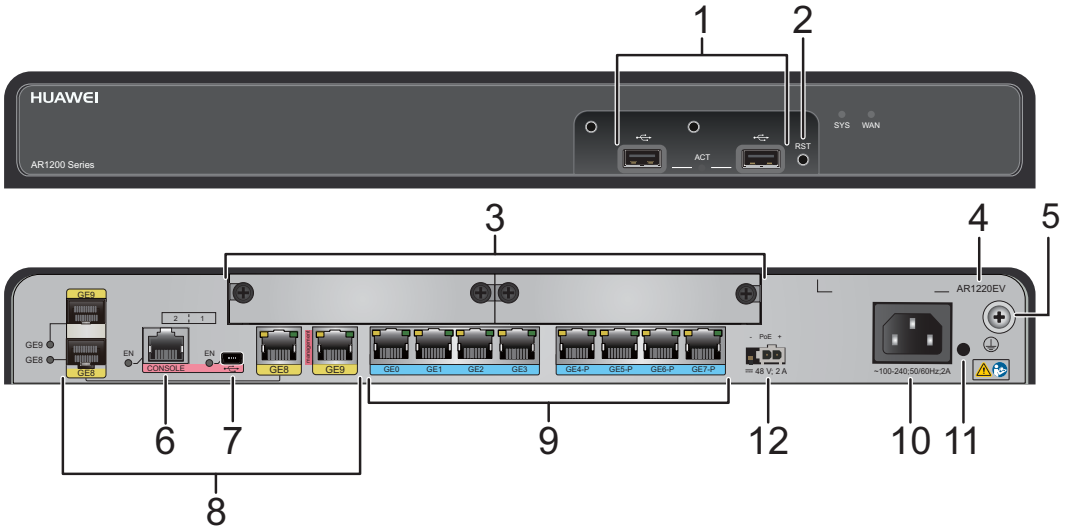
Figure 2-231 AR1220EV appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Two SIC slots	4	Product model silkscreen
5	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	6	**CONSOLE interface**
7	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	8	WAN interface: **GE combo interface**
9	LAN interfaces: eight **GE electrical interfaces**	10	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.

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11	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	12	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-232 shows the slot distribution of the AR1220EV.

Figure 2-232 Slot distribution of the AR1220EV router

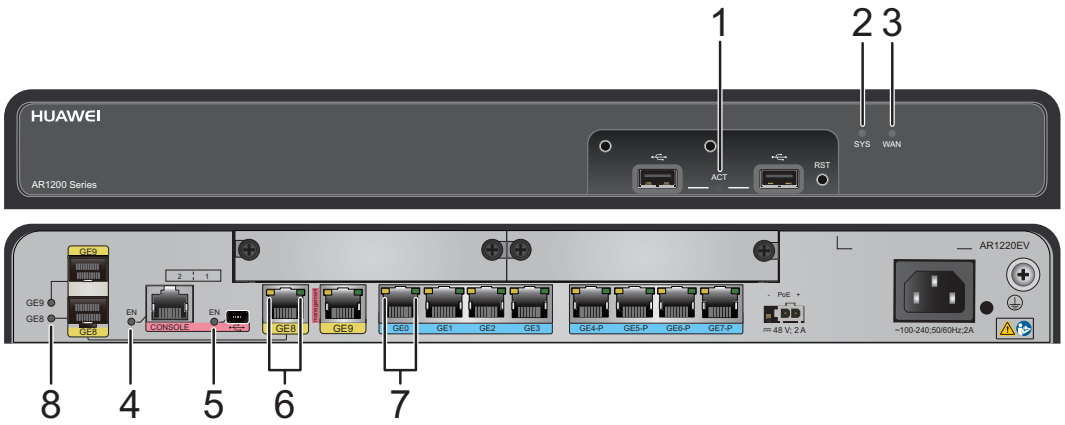
Device Model		Slot Distribution	Slot Combination
AR1220EV	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-233 shows indicators on the AR1220EV router.

Figure 2-233 Indicators on the AR1220EV



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Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The two GE interfaces are both disconnected or inactive.
4	EN (console interface)	Green	Steady on: The console interface is enabled.

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Number	Indicator	Color	Description
	NOTE • The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. • By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The console interface is disabled.
5	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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Number	Indicator	Color	Description
8	GE optical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-640** lists attributes of a console interface.

Table 2-640 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-641** lists attributes of a Mini USB interface.

Table 2-641 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

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GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-642** lists attributes of a GE electrical interface.

Table 2-642 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-643** lists attributes of a USB interface.

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Table 2-643 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

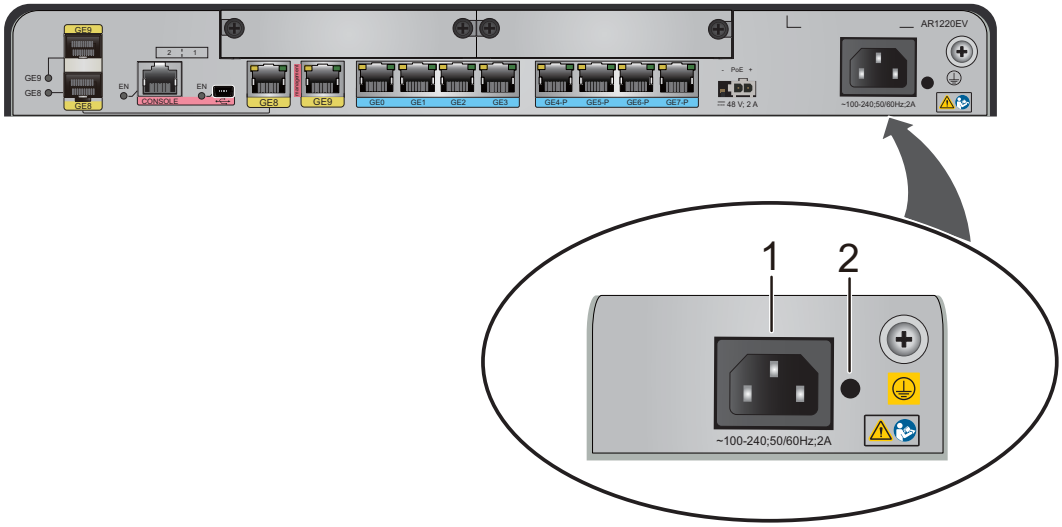
Power Supply System

The AR1220EV router has a built-in 60 W AC power module. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its FE electrical interfaces.

60 W AC Power Module

The 60 W AC power module of the AR1220E router is fixed in the chassis and cannot be removed. **Figure 2-234** shows the appearance of this power module.

Figure 2-234 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-644 describes functions of the built-in 60 W AC power module.

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Table 2-644 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-645 lists technical specifications of the 60 W AC power module.

Table 2-645 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	

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Item	Specification
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-235** shows its appearance.

Figure 2-235 Appearance of the 100 W AC PoE power module

Table 2-646 describes functions of the 100 W AC PoE power module.

Table 2-646 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.

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Function	Description
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-647 lists the specifications of the 100 W AC PoE power module.

Table 2-647 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR1220EV router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in Figure 2-236. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-236 Airflow

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Technical Specifications

Table 2-648 lists technical specifications of the AR1220EV router.

Table 2-648 AR1220EV technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces GE4 to GE7)
Power consumption (empty chassis)	
Typical power consumption	21 W
Maximum power consumption	22 W

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Item	Specification
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.10 AR1220EVW

Version Mapping

Table 2-649 lists the mapping between the AR1220EVW router and software versions.

Table 2-649 Mapping between the AR1220EVW router and software versions

Router Model	Software Version
AR1220EVW	V200R006C10 and later versions

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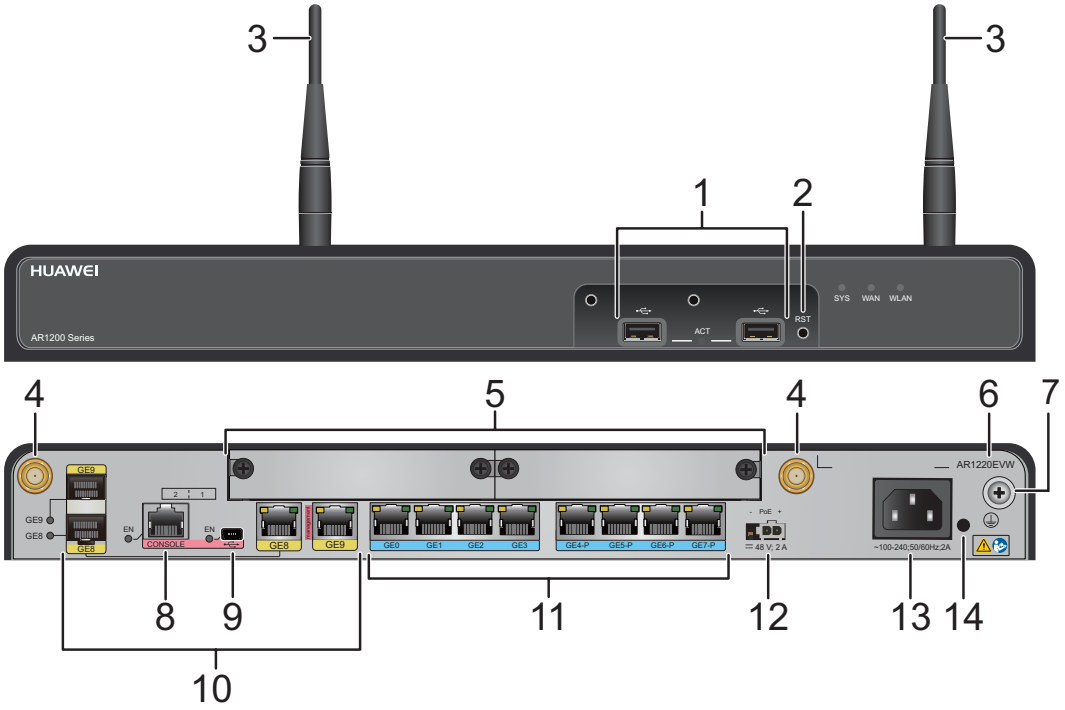
Appearance and Structure

Appearance

Figure 2-237 shows the appearance of the AR1220EVW router.

Figure 2-237 AR1220EVW appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Two **Wi-Fi antennas**	4	Two **Wi-Fi antenna interfaces**
5	Two SIC slots	6	Product model silkscreen

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7	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	8	**CONSOLE interface**
9	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	10	WAN interface: **GE combo interface**
11	LAN interfaces: eight **GE electrical interfaces**	12	PoE power jack **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.
13	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.	14	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-238 shows the slot distribution of the AR1220EVW router.

Figure 2-238 Slot distribution of the AR1220EVW router

Device Model		Slot Distribution	Slot Combination
AR1220EVW	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-239 shows indicators on the AR1220EVW router.

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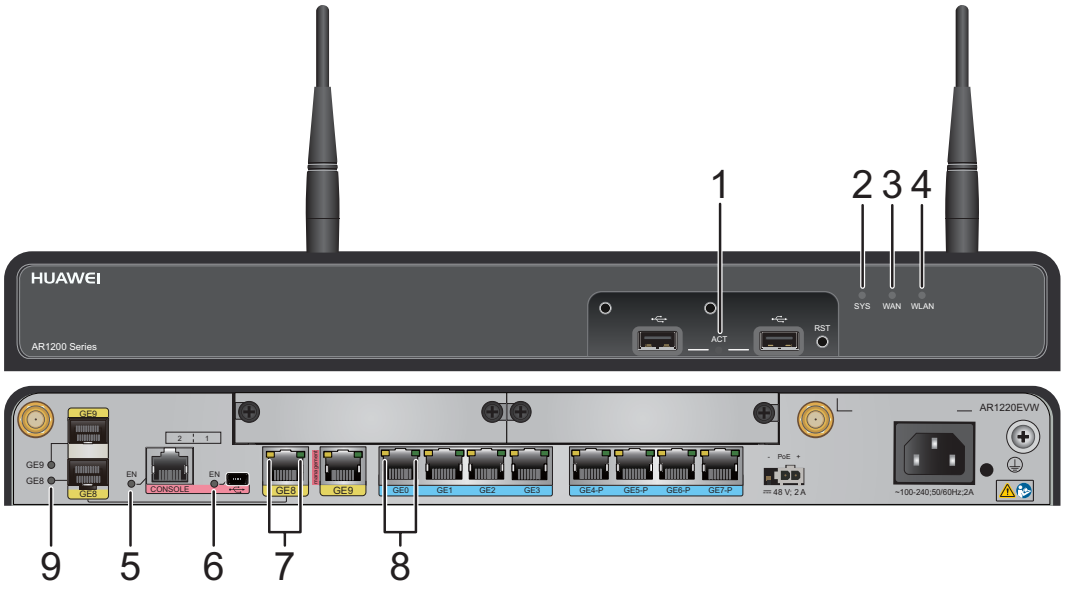
Figure 2-239 Indicators on the AR1220EVW



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.

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Number	Indicator	Color	Description
			Off: The two GE interfaces are both disconnected or inactive.
4	WLAN	Green	Blinking: The WLAN link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link.
			Off: The WLAN link has not been established or is inactive.
5	EN (console interface) **NOTE** ● The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The console interface is enabled.
			Off: The console interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
7	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.

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Number	Indicator	Color	Description
			Off: No data is being transmitted or received.
8	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
9	GE optical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-650** lists attributes of a console interface.

Table 2-650 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-651** lists attributes of a Mini USB interface.

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Table 2-651 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-652** lists attributes of a GE electrical interface.

Table 2-652 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

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NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-653** lists attributes of a USB interface.

Table 2-653 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna interface to transmit and receive data. **Table 2-654** lists attributes of a Wi-Fi antenna interface.

Table 2-654 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	300 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Wi-Fi antenna

Power Supply System

The AR1220EVW router has a built-in 60 W AC power module. It can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its FE electrical interfaces.

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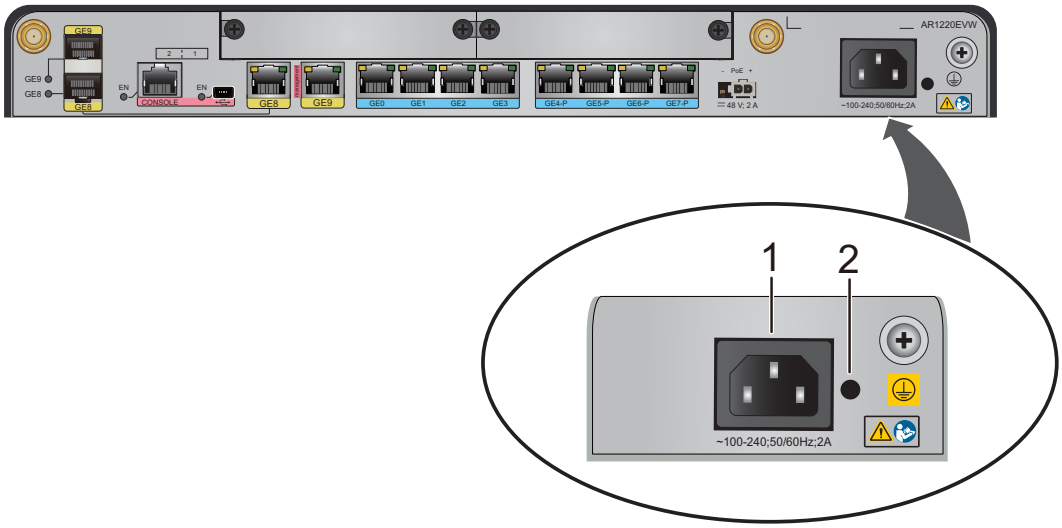
60 W AC Power Module

The 60 W AC power module of the AR1220E router is fixed in the chassis and cannot be removed. **Figure 2-240** shows the appearance of this power module.

Figure 2-240 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-655 describes functions of the built-in 60 W AC power module.

Table 2-655 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.

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Function	Description
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-656 lists technical specifications of the 60 W AC power module.

Table 2-656 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

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100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-241** shows its appearance.

Figure 2-241 Appearance of the 100 W AC PoE power module

Table 2-657 describes functions of the 100 W AC PoE power module.

Table 2-657 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-658 lists the specifications of the 100 W AC PoE power module.

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Table 2-658 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

The AR1220EVW router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-242**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-242 Airflow

Technical Specifications

Table 2-659 lists technical specifications of the AR1220EVW router.

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Table 2-659 AR1220EVW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (interfaces GE4 to GE7)
Power consumption (empty chassis)	
Typical power consumption	22 W
Maximum power consumption	25 W
Heat dissipation	
Fans	Built-in fans, not pluggable
Airflow (facing the front panel)	Left to right
Interface density	

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Item	Specification
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.9.11 AR1220C

Version Mapping

Table 2-660 lists the mapping between the AR1220C router and software versions.

Table 2-660 Mapping between the AR1220C router and software versions

Router Model	Software Version
AR1220C	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-243 shows the appearance of the AR1220C router.

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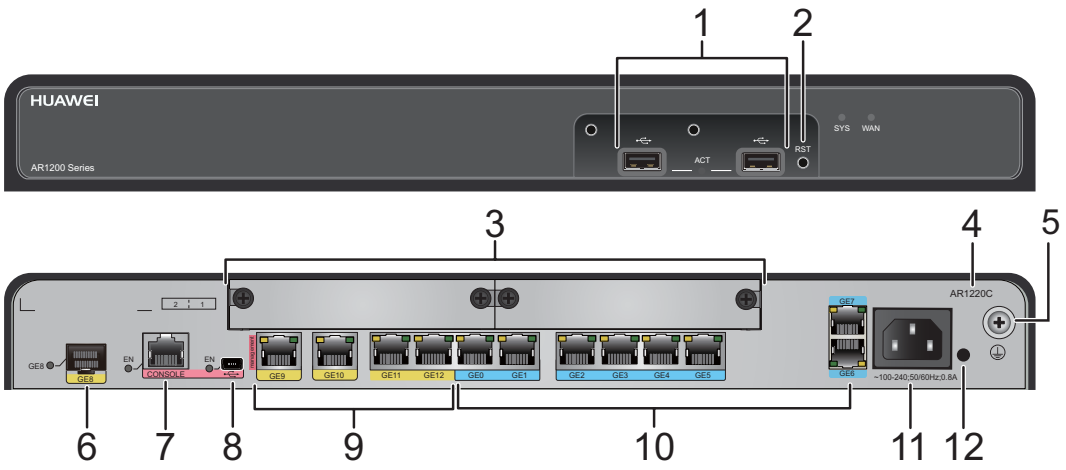
Figure 2-243 AR1220C appearance



1	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	2	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	Two SIC slots	4	Product model silkscreen
5	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	6	WAN interface: **GE optical interface**
7	**CONSOLE interface**	8	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.
9	WAN interface: **GE electrical interface**	10	LAN interfaces: eight **GE electrical interfaces**
11	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.	12	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.

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Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-244 shows the slot layout on the AR1220C.

Figure 2-244 Slot distribution of the AR1220C router

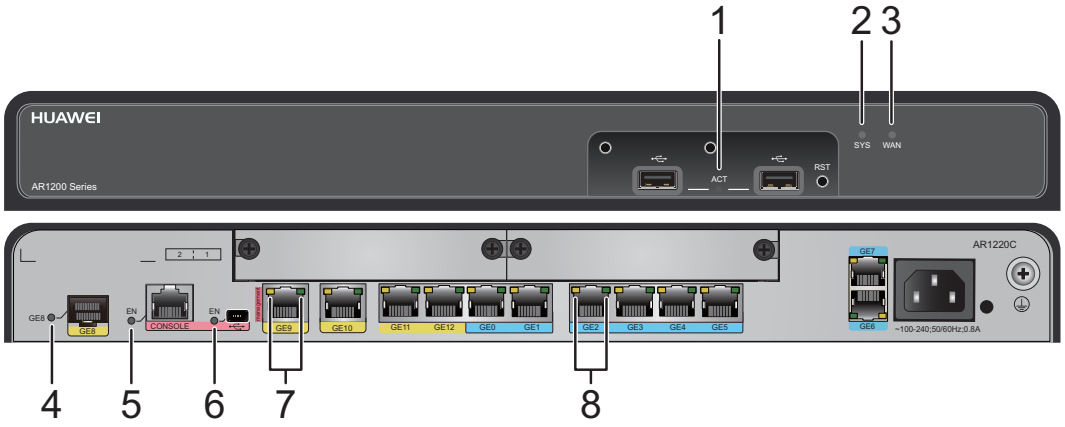
Device Model		Slot Distribution	Slot Combination
AR1220C	Front view	NA	NA
	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC)

- Slot 1 and slot 2 are combined into new slot 2.

Indicator Description

Figure 2-245 shows indicators on the AR1220C router.

Figure 2-245 Indicators on the AR1220C



Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
			Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: At least one GE interface is connected and active.
			Off: The five GE interfaces are all disconnected or inactive.
4	GE optical interface indicators (WAN)	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.
5	EN (console interface)	Green	Steady on: The console interface is enabled.

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Number	Indicator	Color	Description
	NOTE • The console interface and Mini USB interface are multiplexed, and only one of them can be used at a time. • By default, the console interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The console interface is disabled.
6	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
7	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-661** lists attributes of a console interface.

Table 2-661 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-662** lists attributes of a Mini USB interface.

Table 2-662 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-663** lists attributes of a GE electrical interface.

Table 2-663 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Optical Interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 2-664** lists attributes of a GE optical interface.

Table 2-664 GE optical interface attributes

Attribute	Description
Connector type	LC/PC

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Attribute	Description
Optical interface attributes	Optical modules supported: ● SFP-FE-SX-MM1310 (SFP) ● eSFP-FE-LX-SM1310 ● eSFP-FE-LH40-SM1310 ● eSFP-FE-LH80-SM1550 ● SFP-FE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-FE-LX-SM1550-BIDI (single-fiber-bidirectional) ● eSFP-GE-SX-MM850 ● SFP-GE-LX-SM1310 ● S-SFP-GE-LH40-SM1310 ● S-SFP-GE-LH40-SM1550 ● S-SFP-GE-LH80-SM1550 ● eSFP-GE-ZX100-SM1550 ● SFP-GE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-GE-LX-SM1490-BIDI (single-fiber-bidirectional) ● LE2MGSC40DE0 (single-fiber-bidirectional) ● LE2MGSC40ED0 (single-fiber-bidirectional) ● 1471, CWDM-SFPGE-1471 ● 1491, CWDM-SFPGE-1491 ● 1511, CWDM-SFPGE-1511 ● 1531, CWDM-SFPGE-1531 ● 1591, CWDM-SFPGE-1591 ● 1557.36, DWDM-SFPGE-1557-36 ● 1558.17, DWDM-SFPGE-1558-17 ● 1558.98, DWDM-SFPGE-1558-98 ● 1559.79, DWDM-SFPGE-1559-79 ● 1560.61, DWDM-SFPGE-1560-61 The optical interface attributes depend on the optical modules used. For details, see **GE Optical Module**, **GE-CWDM Optical Module**, **GE-DWDM Optical Module**, **GE Copper Transceiver Module**, and **FE Optical Module**.
Standards compliance	IEEE 802.3z

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USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-665** lists attributes of a USB interface.

Table 2-665 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

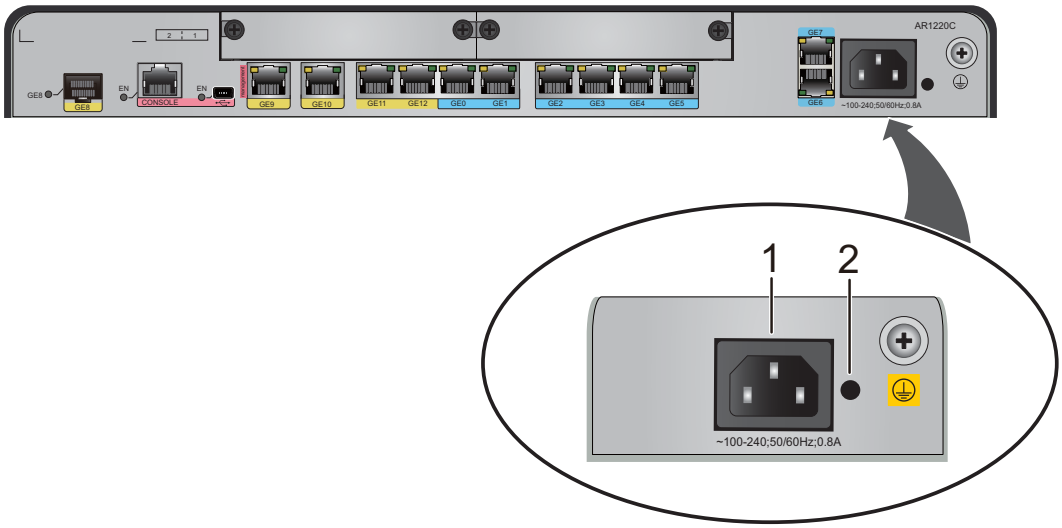
Power Supply System

The AR1220C router has a built-in 25 W AC power module.

25 W AC Power Module

The 25 W AC power module of the AR1220C router is fixed in the chassis and cannot be removed. **Figure 2-246** shows the appearance of this power module.

Figure 2-246 Appearance of the 25 W AC power module



Number	Name	Specification
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

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Table 2-666 describes functions of the built-in 25 W AC power module.

Table 2-666 Functions of the built-in 25 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-667 lists technical specifications of the 25 W AC power module.

Table 2-667 Technical specifications of the 25 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	0.8 A

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Item	Specification
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	25 W

Heat Dissipation

The AR1220C router has no fans and uses natural heat dissipation.

Technical Specifications

Table 2-668 lists technical specifications of the AR1220C router.

Table 2-668 AR1220C technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 390.0 mm x 232.5 mm x 44.5 mm (15.35 in. x 9.2 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 232.5 mm x 44.5 mm (19.0 in. x 9.2 in. x 1.75 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz

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Item	Specification
Maximum input current	0.8 A
Maximum output power	25 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	14 W
Maximum power consumption	15 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: four GE electrical interfaces and one GE optical interface LAN interfaces: eight GE electrical interfaces
Extended slots	2xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

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2.10 AR2200 Series

2.10.1 AR2220-AC

Version Mapping

Table 2-669 lists the mapping between the AR2220-AC router and software versions.

Table 2-669 Mapping between the AR2220-AC router and software versions

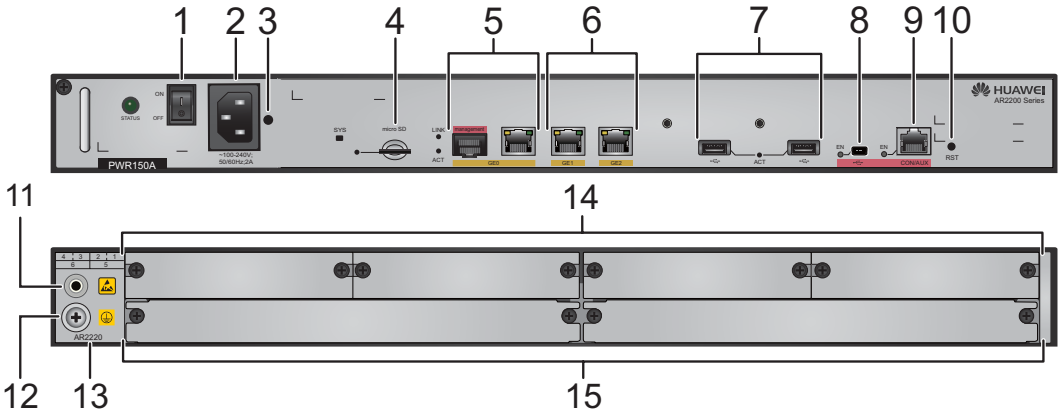
Router Model	Software Version
AR2220-AC	V200R001C00 and later versions

Appearance and Structure

Appearance

Figure 2-247 shows the appearance of the AR2220-AC router.

Figure 2-247 AR2220-AC appearance



1	Power switch	2	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.

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3	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	4	Micro SD card slot
5	WAN interface: **GE combo interface**	6	WAN interfaces: two **GE electrical interfaces**
7	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	8	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.
9	**CON/AUX interface** **NOTE** The AR2220-AC does not support AUX login.	10	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
11	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
13	Product model silkscreen	14	Four SIC slots
15	Two WSIC slots	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-248 shows slot distribution of AR2220-AC routers.

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Figure 2-248 Slot distribution of the AR2220-AC routers

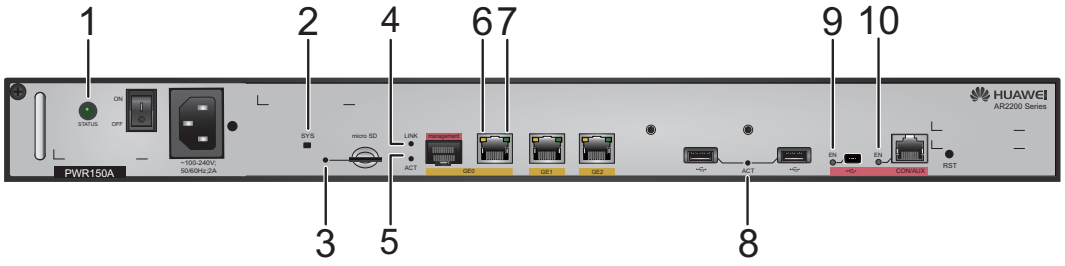
Device Model		Slot Distribution	Slot Combination
AR2220-AC	Front view	NA	NA
	Rear view	4(SIC) 3(SIC) 2(SIC) 1(SIC) 6(WSIC) 5(WSIC)	Two SIC slots are combined into one WSIC slot 4(WSIC) 2(WSIC) 6(WSIC) 5(WSIC) Two WSIC slots are combined into one XSIC slot 6(XSIC) 5(XSIC)

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

Figure 2-249 shows the locations of AR2220-AC indicators.

Figure 2-249 Indicators on the AR2220-AC



Number	Indicator	Color	Description
1	STATUS	Green	The router is powered by the internal power modules normally.
		Red	The internal power modules of the router do not work normally.
		Off	The router is powered off.

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Number	Indicator	Color	Description
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	Micro SD card indicator	Green	Steady on: A link has been established. Blinking: Data is being transmitted or received. Off: No Micro SD card is available.
4 and 5	GE optical interface indicators ● 4: LINK indicator ● 5: ACT indicator	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
6 and 7	GE electrical interface indicators ● 6: ACT indicator ● 7: LINK indicator	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.

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Number	Indicator	Color	Description
8	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.
10	EN (CON/AUX interface) **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled. Off: The CON/AUX interface is disabled.

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Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-670** lists the CON/AUX interface attributes.

Table 2-670 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-671** lists attributes of a Mini USB interface.

Table 2-671 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-672** lists attributes of a GE electrical interface.

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Table 2-672 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-673** lists attributes of a USB interface.

Table 2-673 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

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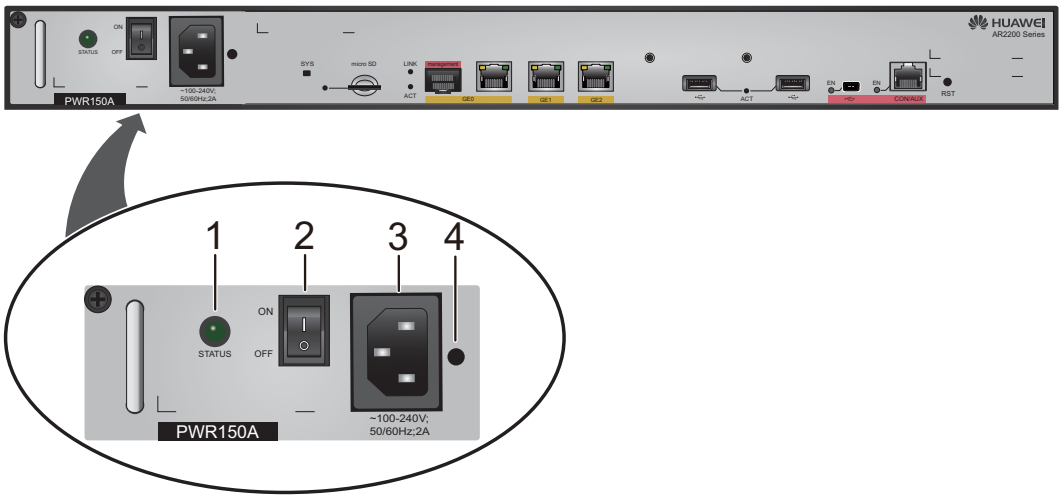
Power Supply System

The AR2220-AC has one built-in 150 W AC power module.

150 W AC Power Module

The 150 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-250** shows the appearance of this power module.

Figure 2-250 Appearance of the 150 W AC power module



Number	Name	Description
1	Power module indicator (STATUS)	● Green: The power module is supplying power normally. ● Red: The power module does not supply power normally. ● Off: The router is not powered on.
2	Power switch	You can turn the power switch to the ON or OFF position to power on or off the router.
3	AC power jack	Use an **AC Power Cable** to connect the router to an external power source.
4	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-674 describes functions of the 150 W AC power module.

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Table 2-674 Functions of a 150 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-675 describes technical specifications of the 150 W AC power module.

Table 2-675 Technical specifications of the 150 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	

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Item	Specification
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	150 W

Heat Dissipation

The AR2220-AC router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-251**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-251 Airflow

Technical Specifications

Table 2-676 lists technical specifications of the AR2220-AC routers.

Table 2-676 AR2220-AC routers technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 600 MHz
Memory	2 GB
Flash memory	16 MB
Micro SD card (default: sd1)	2 GB
Hard disk	Not supported

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Item	Specification
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.)
Weight	7 kg
Power specifications	
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	150 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	47 W
Maximum power consumption	65 W
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two GE electrical interfaces

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Item	Specification
Extended slots	● 4xSIC ● 2xWSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.10.2 AR2240

Version Mapping

Table 2-677 describes the matching relationship between the AR2240 series routers and software versions.

Table 2-677 Matching between AR2240 series routers and software versions

Router Model	Software Version
AR2240	V200R001C00 and later versions

Appearance and Structure

Appearance

Figure 2-252 shows the appearance of the AR2240 router.

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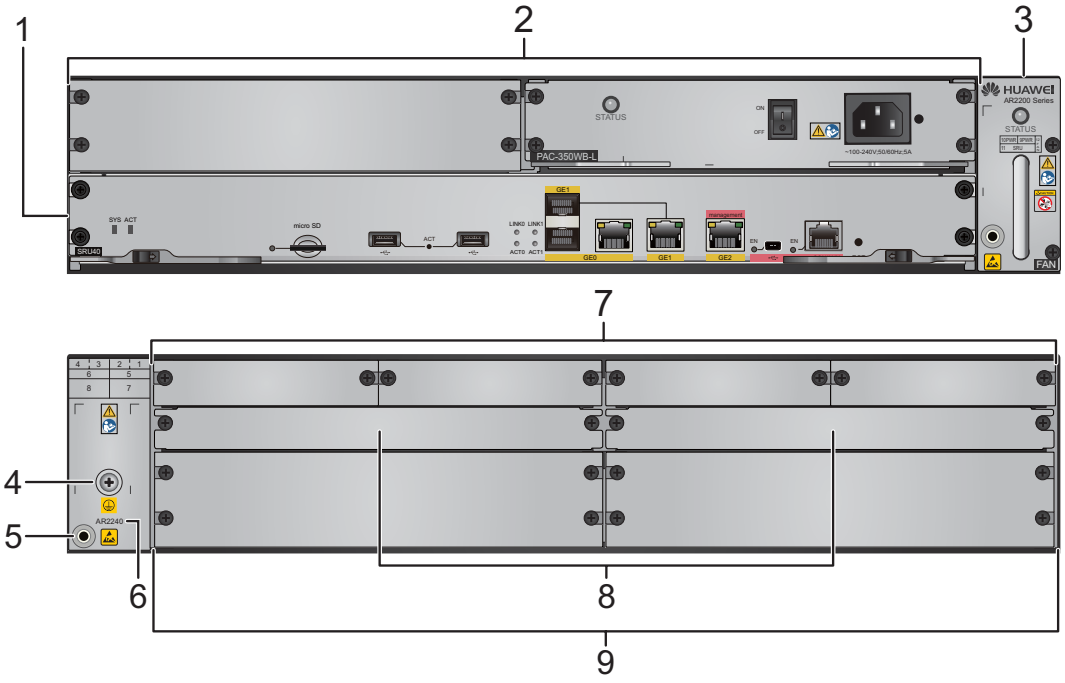
Figure 2-252 AR2240 appearance



1	**SRU** slots	2	Two power module slots Applicable power modules: ● **350 W AC Power Module** ● **350 W DC Power Module** ● **850 W AC PoE Power Module** **NOTE** AC and DC power modules cannot be used together in a router.
3	Fan module slot Applicable fan module: **Fan Module**	4	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
5	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	6	Product model silkscreen
7	Four SIC slots	8	Two WSIC slots
9	Two XSIC slots	-	-

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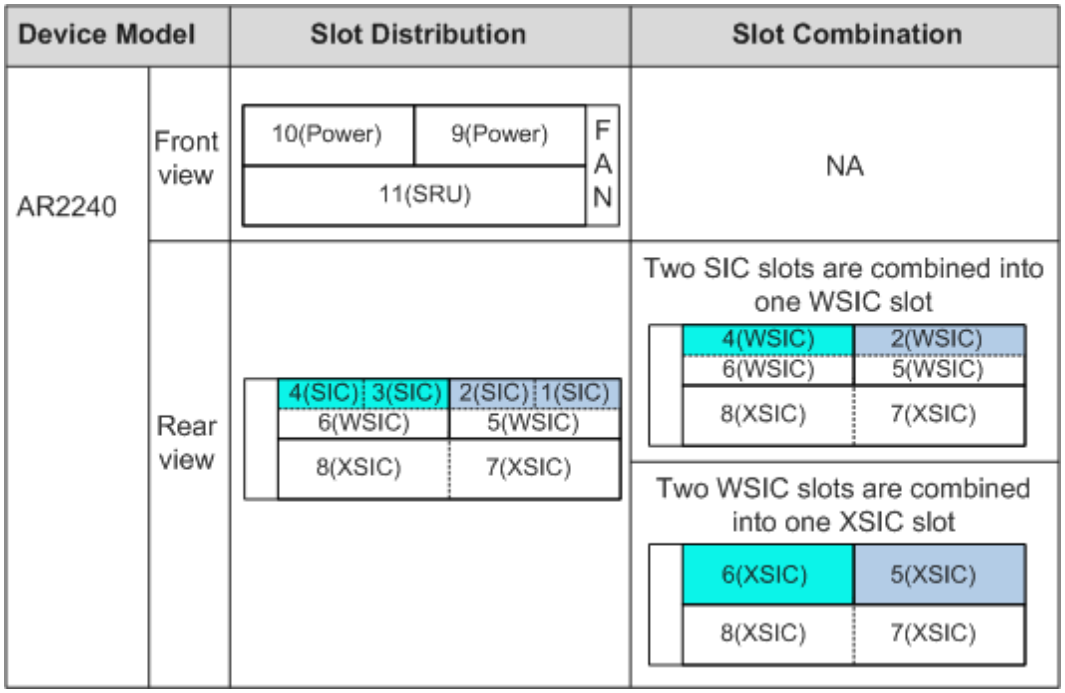
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot with a special component. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 2-253 shows the slot distribution on the AR2240.

Figure 2-253 AR2240 slot distribution



- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

All the indicators seen on the AR2240 front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Power Supply System

The AR2240 power supply system consists of two 350 W AC or DC power modules that work in 1+1 backup mode, and can have an 850 W AC PoE power module installed.

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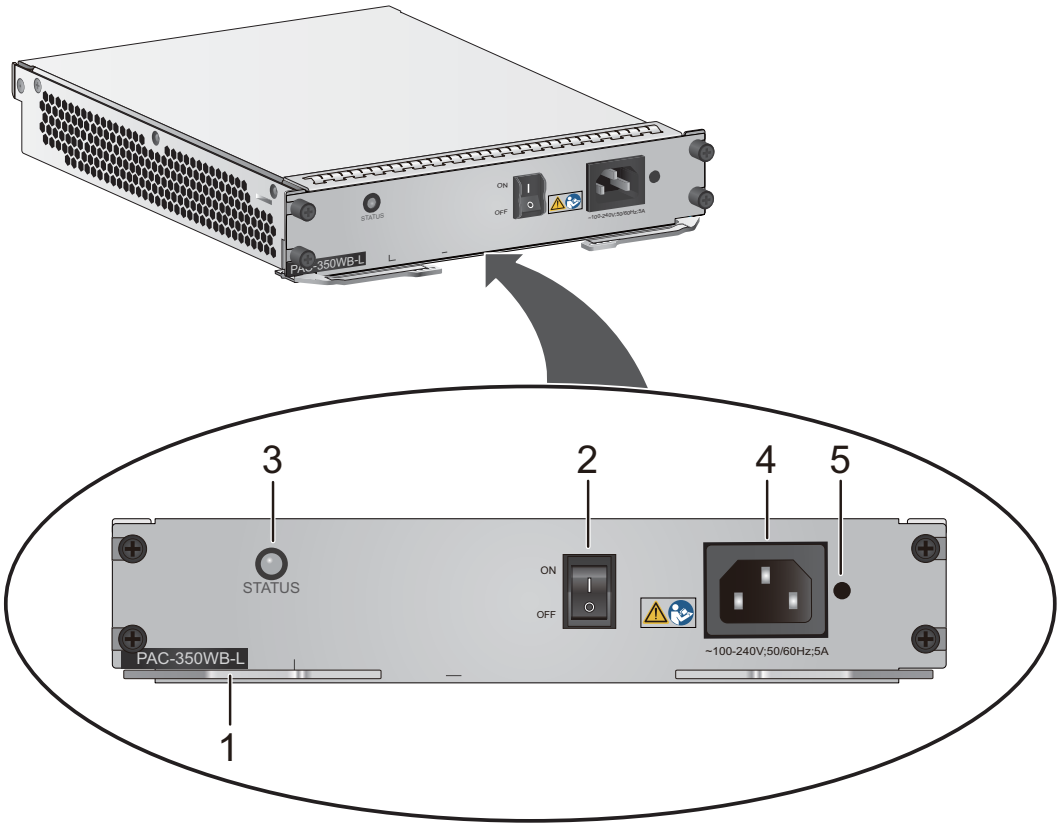
350 W AC Power Module

Figure 2-254 shows the appearance of the 350 W AC power module.

Figure 2-254 Appearance of the 350 W AC power module



Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The AC output power is within the allowed range. ● Steady red: The AC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	AC power jack	Use **AC Power Cable** to connect the router to an external power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-678 describes functions of the 350 W AC power module.

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Table 2-678 Functions of a 350 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-679 describes technical specifications of the 350 W AC power module.

Table 2-679 Technical specifications of an 350 W AC power module

Item	Description
Silkscreen	PWR350A
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.5 kg
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz

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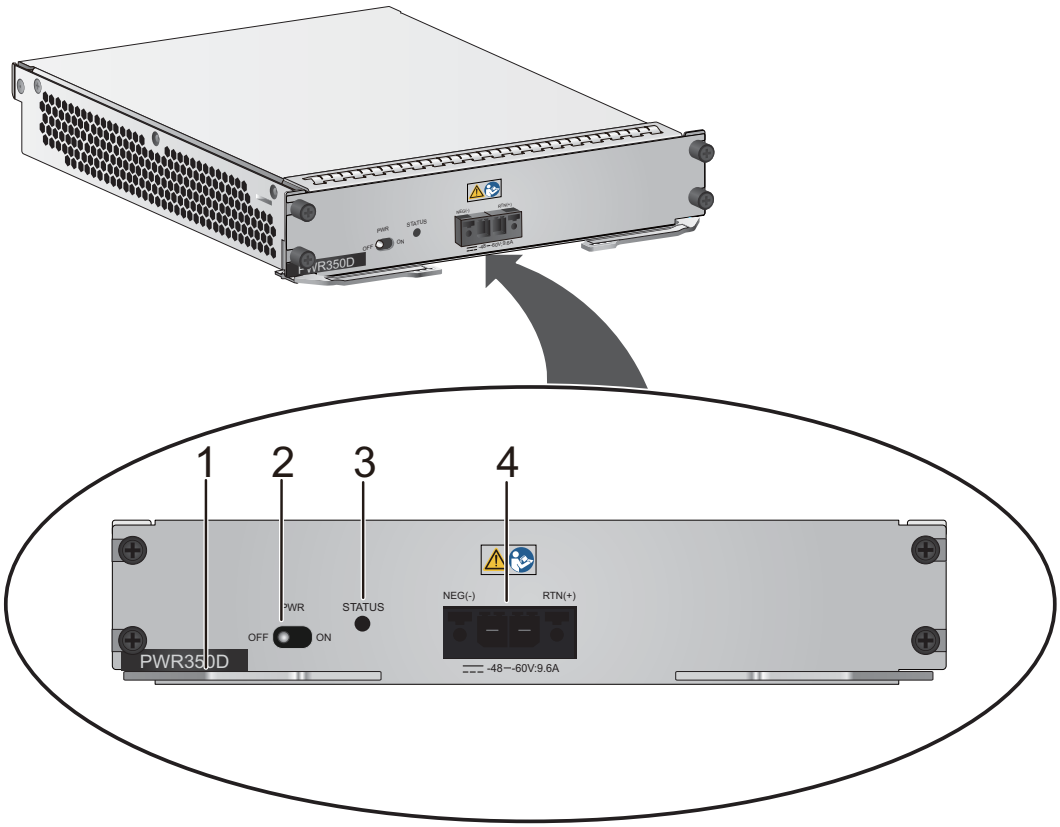
Item	Description
Maximum input current	5 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	350 W

350 W DC Power Module

Figure 2-255 shows the appearance of a 350 W DC power module.

Figure 2-255 Appearance of a 350 W DC power module



Number	Name	Description
1	Wrench	Install or remove a power module.

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Number	Name	Description
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The DC output power is within the allowed range. ● Steady red: The DC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	DC power interface	Use a DC power cable to connect the router to an external power source.

Table 2-680 describes functions of the 350 W DC power module.

Table 2-680 Functions of a 350 W DC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	The power module can automatically resume power supply in this protection state.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-681 describes technical specifications of a 350 W DC power module.

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Table 2-681 Technical specifications of a 350 W DC power module

Item	Description
Silkscreen	PWR350D
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.5 kg
Input	
Rated input voltage range	-48 V DC to -60 V DC
Maximum input voltage range	-38.4 V DC to -72 V DC
Maximum input current	6 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	350 W

850 W AC PoE Power Module

Figure 2-256 shows the appearance of the 850 W AC PoE power supply.

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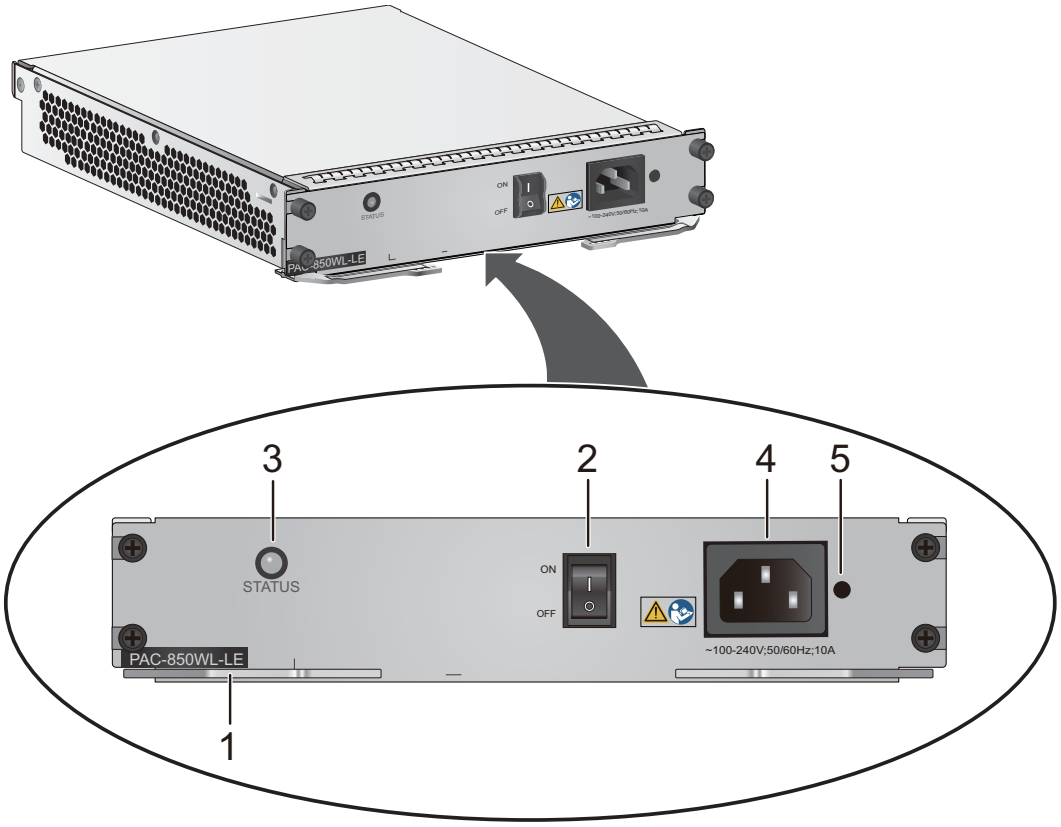
Figure 2-256 Appearance of the 850 W AC PoE power module



Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The AC output power is within the allowed range. ● Steady red: The AC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	AC power jack	Use **AC Power Cable** to connect the router to an external power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-682 describes functions of the 850 W AC PoE power module.

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Table 2-682 Functions of an 850 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-683 lists technical specifications of an 850 W AC PoE power module.

Table 2-683 Technical specifications of the 850 W AC PoE power module

Item	Description
Silkscreen	PAC-850WL-LE
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.85 kg
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz

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Item	Description
Maximum input current	10 A
Output	
Rated output voltage	12 V DC/-53.5 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC/-51.895 V DC to -55.105 V DC
Maximum output power	850 W

Heat Dissipation

The AR2240 uses two independent pluggable fan modules to cool the system.

Air Channel

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-257**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-257 Airflow

Fan Module

Fan modules are hot swappable and each consists of a fan tray, fans and a FAN Control Board (FCB), as shown in **Figure 2-258**.

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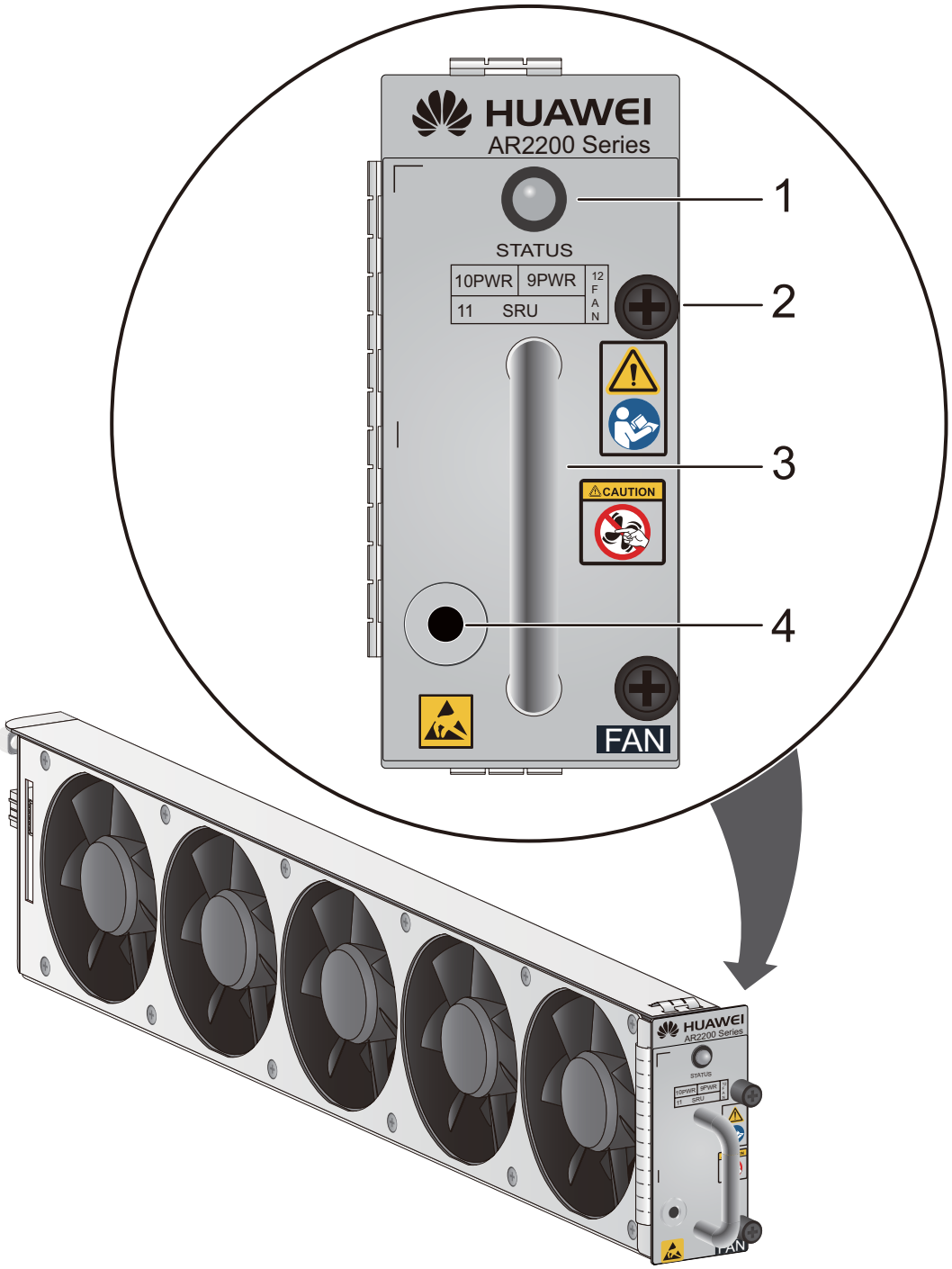
Figure 2-258 Appearance of a fan module



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Number	Name	Description
1	STATUS indicator of the fan module (red and green)	● Slow blinking green: The fan module is running properly. ● Fast blinking green: The fan module cannot communicate with the system. ● Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Fix the fan module
3	Handle	Install or remove a power module.
4	ESD jack	Connect to an ESD wrist strap, and ensure that the grounding terminal has been connected to the PGND cable.

Table 2-684 lists technical specifications of a fan module.

Table 2-684 Technical specifications of a fan module

Item	Description
Silkscreen	FAN
Dimensions (W x D x H)	27.4 mm x 478.6 mm x 84.3 mm (1.08 in. x 18.84 in. x 3.32 in.)
Fans	5
Weight	1.05 kg
Maximum power consumption	60 W
Maximum wind pressure	150Pa
Maximum wind rate	400 cubic feet per minute (CFM)
Maximum noise	65.7 dB
Operating voltage of a fan	7 V DC to 15 V DC

Technical Specifications

Table 2-685 lists technical specifications of the AR2240 series routers.

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Table 2-685 AR2240 series routers technical specifications

Item	Specification
System parameters	
Processor	● SRU40: 8-core, 600 MHz ● SRU60: 8-core, 600 MHz ● SRU80: 12-core, 750 MHz ● SRU100: 12-core, 750 MHz ● SRU200/SRU400: 32-core, 1.2 GHz ● SRU100E/SRU200E: 12-core, 1.2 GHz
Memory	● SRU40: 2 GB ● SRU60: 2 GB ● SRU80: 2 GB ● SRU100: 2 GB ● SRU200/SRU400: 4 GB ● SRU100E/SRU200E: 4 GB
Flash Memory	16 MB
Micro SD card (sd1 by default)	2 GB
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● Without rack-mounting bracket installed: 442.0 mm x 470.0 mm x 88.1 mm (17.40 in. x 18.50 in. x 3.47 in.) ● With rack-mounting brackets installed: 482.6 mm x 470.0 mm x 88.1 mm (19.0 in. x 18.50 in. x 3.47 in.)
Weight	8.85 kg
Power	
AC chassis model (350 W AC Power)	Support double hot-swappable power modules
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	5 A
Maximum output power	350 W
RPS	Not supported

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Item	Specification
PoE	Not supported
AC PoE chassis model (850 W AC PoE Power)	Support double hot-swappable power modules
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	10 A
Maximum output power	850 W
RPS	Not supported
PoE	Supported
DC chassis model (350 W DC Power)	Support double hot-swappable power modules
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum input voltage (DC)	-38.4 V DC to -72 V DC
Maximum input current	6 A
Maximum output power	350 W
RPS	Not supported
PoE	Not supported
Power consumption (empty chassis)	
Typical power consumption	● SRU40: 67 W ● SRU60: 67 W ● SRU80: 100 W ● SRU100: 100 W ● SRU200/SRU400: 130 W ● SRU100E/SRU200E: 62 W

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Item	Specification
Maximum power consumption	● SRU40: 97 W ● SRU60: 97 W ● SRU80: 129 W ● SRU100: 129 W ● SRU200/SRU400: 185 W ● SRU100E/SRU200E: 92 W
Heat dissipation	
Fan module	Independent pluggable fan modules
Airflow (facing the front panel)	Cold air flows into the router from the left side and is exhausted from the right side.
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interfaces	● SRU40: 2 ● SRU60: 2 ● SRU80: 2 ● SRU100: 2 ● SRU200: 1 ● SRU400: 1 ● SRU100E: 1 ● SRU200E: 1
Service interfaces (standard configuration)	● SRU40: Two GE Combo interface (WAN) and one GE electrical interface (WAN). ● SRU60: Two GE Combo interface (WAN) and one GE electrical interface (WAN). ● SRU80: Two GE Combo interface (WAN) and one GE electrical interface (WAN). ● SRU100: Two GE Combo interface (WAN) and one GE electrical interface (WAN). ● SRU200: Four GE Combo interfaces (WAN) and two 10 GE optical interfaces (WAN). ● SRU400: Four GE Combo interfaces (WAN) and two 10 GE optical interfaces (WAN). ● SRU100E: Four GE Combo interfaces (WAN) and two GE optical interfaces (WAN). ● SRU200E: Four GE Combo interfaces (WAN) and two 10 GE optical interfaces (WAN).

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Item	Specification
Extended slots	● 4xSIC ● 2xWSIC ● 2xXSIC
Environment	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the operating temperature reduces 1°C every time the altitude increases 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.10.3 AR2220-DC

Version Mapping

Table 2-686 describes the matching relationship between the AR2220-DC series routers and software versions.

Table 2-686 Matching between AR2220-DC series routers and software versions

Router Model	Software Version
AR2220-DC	V200R001C01 and later versions

Appearance and Structure

Appearance

Figure 2-259 shows the appearance of the AR2220-DC router.

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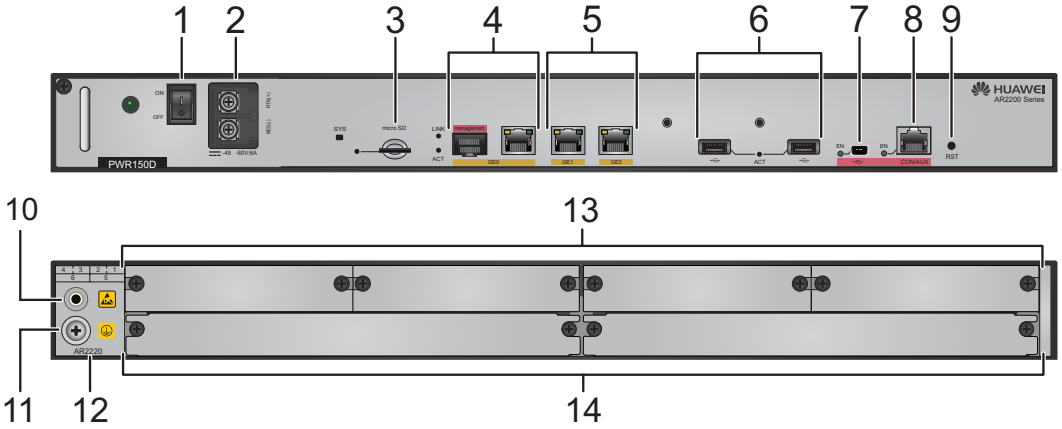
Figure 2-259 AR2220-DC appearance



1	Power switch	2	DC power terminals **NOTE** Use **DC power cables** to connect the router to an external power source.
3	Micro SD card slot	4	WAN interface: **GE combo interface**
5	WAN interfaces: two **GE electrical interfaces**	6	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap.
7	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	8	**CON/AUX interface** **NOTE** The AR2220-DC does not support AUX login.
9	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.	10	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.

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11	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	12	Product model silkscreen
13	Four SIC slots	14	Two WSIC slots

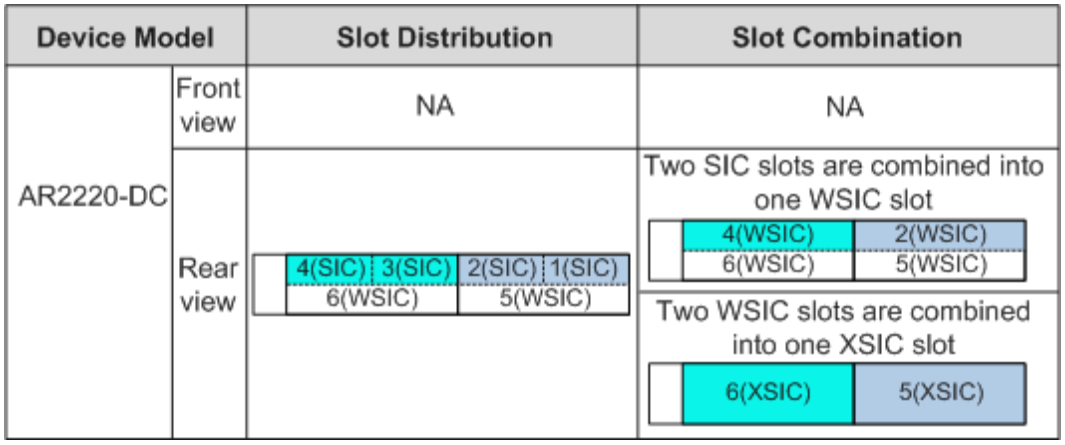
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-260 shows the slot layout on the AR2220-DC.

Figure 2-260 Slot distribution of the AR2220-DC



- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

Figure 2-261 shows the AR2220-DC indicator.

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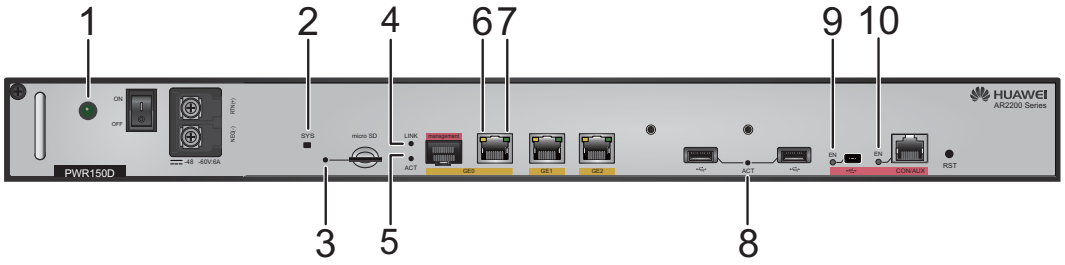
Figure 2-261 Indicators on the AR2220-DC



Number	Indicator	Color	Description
1	STATUS	Green	The router is powered by the internal power modules normally.
		Red	The internal power modules of the router do not work normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	Micro SD card indicator	Green	Steady on: A link has been established. Blinking: Data is being transmitted or received. Off: No Micro SD card is available.
4 and 5	GE optical interface indicators ● 4: LINK indicator ● 5: ACT indicator	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.

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Number	Indicator	Color	Description
6 and 7	GE electrical interface indicators ● 6: ACT indicator ● 7: LINK indicator	Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
8	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.

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Number	Indicator	Color	Description
10	EN (CON/AUX interface) **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled. Off: The CON/AUX interface is disabled.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-687** lists the CON/AUX interface attributes.

Table 2-687 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)

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Attribute	Description
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-688** lists attributes of a Mini USB interface.

Table 2-688 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-689** lists attributes of a GE electrical interface.

Table 2-689 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-690** lists attributes of a USB interface.

Table 2-690 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR2220-DC power supply system contains one built-in 150 W DC power module.

150 W DC Power Module

The 150 W DC power module is fixed in the chassis and cannot be removed. **Figure 2-262** shows its appearance.

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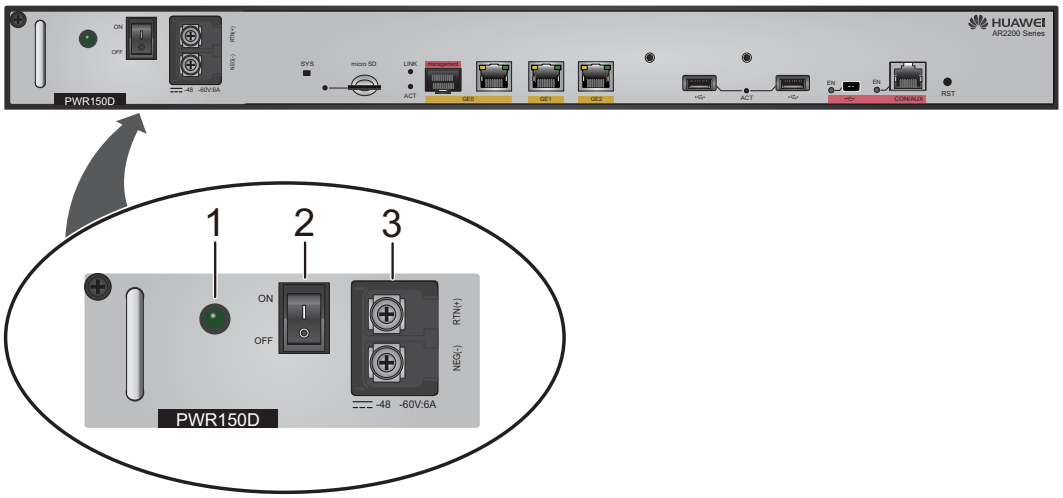
Figure 2-262 Appearance of a 150 W DC power module



Number	Name	Description
1	Power module indicator (STATUS)	● Green: The power supply is working properly. ● Red: A power supply failure occurs. ● Off: The device is not powered on.
2	Power switch	Turn on or off the power.
3	DC power jack	Use **DC Power Cable** to connect the router to an external power source.

Table 2-691 describes functions of the 150 W DC power module.

Table 2-691 Functions of a 150 W DC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.

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Function	Description
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Not supported

Table 2-692 describes technical specifications of a 150 W DC power module.

Table 2-692 Technical specifications of a 150 W DC power module

Item	Description
Type	A built-in module
Input	
Rated input voltage range	-48 V DC to -60 V DC
Maximum input voltage range	-38.4 V DC to -72 V DC
Maximum input current	6 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	150 W

Heat Dissipation

The AR2220-DC router has built-in fans to cool the system. The fans are not pluggable.

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Seen from the front panel, the airflow is left to right, as shown in **Figure 2-263**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-263 Airflow

Technical Specifications

Table 2-693 lists technical specifications of the AR2220-DC routers.

Table 2-693 AR2220-DC routers technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 600 MHz
Memory	2 GB
Flash memory	16 MB
Micro SD card (default: sd1)	2 GB
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.)
Weight	7 kg (15.43 lb)
Power specifications	
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum DC input voltage	-38.4 V DC to -72 V DC

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Item	Specification
Maximum input current	6 A
Maximum output power	150 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	47 W
Maximum power consumption	65 W
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two GE electrical interfaces
Extended slots	● 4xSIC ● 2xWSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

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2.10.4 AR2201-48FE

Version Mapping

Table 2-694 lists the mapping between the AR2201-48FE router and software versions.

Table 2-694 Mapping between the AR2201-48FE router and software versions

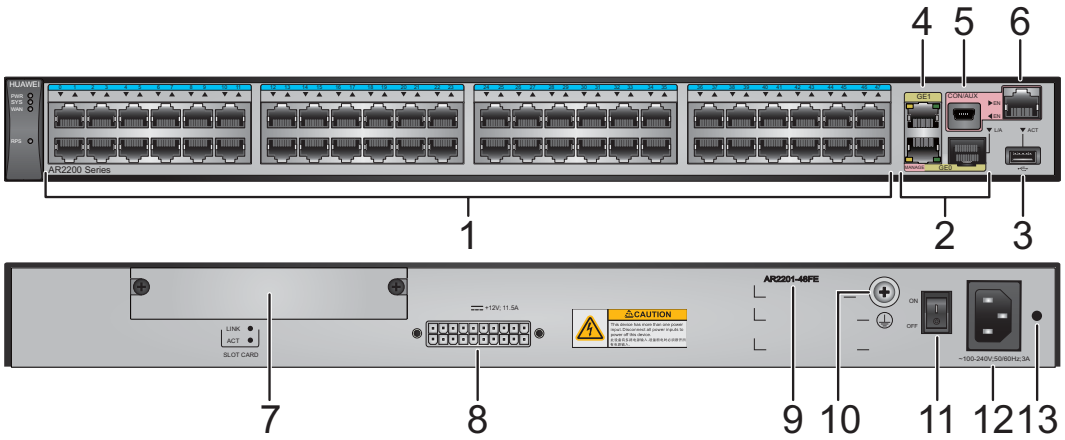
Router Model	Software Version
AR2201-48FE	V200R003C00 and later versions

Appearance and Structure

Appearance

Figure 2-264 shows the appearance of the AR2201-48FE router.

Figure 2-264 AR2201-48FE appearance



1	LAN interfaces: forty-eight **FE electrical interfaces**	2	WAN interface: **GE combo interface**
3	One **USB interface (host)**	4	WAN interface: one **GE electrical interface**

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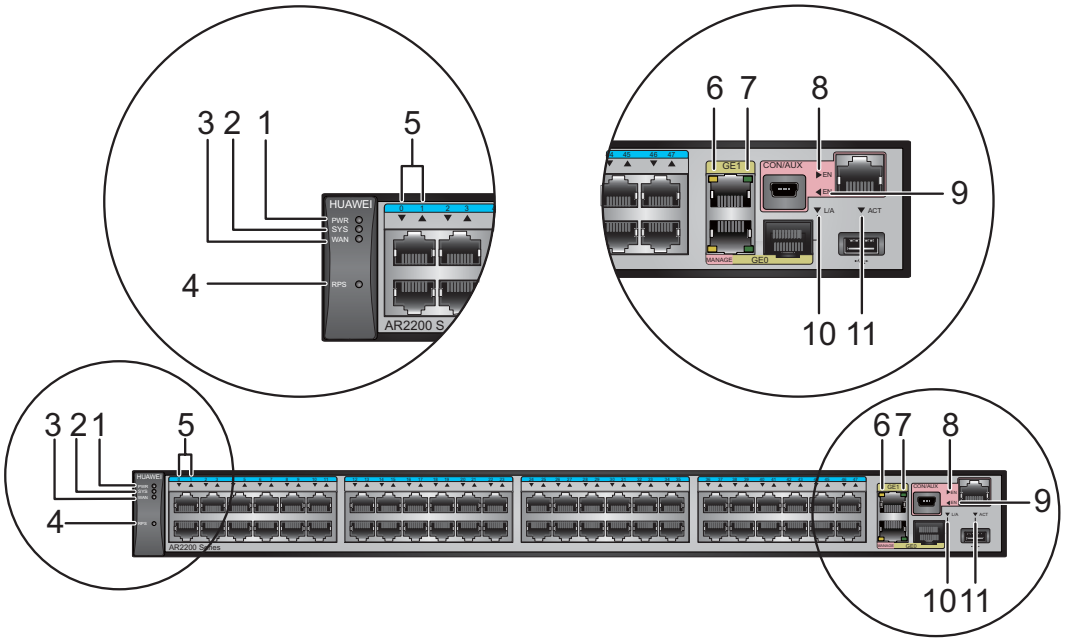
5	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	6	**CON/AUX interface** **NOTE** The AR2201-48FE does not support AUX login.
7	Extended card slot **NOTE** The slot is reserved, and no extended card is supported currently.	8	RPS power socket **NOTE** Use an **RPS150 power and communication cable** to connect the router to a 150 W RPS power supply system.
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
11	Power switch	12	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
13	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	-	-

Indicator Description

Figure 2-265 shows the locations of AR2201-48FE indicators.

Figure 2-265 Indicators on the AR2201-48FE



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Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: A WAN connection has been established and is active.
			Off: No WAN connection is established or active.
4	RPS	Green	Steady on: An RPS is connected to the router.
		Yellow	Steady on: An RPS is connected to the router but is not working normally. Blinking: An RPS is supplying power to the router.
		Off	No RPS is connected to the router.
5	FE electrical interface indicators	Green	Steady on: A link has been established on the FE electrical interface.
			Blinking: Data is being transmitted or received on the FE electrical interface.
			Off: No link is established on the FE electrical interface.
6 and 7	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.

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Number	Indicator	Color	Description
			Off: No data is being transmitted or received.
8	EN (CON/AUX interface) **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled. Off: The CON/AUX interface is disabled.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.
10	EN (SFP optical interface)	Green	Steady on: A link has been established on the SFP optical interface. Blinking: Data is being transmitted or received on the SFP optical interface. Off: No link is established on the SFP optical interface.
11	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-695** lists the CON/AUX interface attributes.

Table 2-695 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-696** lists attributes of a Mini USB interface.

Table 2-696 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle

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Attribute	Description
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-697** lists attributes of a GE electrical interface.

Table 2-697 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-698** lists attributes of an FE electrical interface.

Table 2-698 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-699** lists attributes of a USB interface.

Table 2-699 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

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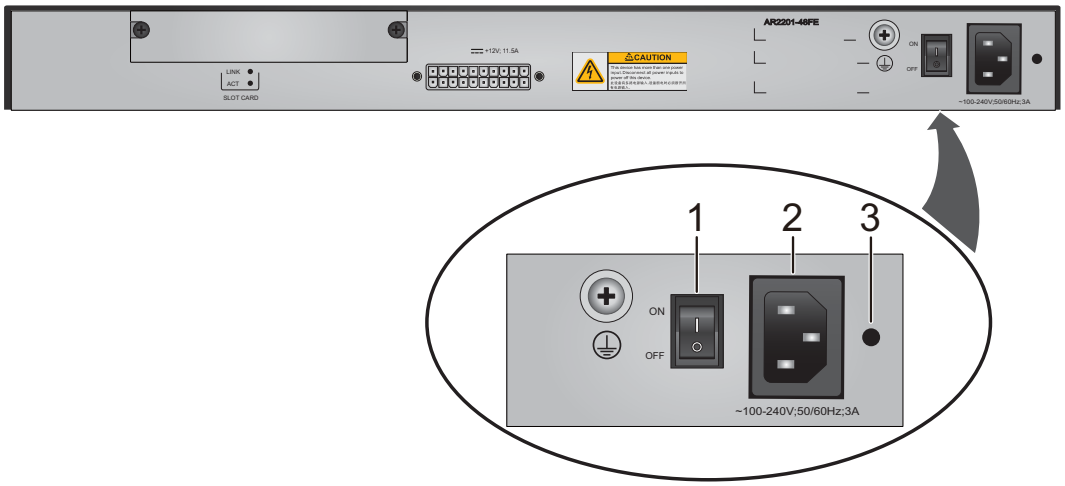
Power Supply System

The AR2201-48FE has one built-in 60 W AC power module and can connect to a 150 W RPS power module to implement 1+1 power redundancy.

60 W AC Power Module

The 60 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-266** shows the appearance of this power module.

Figure 2-266 Appearance of the 60 W AC power module



Number	Name	Description
1	Power switch	You can turn the power switch to the ON or OFF position to power on or off the router.
2	AC power jack	Use an **AC Power Cable** to connect the router to an external power source.
3	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-700 describes functions of the 60 W AC power module.

Table 2-700 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-701 describes technical specifications of the 60 W AC power module.

Table 2-701 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC

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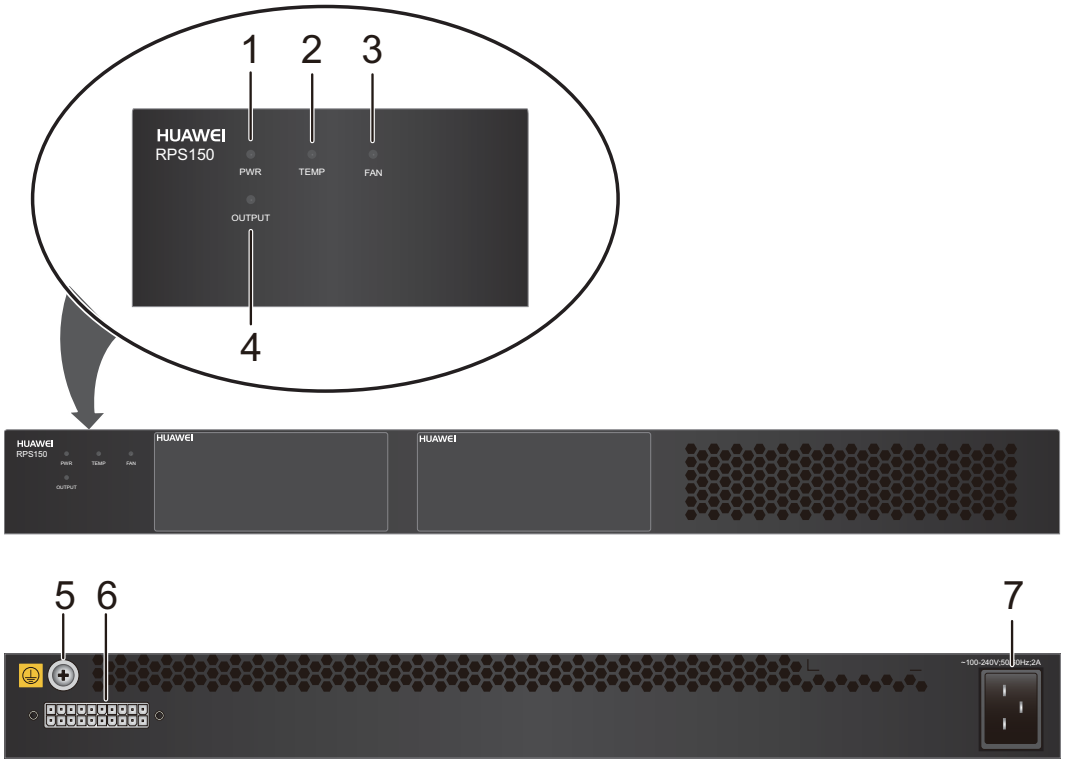
Item	Specification
Maximum output power	60 W

150 W RPS Power Module

The 150 W RPS is an AC power module. **Figure 2-267** shows the appearance of this power module.

Figure 2-267 Appearance of the 150 W RPS



Number	Name	Description
1	PWR	● Steady green: The power input is normal. ● Off: The 150 W RPS is powered off.
2	TEMP	● Steady green: The temperature is within the allowed range. ● Steady red: The temperature is out of the allowed range. ● Off: The 150 W RPS is powered off.

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Number	Name	Description
3	FAN	● Steady green: The fan module works properly. ● Steady red: The fan module does not work properly. ● Off: The 150 W RPS is powered off.
4	OUTPUT	● Steady green: The 150 W RPS is in cold backup state. ● Blinking green: The 150 W RPS is supplying power. ● Off: The 150 W RPS is powered off.
5	Ground point	To protect the device from lightning and interference, reliably ground the chassis by connecting a **4.1.5 Ground Cable** to the ground point.
6	RPS power socket	Use an **RPS150 Power and Communication Cable** to connect to the router.
7	AC power jack	Use an **RPS150 AC Power Cable** to connect the router to the power supply system.

The 150 W RPS has the following features:

- When the built-in power module of a router fails, the 150 W RPS starts to provide power for the router.
- When the built-in power module of the router starts to work again, the 150 W RPS stops providing power for the router and switches to cold backup state.

NOTE

The 150 W RPS can power only one router at a time when the built-in power module of the router fails.

Table 2-702 describes the technical specifications of the 150 W RPS.

Table 2-702 Technical specifications of the 150 W RPS

Item	Specification
Silkscreen	RPS150
Dimensions (W x D x H)	442.0 mm x 310.0 mm x 43.6 mm (17.4 in. x 12.2 in. x 1.72 in.)
Weight	4 kg
Input	
Rated input voltage range	110 V AC to 220 V AC, 50 Hz or 60 Hz

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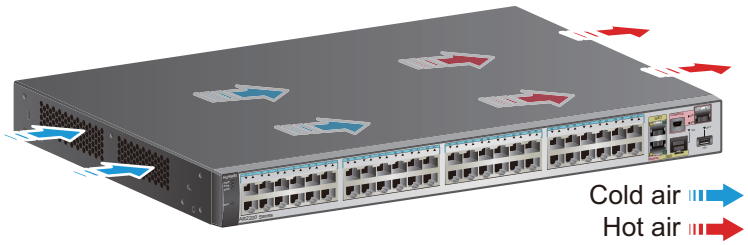
Item	Specification
Maximum input voltage range	200 V AC to 240 V AC (220 V Input)/100 V AC to 120 V AC (110 V Input), 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	150 W

Heat Dissipation

The AR2201-48FE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-268**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-268 Airflow



Technical Specifications

Table 2-703 lists technical specifications of the AR2201-48FE routers.

Table 2-703 AR2201-48FE routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB

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Item	Specification
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 314.9 mm x 43.6 mm (17.4 in. x 12.4 in. x 1.72 in.) ● With mounting brackets installed: 482.6 mm x 314.9 mm x 43.6 mm (19.0 in. x 12.4 in. x 1.72 in.)
Weight	4.5 kg (9.92 lb)
Power specifications	
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output power	60 W
RPS power supply	Supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	35 W
Maximum power consumption	40 W
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)

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Item	Specification
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and one GE electrical interface LAN interfaces: 48 FE electrical interfaces
Extended slots	None
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.10.5 AR2202-48FE

Version Mapping

Table 2-704 lists the mapping between the AR2202-48FE router and software versions.

Table 2-704 Mapping between the AR2202-48FE router and software versions

Router Model	Software Version
AR2202-48FE	V200R003C00 and later versions

Appearance and Structure

Appearance

Figure 2-269 shows the appearance of the AR2202-48FE router.

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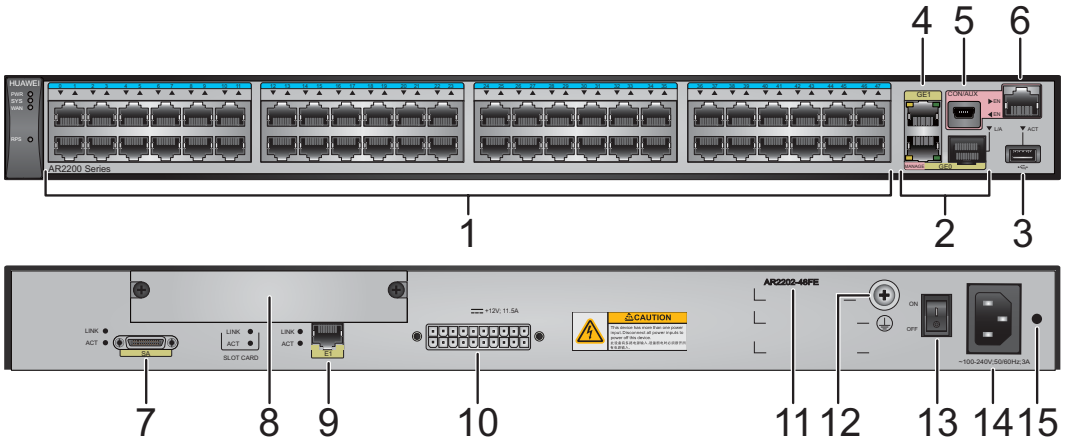
Figure 2-269 AR2202-48FE appearance



1	LAN interfaces: forty-eight **FE electrical interfaces**	2	WAN interface: **GE combo interface**
3	One **USB interface (host)**	4	WAN interface: one **GE electrical interface**
5	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.	6	**CON/AUX interface** **NOTE** The AR2202-48FE does not support AUX login.
7	WAN interface: **SA interface** **NOTE** This interface can be connected to a wide area network using an **SA cable**.	8	Extended card slot **NOTE** The slot is reserved, and no extended card is supported currently.
9	WAN interface: **E1 interface** **NOTE** This interface can be connected to a wide area network using an **E1/T1 cable**.	10	RPS power socket **NOTE** Use an **RPS150 power and communication cable** to connect the router to a 150 W RPS power supply system.
11	Product model silkscreen	12	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
13	Power switch	14	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.

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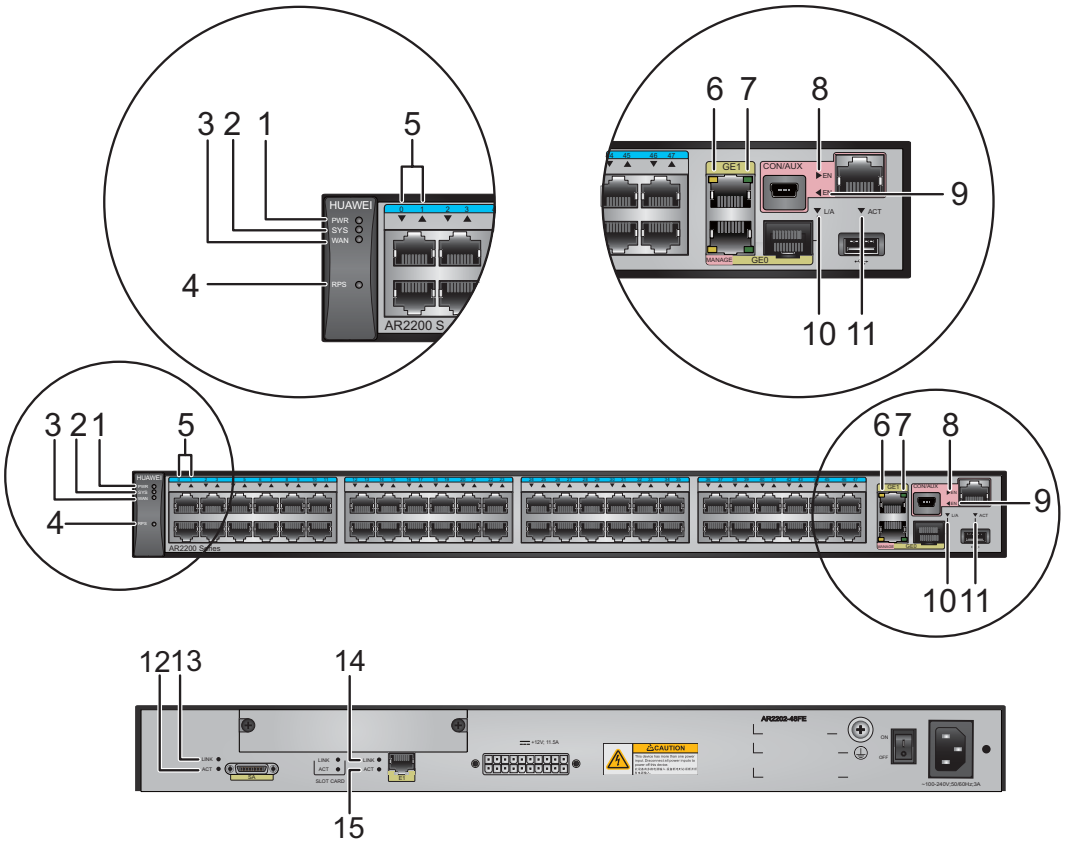
15	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	-	-

Indicator Description

Figure 2-270 shows the locations of AR2202-48FE indicators.

Figure 2-270 Indicators on the AR2202-48FE



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.

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Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	WAN	Green	Steady on: A WAN connection has been established and is active.
			Off: No WAN connection is established or active.
4	RPS	Green	Steady on: An RPS is connected to the router.
		Yellow	Steady on: An RPS is connected to the router but is not working normally. Blinking: An RPS is supplying power to the router.
		Off	No RPS is connected to the router.
5	FE electrical interface indicators	Green	Steady on: A link has been established on the FE electrical interface.
			Blinking: Data is being transmitted or received on the FE electrical interface.
			Off: No link is established on the FE electrical interface.
6 and 7	GE electrical interface indicators	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
8	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

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Number	Indicator	Color	Description
	NOTE ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The CON/AUX interface is disabled.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled. Off: The Mini USB interface is disabled.
10	EN (SFP optical interface)	Green	Steady on: A link has been established on the SFP optical interface. Blinking: Data is being transmitted or received on the SFP optical interface. Off: No link is established on the SFP optical interface.
11	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
12 and 13	SA interface indicators: ● 13: LINK indicator, green ● 12: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
14 and 15	E1 interface indicators: ● 14: LINK indicator, green ● 15: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-705** lists the CON/AUX interface attributes.

Table 2-705 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

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Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-706** lists attributes of a Mini USB interface.

Table 2-706 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-707** lists attributes of a GE electrical interface.

Table 2-707 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

FE Electrical Interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 2-708** lists attributes of an FE electrical interface.

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Table 2-708 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-709** lists attributes of a USB interface.

Table 2-709 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0

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Attribute	Description
Working mode	Host

SA Interface

When working in synchronous mode, the SA interfaces implement interworking between a branch and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. **Table 2-710** lists attributes of a SA interface.

Table 2-710 SA interface attributes

Attribute	Description		
	Synchronous Serial Interface		**Asynchronous Serial Interface**
Connector type	DB28		
Standards compliance and working mode	● V.24 DTE ● V.24 DCE	● V.35 DTE ● V.35 DCE ● X.21 DTE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Services provided	DDN leased line		● Modem dial-up ● Backup
	Terminal access		● Asynchronous leased line ● Terminal access
Cable type	**4.1.11 SA Cable**		

E1 Interface

An E1 interface transmits data and image signals. **Table 2-711** lists attributes of an E1 interface.

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Table 2-711 E1 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	G.703, G.704
Rate	2.048 Mbit/s
Working mode	E1
Services provided	● Backup ● Terminal access
Cable type	**4.1.9 E1/T1 Cable**

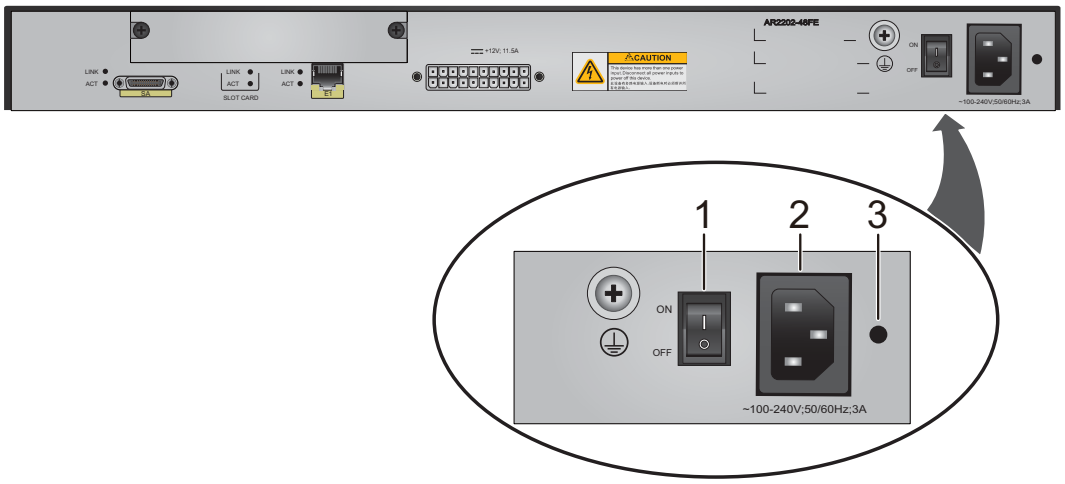
Power Supply System

The AR2202-48FE has one built-in 60 W AC power module and can connect to a 150 W RPS power module to implement 1+1 power redundancy.

60 W AC Power Module

The 60 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-271** shows the appearance of this power module.

Figure 2-271 Appearance of the 60 W AC power module



Number	Name	Description
1	Power switch	You can turn the power switch to the ON or OFF position to power on or off the router.

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Number	Name	Description
2	AC power jack	Use an **AC Power Cable** to connect the router to an external power source.
3	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-712 describes functions of the 60 W AC power module.

Table 2-712 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-713 describes technical specifications of the 60 W AC power module.

Table 2-713 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module

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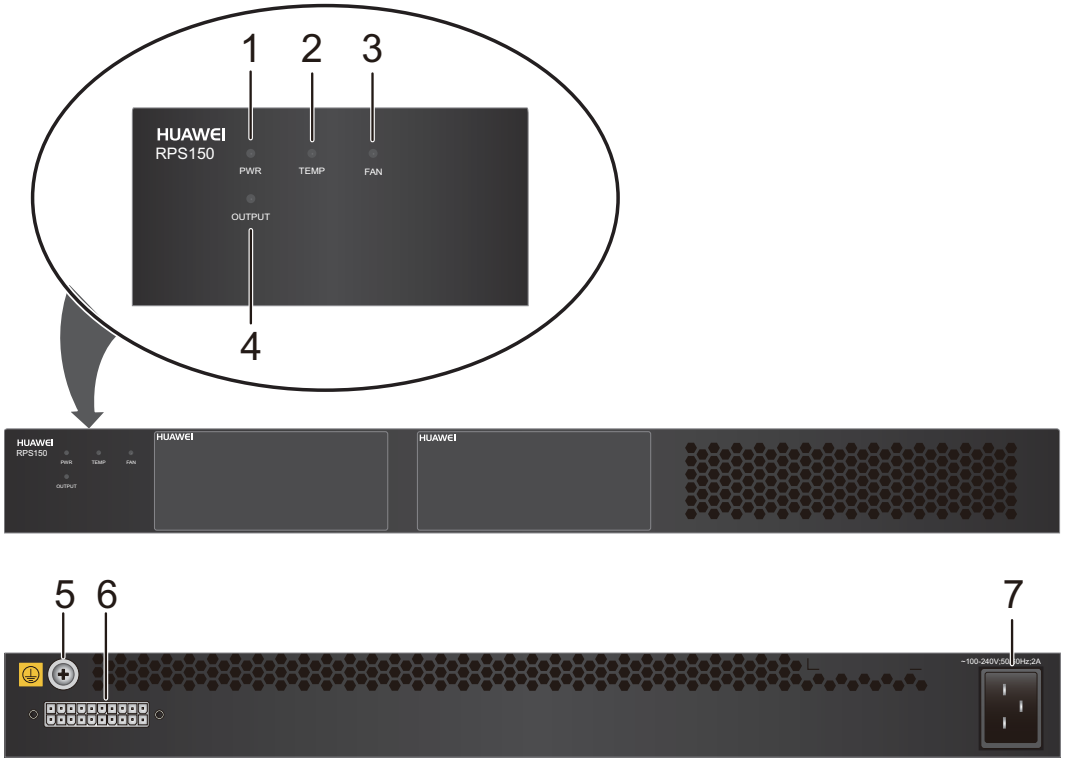
Item	Specification
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

150 W RPS Power Module

The 150 W RPS is an AC power module. **Figure 2-272** shows the appearance of this power module.

Figure 2-272 Appearance of the 150 W RPS



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Number	Name	Description
1	PWR	● Steady green: The power input is normal. ● Off: The 150 W RPS is powered off.
2	TEMP	● Steady green: The temperature is within the allowed range. ● Steady red: The temperature is out of the allowed range. ● Off: The 150 W RPS is powered off.
3	FAN	● Steady green: The fan module works properly. ● Steady red: The fan module does not work properly. ● Off: The 150 W RPS is powered off.
4	OUTPUT	● Steady green: The 150 W RPS is in cold backup state. ● Blinking green: The 150 W RPS is supplying power. ● Off: The 150 W RPS is powered off.
5	Ground point	To protect the device from lightning and interference, reliably ground the chassis by connecting a **4.1.5 Ground Cable** to the ground point.
6	RPS power socket	Use an **RPS150 Power and Communication Cable** to connect to the router.
7	AC power jack	Use an **RPS150 AC Power Cable** to connect the router to the power supply system.

The 150 W RPS has the following features:

- When the built-in power module of a router fails, the 150 W RPS starts to provide power for the router.
- When the built-in power module of the router starts to work again, the 150 W RPS stops providing power for the router and switches to cold backup state.

NOTE

The 150 W RPS can power only one router at a time when the built-in power module of the router fails.

Table 2-714 describes the technical specifications of the 150 W RPS.

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Table 2-714 Technical specifications of the 150 W RPS

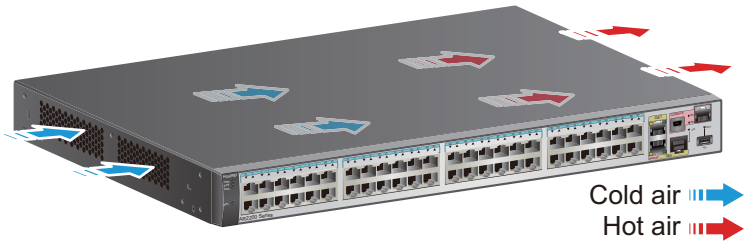
Item	Specification
Silkscreen	RPS150
Dimensions (W x D x H)	442.0 mm x 310.0 mm x 43.6 mm (17.4 in. x 12.2 in. x 1.72 in.)
Weight	4 kg
Input	
Rated input voltage range	110 V AC to 220 V AC, 50 Hz or 60 Hz
Maximum input voltage range	200 V AC to 240 V AC (220 V Input)/100 V AC to 120 V AC (110 V Input), 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	150 W

Heat Dissipation

The AR2202-48FE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-273**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-273 Airflow



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Technical Specifications

Table 2-715 lists technical specifications of the AR2202-48FE routers.

Table 2-715 AR2202-48FE routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 314.9 mm x 43.6 mm (17.4 in. x 12.4 in. x 1.72 in.) ● With mounting brackets installed: 482.6 mm x 314.9 mm x 43.6 mm (19.0 in. x 12.4 in. x 1.72 in.)
Weight	4.5 kg (9.92 lb)
Power specifications	
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output power	60 W
RPS power supply	Supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	35 W
Maximum power consumption	40 W
Heat dissipation	
Fan module	Built-in fan module, not swappable

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Item	Specification
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one GE electrical interface, one SA interface, and one E1 interface LAN interfaces: 48 FE electrical interfaces
Extended slots	None
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.10.6 AR2204

Version Mapping

Table 2-716 lists the mapping between the AR2204 router and software versions.

Table 2-716 Mapping between the AR2204 router and software versions

Router Model	Software Version
AR2204	V200R003C00 and later versions

Appearance and Structure

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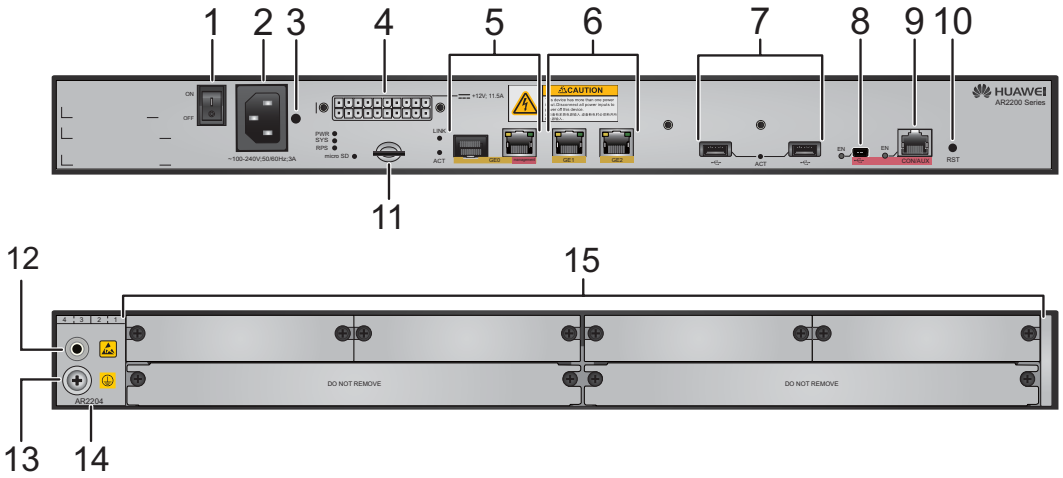
Appearance

Figure 2-274 shows the appearance of the AR2204 router.

Figure 2-274 AR2204 appearance



1	Power switch	2	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
3	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	4	RPS power socket **NOTE** Use an **RPS150 power and communication cable** to connect the router to a 150 W RPS power supply system.
5	WAN interface: **GE combo interface**	6	WAN interfaces: two **GE electrical interfaces**
7	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	8	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.

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9	**CON/AUX interface** **NOTE** The AR2204 does not support AUX login.	10	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
11	Micro SD card slot	12	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
13	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	14	Product model silkscreen
15	Four SIC slots	-	-

Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-275 shows slot distribution of the AR2204 routers.

Figure 2-275 Slot distribution of the AR2204 routers

Device Model		Slot Distribution	Slot Combination
AR2204	Front view	NA	NA
	Rear view	4(SIC) 3(SIC) 2(SIC) 1(SIC) NA NA	Two SIC slots are combined into one WSIC slot 4(WSIC) 2(WSIC) NA NA

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.

Indicator Description

Figure 2-276 shows the locations of AR2204 indicators.

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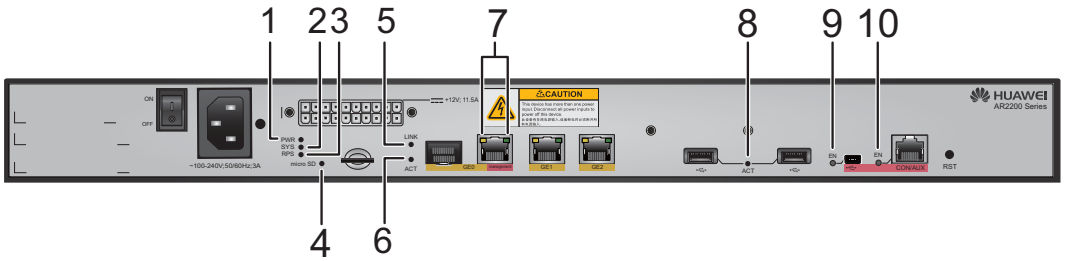
Figure 2-276 Indicators on the AR2204



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Red	The internal power modules of the router do not work normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	RPS	Green	Steady on: An RPS is connected to the router.
		Yellow	Steady on: An RPS is connected to the router but is not working normally.
			Blinking: An RPS is supplying power to the router.
		Off	No RPS is connected to the router.
4	Micro SD card indicator	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No Micro SD card is available.

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Number	Indicator	Color	Description
5 and 6	GE optical interface indicators: ● 5: LINK indicator ● 6: ACT indicator	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
7	GE electrical interface indicators	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
8	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

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Number	Indicator	Color	Description
	NOTE ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The CON/AUX interface is disabled.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-717** lists the CON/AUX interface attributes.

Table 2-717 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)

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Attribute	Description
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-718** lists attributes of a Mini USB interface.

Table 2-718 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-719** lists attributes of a GE electrical interface.

Table 2-719 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-720** lists attributes of a USB interface.

Table 2-720 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR2204 has one built-in 150 W AC power module and can connect to a 150 W RPS power module to implement 1+1 power redundancy.

150 W AC Power Module

The 150 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-277** shows the appearance of this power module.

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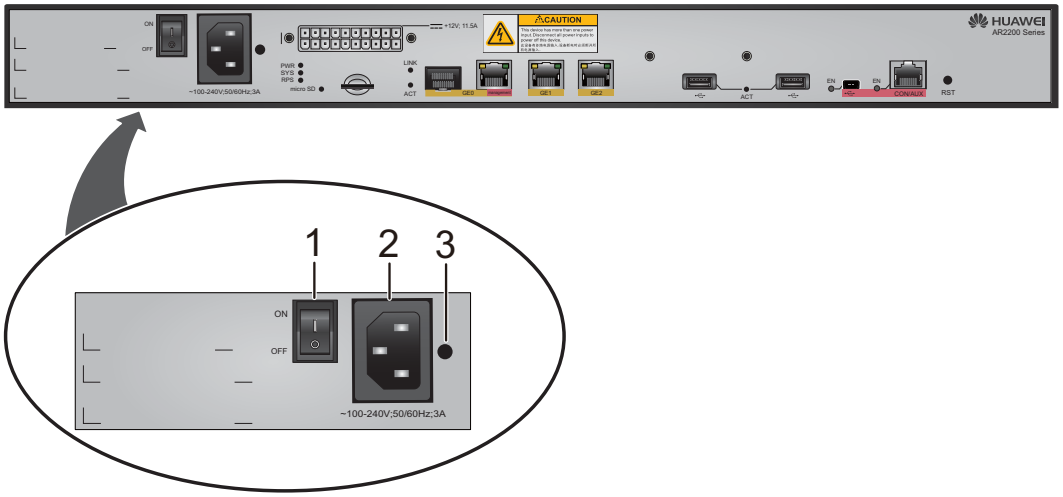
Figure 2-277 Appearance of the 150 W AC power module



Number	Name	Description
1	Power switch	You can turn the power switch to the ON or OFF position to power on or off the router.
2	AC power jack	Use an **AC Power Cable** to connect the router to an external power source.
3	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-721 describes functions of the 150 W AC power module.

Table 2-721 Functions of a 150 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-722 describes technical specifications of the 150 W AC power module.

Table 2-722 Technical specifications of the 150 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	150 W

150 W RPS Power Module

The 150 W RPS is an AC power module. Figure 2-278 shows the appearance of this power module.

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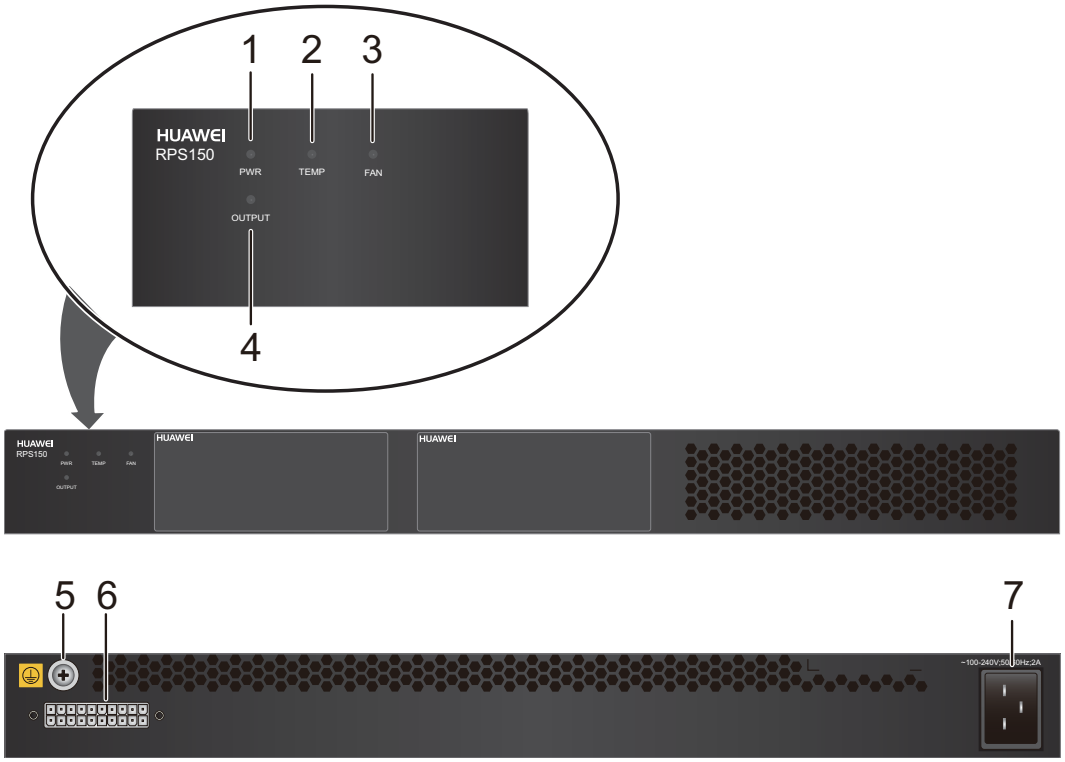
Figure 2-278 Appearance of the 150 W RPS



Number	Name	Description
1	PWR	● Steady green: The power input is normal. ● Off: The 150 W RPS is powered off.
2	TEMP	● Steady green: The temperature is within the allowed range. ● Steady red: The temperature is out of the allowed range. ● Off: The 150 W RPS is powered off.
3	FAN	● Steady green: The fan module works properly. ● Steady red: The fan module does not work properly. ● Off: The 150 W RPS is powered off.
4	OUTPUT	● Steady green: The 150 W RPS is in cold backup state. ● Blinking green: The 150 W RPS is supplying power. ● Off: The 150 W RPS is powered off.

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Number	Name	Description
5	Ground point	To protect the device from lightning and interference, reliably ground the chassis by connecting a **4.1.5 Ground Cable** to the ground point.
6	RPS power socket	Use an **RPS150 Power and Communication Cable** to connect to the router.
7	AC power jack	Use an **RPS150 AC Power Cable** to connect the router to the power supply system.

The 150 W RPS has the following features:

- When the built-in power module of a router fails, the 150 W RPS starts to provide power for the router.
- When the built-in power module of the router starts to work again, the 150 W RPS stops providing power for the router and switches to cold backup state.

NOTE

The 150 W RPS can power only one router at a time when the built-in power module of the router fails.

Table 2-723 describes the technical specifications of the 150 W RPS.

Table 2-723 Technical specifications of the 150 W RPS

Item	Specification
Silkscreen	RPS150
Dimensions (W x D x H)	442.0 mm x 310.0 mm x 43.6 mm (17.4 in. x 12.2 in. x 1.72 in.)
Weight	4 kg
Input	
Rated input voltage range	110 V AC to 220 V AC, 50 Hz or 60 Hz
Maximum input voltage range	200 V AC to 240 V AC (220 V Input)/100 V AC to 120 V AC (110 V Input), 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC

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Item	Specification
Maximum output power	150 W

Heat Dissipation

The AR2204 router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-279**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-279 Airflow

Technical Specifications

Table 2-724 lists technical specifications of the AR2204 routers.

Table 2-724 AR2204 routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 800 MHz
Memory	1 GB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	

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Item	Specification
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.)
Weight	6 kg (13.23 lb)
Power specifications	
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output power	150 W
RPS power supply	Supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	35 W
Maximum power consumption	55 W
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two GE electrical interfaces
Extended slots	4xSIC
Environment parameters	

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Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.10.7 AR2220E

Version Mapping

Table 2-725 lists the mapping between the AR2220E router and software versions.

Table 2-725 Mapping between the AR2220E router and software versions

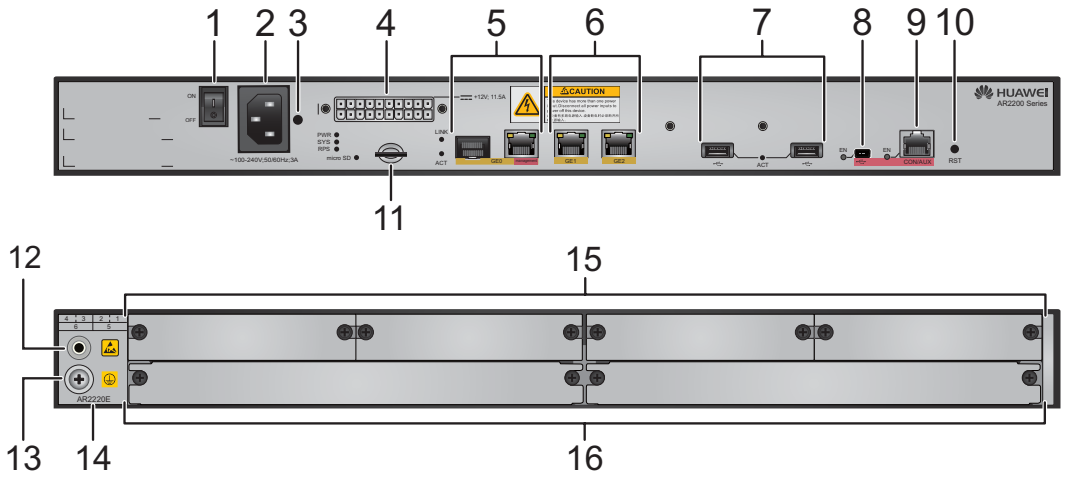
Router Model	Software Version
AR2220E	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-280 shows the appearance of the AR2220E router.

Figure 2-280 AR2220E appearance



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1	Power switch	2	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
3	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	4	RPS power socket **NOTE** Use an **RPS150 power and communication cable** to connect the router to a **150 W RPS power supply system**.
5	WAN interface: **GE combo interface**	6	WAN interfaces: two **GE electrical interfaces**
7	Two **USB interfaces (host)** **NOTE** After a 3G USB modem is inserted, you are advised to install a plastic USB protection cap (optional) on it. There are two tapped holes above a USB interface. Insert screws in the tapped holes to fix the plastic protection cap. The following figure shows a plastic USB protection cap. 	8	**Mini USB interface** **NOTE** The Mini USB interface and console interface cannot be used at the same time.
9	**CON/AUX interface** **NOTE** The AR2220E does not support AUX login.	10	RST button **NOTICE** ● This button is used to reset the router. ● Resetting the router will interrupt services. Exercise caution when deciding to press this button.
11	Micro SD card slot	12	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.
13	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	14	Product model silkscreen
15	Four SIC slots	16	Two WSIC slots

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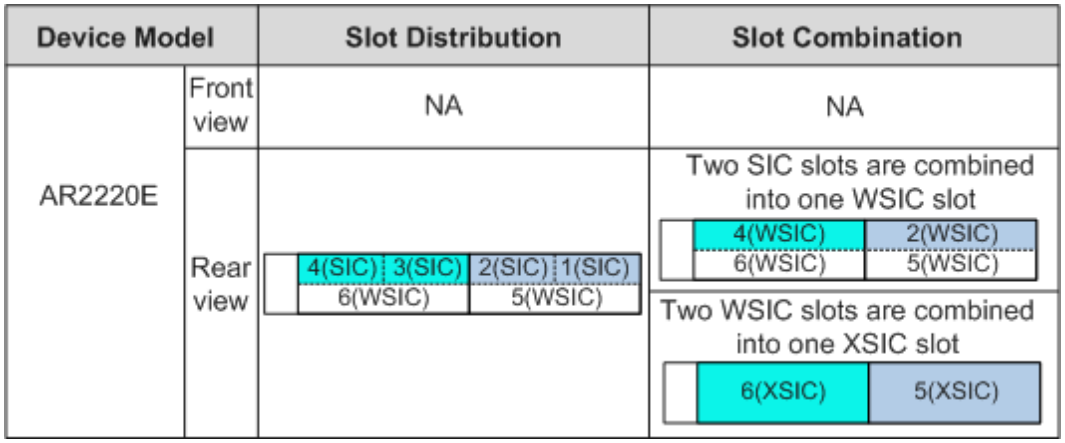
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.

Figure 2-281 shows slot distribution of the AR2220E routers.

Figure 2-281 Slot distribution of the AR2220E routers

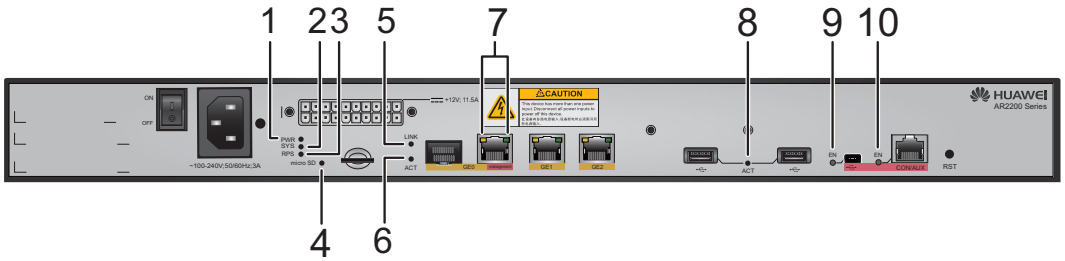


- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

Figure 2-282 shows indicators on the AR503GW-LM7 router.

Figure 2-282 Indicators on the AR2220E



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Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Red	The internal power modules of the router do not work normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	RPS	Green	Steady on: An RPS is connected to the router.
		Yellow	Steady on: An RPS is connected to the router but is not working normally.
			Blinking: An RPS is supplying power to the router.
		Off	No RPS is connected to the router.
4	Micro SD card indicator	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No Micro SD card is available.
5 and 6	GE optical interface indicators: ● 5: LINK indicator ● 6: ACT indicator	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

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Number	Indicator	Color	Description
7	GE electrical interface indicators	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
8	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	EN (CON/AUX interface)	Green	Steady on: The CON/AUX interface is enabled.

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Number	Indicator	Color	Description
	NOTE ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The CON/AUX interface is disabled.

Interface Description

CON/AUX Interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 2-726** lists the CON/AUX interface attributes.

Table 2-726 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)

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Attribute	Description
Cable type	**4.1.6 Console Cable**

Mini USB Interface

A Mini USB interface can connect to an operation terminal for onsite configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works. **Table 2-727** lists attributes of a Mini USB interface.

Table 2-727 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-728** lists attributes of a GE electrical interface.

Table 2-728 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-729** lists attributes of a USB interface.

Table 2-729 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

Power Supply System

The AR2220E has one built-in 150 W AC power module and can connect to a 150 W RPS power module to implement 1+1 power redundancy.

150 W AC Power Module

The 150 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-283** shows the appearance of this power module.

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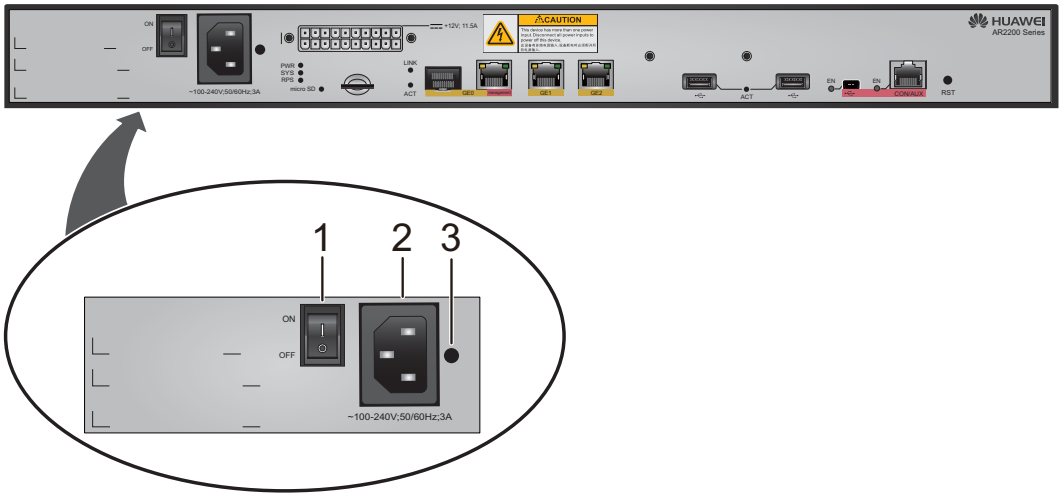
Figure 2-283 Appearance of the 150 W AC power module



Number	Name	Description
1	Power switch	You can turn the power switch to the ON or OFF position to power on or off the router.
2	AC power jack	Use an **AC Power Cable** to connect the router to an external power source.
3	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-730 describes functions of the 150 W AC power module.

Table 2-730 Functions of a 150 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-731 describes technical specifications of the 150 W AC power module.

Table 2-731 Technical specifications of the 150 W AC power module

Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	150 W

150 W RPS Power Module

The 150 W RPS is an AC power module. Figure 2-284 shows the appearance of this power module.

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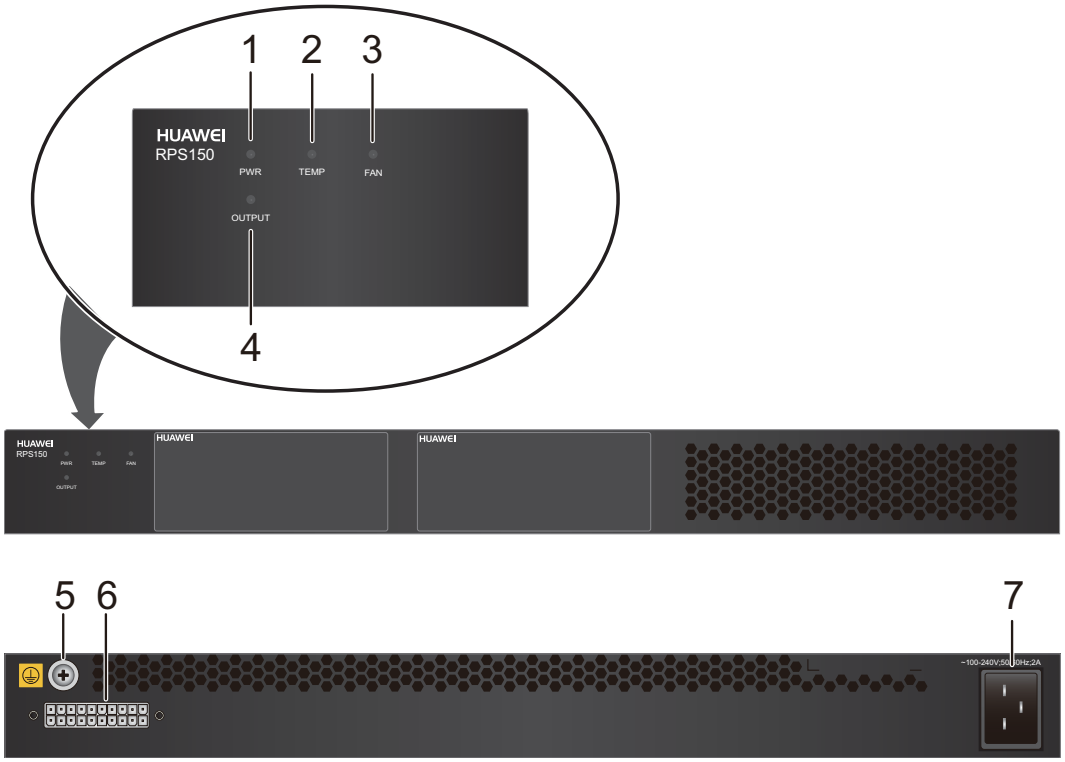
Figure 2-284 Appearance of the 150 W RPS



Number	Name	Description
1	PWR	● Steady green: The power input is normal. ● Off: The 150 W RPS is powered off.
2	TEMP	● Steady green: The temperature is within the allowed range. ● Steady red: The temperature is out of the allowed range. ● Off: The 150 W RPS is powered off.
3	FAN	● Steady green: The fan module works properly. ● Steady red: The fan module does not work properly. ● Off: The 150 W RPS is powered off.
4	OUTPUT	● Steady green: The 150 W RPS is in cold backup state. ● Blinking green: The 150 W RPS is supplying power. ● Off: The 150 W RPS is powered off.

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Number	Name	Description
5	Ground point	To protect the device from lightning and interference, reliably ground the chassis by connecting a **4.1.5 Ground Cable** to the ground point.
6	RPS power socket	Use an **RPS150 Power and Communication Cable** to connect to the router.
7	AC power jack	Use an **RPS150 AC Power Cable** to connect the router to the power supply system.

The 150 W RPS has the following features:

- When the built-in power module of a router fails, the 150 W RPS starts to provide power for the router.
- When the built-in power module of the router starts to work again, the 150 W RPS stops providing power for the router and switches to cold backup state.

NOTE

The 150 W RPS can power only one router at a time when the built-in power module of the router fails.

Table 2-732 describes the technical specifications of the 150 W RPS.

Table 2-732 Technical specifications of the 150 W RPS

Item	Specification
Silkscreen	RPS150
Dimensions (W x D x H)	442.0 mm x 310.0 mm x 43.6 mm (17.4 in. x 12.2 in. x 1.72 in.)
Weight	4 kg
Input	
Rated input voltage range	110 V AC to 220 V AC, 50 Hz or 60 Hz
Maximum input voltage range	200 V AC to 240 V AC (220 V Input)/100 V AC to 120 V AC (110 V Input), 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC

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Item	Specification
Maximum output power	150 W

Heat Dissipation

The AR2220E router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-285**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-285 Airflow

Technical Specifications

Table 2-733 lists technical specifications of the AR2220E routers.

Table 2-733 AR2220E routers technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1 GHz
Memory	1 GB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	

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Item	Specification
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.)
Weight	6 kg (13.23 lb)
Power specifications	
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz or 60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output power	150 W
RPS power supply	Supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	27 W
Maximum power consumption	29 W
Heat dissipation	
Fan module	Built-in fan module, not swappable
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface and two GE electrical interfaces
Extended slots	● 4xSIC ● 2xWSIC

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Item	Specification
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.10.8 AR2204-51GE-P

Version Mapping

Table 2-734 lists the mapping between the AR2204-51GE-P router and software versions.

Table 2-734 Mapping between the AR2204-51GE-P router and software versions

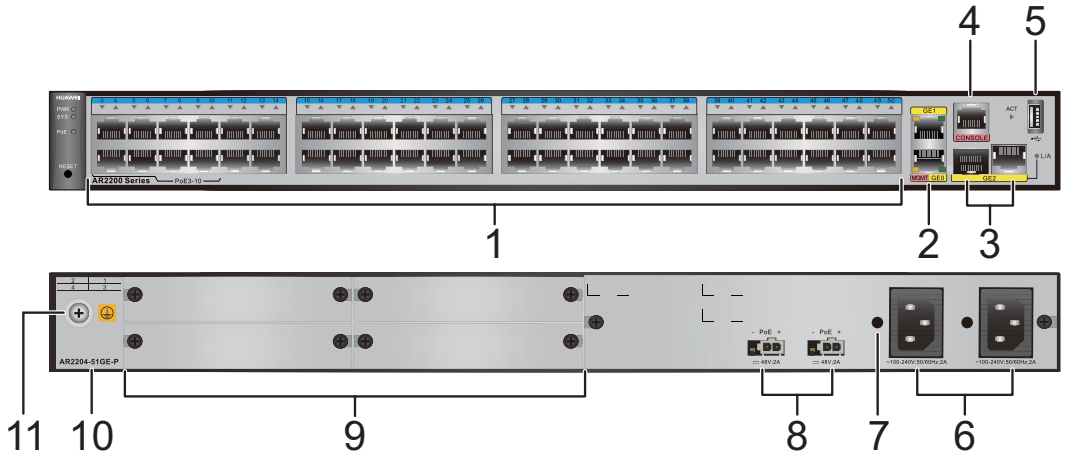
Router Model	Software Version
AR2204-51GE-P	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-286 shows the appearance of the AR2204-51GE-P router.

Figure 2-286 AR2204-51GE-P appearance



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1	LAN interfaces: forty-eight **GE electrical interfaces**	2	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
3	WAN interface: **GE combo interface**	4	**CONSOLE interface**
5	One **USB interface (host)**	6	Two AC power jacks **NOTE** Use an **AC power cable** to connect the router to an external power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Two PoE power jacks **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.
9	Four SIC slots	10	Product model silkscreen
11	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Slot Distribution

Figure 2-287 shows the appearance of the AR2204-51GE-P router.

Figure 2-287 Slot distribution of the AR2204-51GE-P

Device Model		Slot Distribution	Slot Combination
AR2204-51GE-P	Front view	NA	NA
	Rear view	2(SIC) 1(SIC) 4(SIC) 3(SIC) NA	NA

Indicator Description

Figure 2-288 shows the locations of AR2204-51GE-P indicators.

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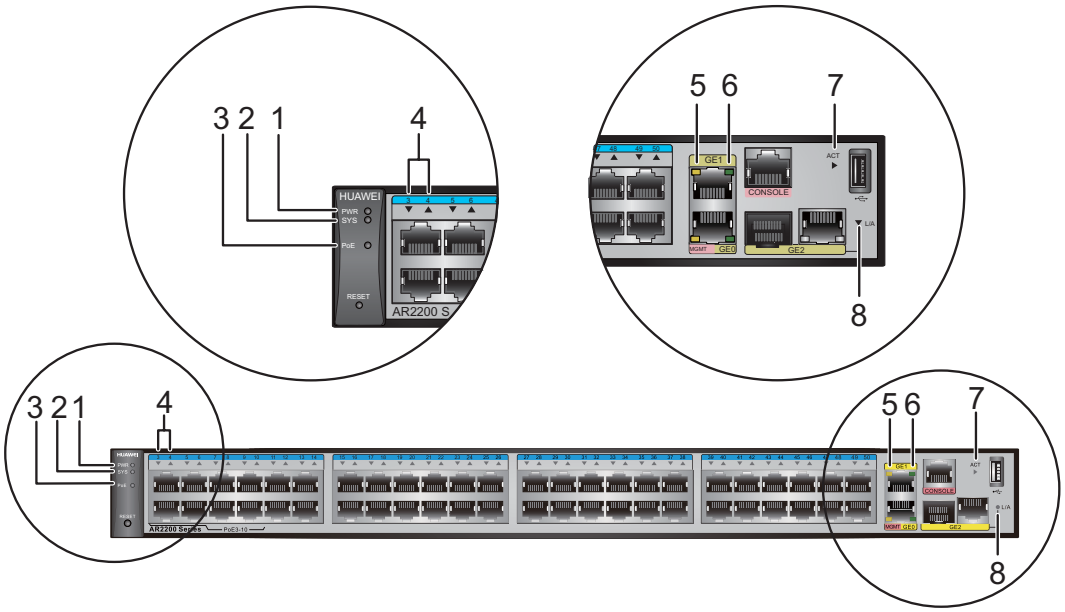
Figure 2-288 Indicators on the AR2204-51GE-P



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	PoE	Green	Steady on: The PoE power supply is normal.
			Off: No PoE power supply is available.
4	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the GE electrical interface.

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Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received on the GE electrical interface.
			Off: No link is established on the GE electrical interface.
5 and 6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received on the link.
			Off: No data is being transmitted or received on the link.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-735** lists attributes of a console interface.

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Table 2-735 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-736** lists attributes of a GE electrical interface.

Table 2-736 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.

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- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-737** lists attributes of a USB interface.

Table 2-737 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

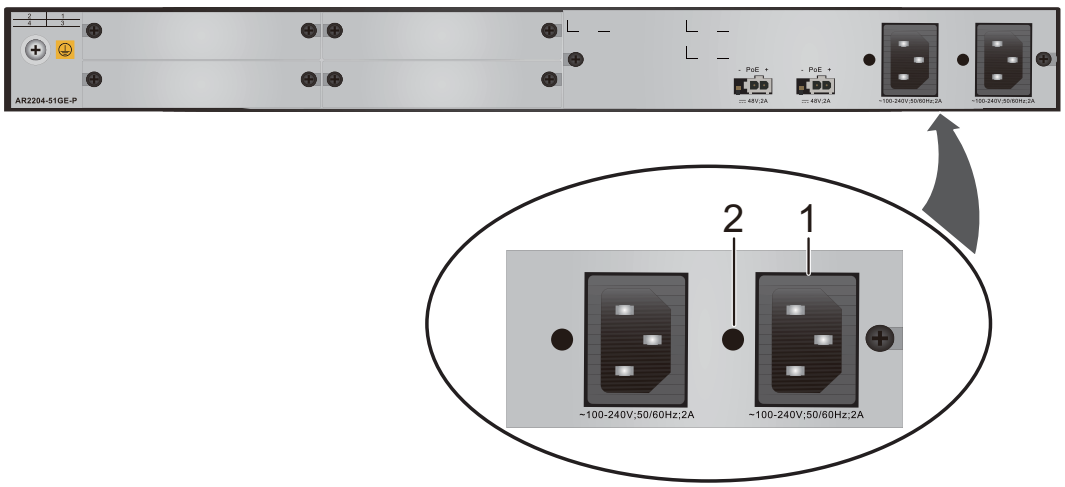
Power Supply System

The AR2204-51GE-P has two built-in 60 W AC power modules for 1+1 power redundancy and can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its GE electrical interfaces.

60 W AC Power Module

The 60 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-289** shows the appearance of this power module.

Figure 2-289 Appearance of the 60 W AC power module



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Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-738 describes functions of the built-in 60 W AC power module.

Table 2-738 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-739 lists technical specifications of the 60 W AC power module.

Table 2-739 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module

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Item	Specification
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-290** shows its appearance.

Figure 2-290 Appearance of the 100 W AC PoE power module

Table 2-740 describes functions of the 100 W AC PoE power module.

Table 2-740 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-741 lists the specifications of the 100 W AC PoE power module.

Table 2-741 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

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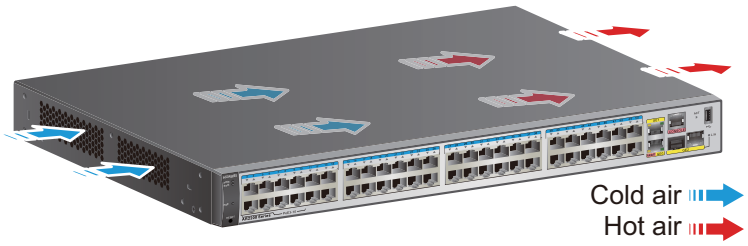
The AR2204-51GE-P router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-291**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-291 Airflow



Technical Specifications

Table 2-742 lists technical specifications of the AR2204-51GE-P routers.

Table 2-742 AR2204-51GE-P routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.)
Weight	5 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz

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Item	Specification
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE3 to GE10)
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	35 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 48 GE electrical interfaces
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

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2.10.9 AR2204-27GE-P

Version Mapping

Table 2-743 lists the mapping between the AR2204-27GE-P router and software versions.

Table 2-743 Mapping between the AR2204-27GE-P router and software versions

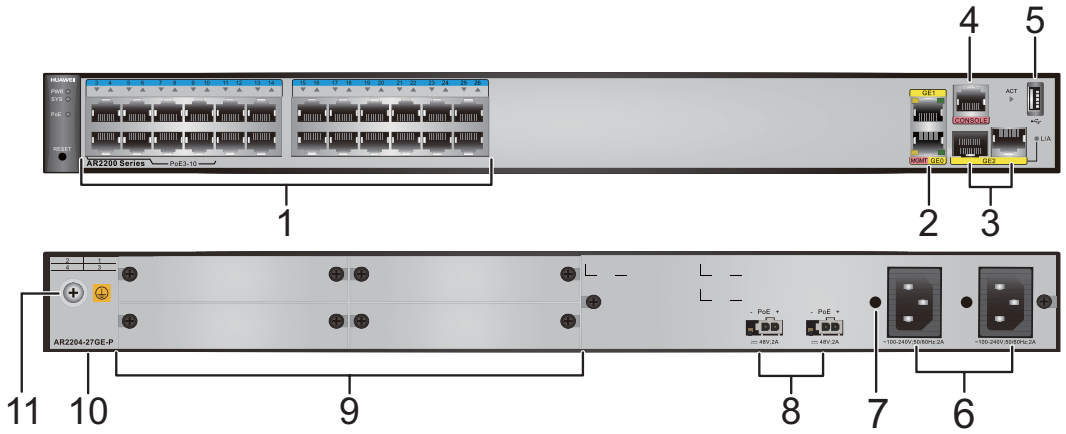
Router Model	Software Version
AR2204-27GE-P	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-292 shows the appearance of the AR2204-27GE-P router.

Figure 2-292 AR2204-27GE-P appearance



1	LAN interfaces: twenty-four **GE electrical interfaces**	2	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
3	WAN interface: **GE combo interface**	4	**CONSOLE interface**

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5	One **USB interface (host)**	6	Two AC power jacks **NOTE** Use an **AC power cable** to connect the router to an external power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Two PoE power jacks **NOTE** A PoE power jack connects to a **100 W AC PoE power module** to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.
9	Four SIC slots	10	Product model silkscreen
11	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Slot Distribution

Figure 2-293 shows the appearance of the AR2204-27GE-P router.

Figure 2-293 Slot distribution of the AR2204-27GE-P

Device Model		Slot Distribution	Slot Combination
AR2204-27GE-P	Front view	NA	NA
	Rear view	2(SIC) 1(SIC) 4(SIC) 3(SIC) NA	NA

Indicator Description

Figure 2-294 shows the locations of AR2204-27GE-P indicators.

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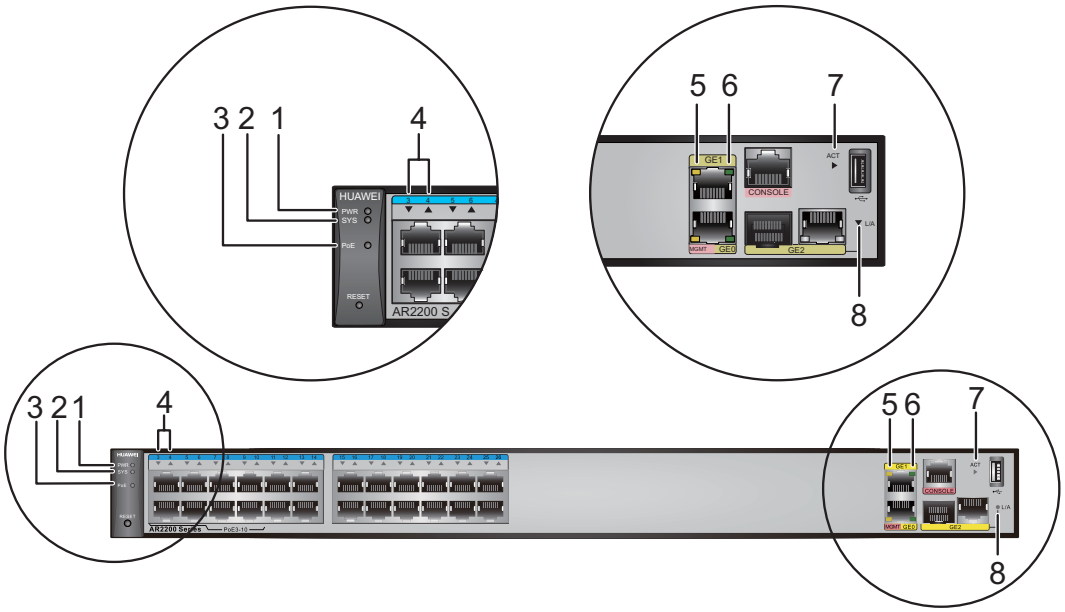
Figure 2-294 Indicators on the AR2204-27GE-P



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	PoE	Green	Steady on: The PoE power supply is normal.
			Off: No PoE power supply is available.
4	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the GE electrical interface.

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Number	Indicator	Color	Description
			Blinking: Data is being transmitted or received on the GE electrical interface.
			Off: No link is established on the GE electrical interface.
5 and 6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received on the link.
			Off: No data is being transmitted or received on the link.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-744** lists attributes of a console interface.

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Table 2-744 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-745** lists attributes of a GE electrical interface.

Table 2-745 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.

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- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-746** lists attributes of a USB interface.

Table 2-746 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

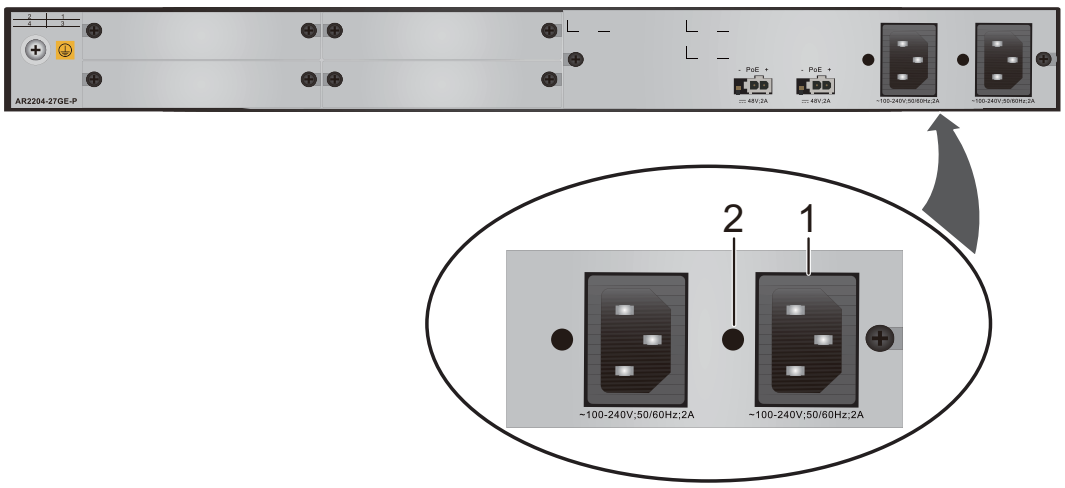
Power Supply System

The AR2204-27GE-P has two built-in 60 W AC power modules for 1+1 power redundancy and can have a 100 W AC PoE power module installed to provide power to powered devices (PDs) connected to its GE electrical interfaces.

60 W AC Power Module

The 60 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-295** shows the appearance of this power module.

Figure 2-295 Appearance of the 60 W AC power module



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Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-747 describes functions of the built-in 60 W AC power module.

Table 2-747 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-748 lists technical specifications of the 60 W AC power module.

Table 2-748 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module

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Item	Specification
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

100 W AC PoE Power Module

The 100 W PoE power adapter uses AC input and DC output. **Figure 2-296** shows its appearance.

Figure 2-296 Appearance of the 100 W AC PoE power module

Table 2-749 describes functions of the 100 W AC PoE power module.

Table 2-749 Functions of the 100 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.

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Function	Description
Output overvoltage protection	The power module can automatically resume power supply in this protection state.
Output current limiting protection	The power module can automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

Table 2-750 lists the specifications of the 100 W AC PoE power module.

Table 2-750 Technical specifications of the 100 W AC PoE power module

Item	Specification
Type	External
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Output	
Rated output voltage	48 V DC
Maximum output voltage range	45.6 V DC to 50.4 V DC
Maximum output current	2 A
Maximum output power	100 W

Heat Dissipation

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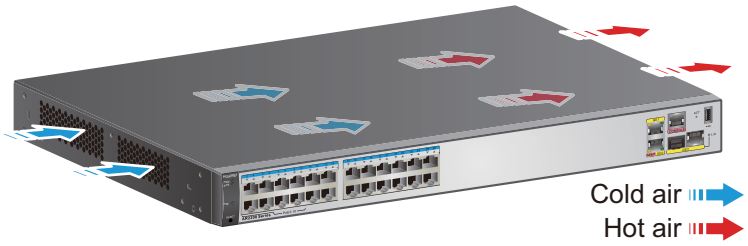
The AR2204-27GE-P router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-297**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-297 Airflow



Technical Specifications

Table 2-751 lists technical specifications of the AR2204-27GE-P routers.

Table 2-751 AR2204-27GE-P routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.)
Weight	5 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz

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Item	Specification
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Supported (GE3 to GE10)
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 24 GE electrical interfaces
Extended slots	4×SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

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2.10.10 AR2204-27GE

Version Mapping

Table 2-752 lists the mapping between the AR2204-27GE router and software versions.

Table 2-752 Mapping between the AR2204-27GE router and software versions

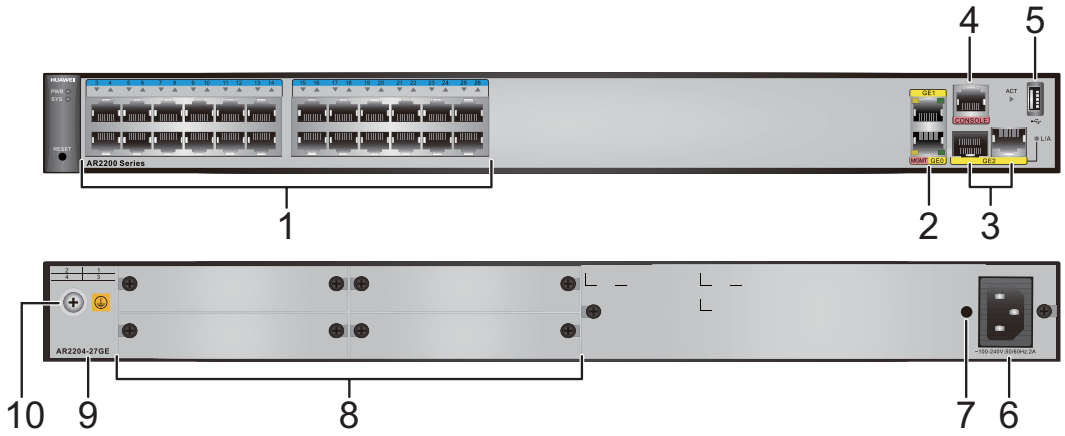
Router Model	Software Version
AR2204-27GE	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-298 shows the appearance of the AR2204-27GE router.

Figure 2-298 AR2204-27GE appearance



1	LAN interfaces: twenty-four **GE electrical interfaces**	2	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.
3	WAN interface: **GE combo interface**	4	**CONSOLE interface**

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5	One **USB interface (host)**	6	AC power jack **NOTE** Use an **AC power cable** to connect the router to an external power source.
7	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.	8	Four SIC slots
9	Product model silkscreen	10	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

Slot Distribution

Figure 2-299 shows the appearance of the AR2204-27GE router.

Figure 2-299 Slot distribution of the AR2204-27GE

Device Model		Slot Distribution	Slot Combination
AR2204-27GE	Front view	NA	NA
	Rear view	2(SIC) 1(SIC) 4(SIC) 3(SIC) NA	NA

Indicator Description

Figure 2-300 shows the locations of AR2204-27GE indicators.

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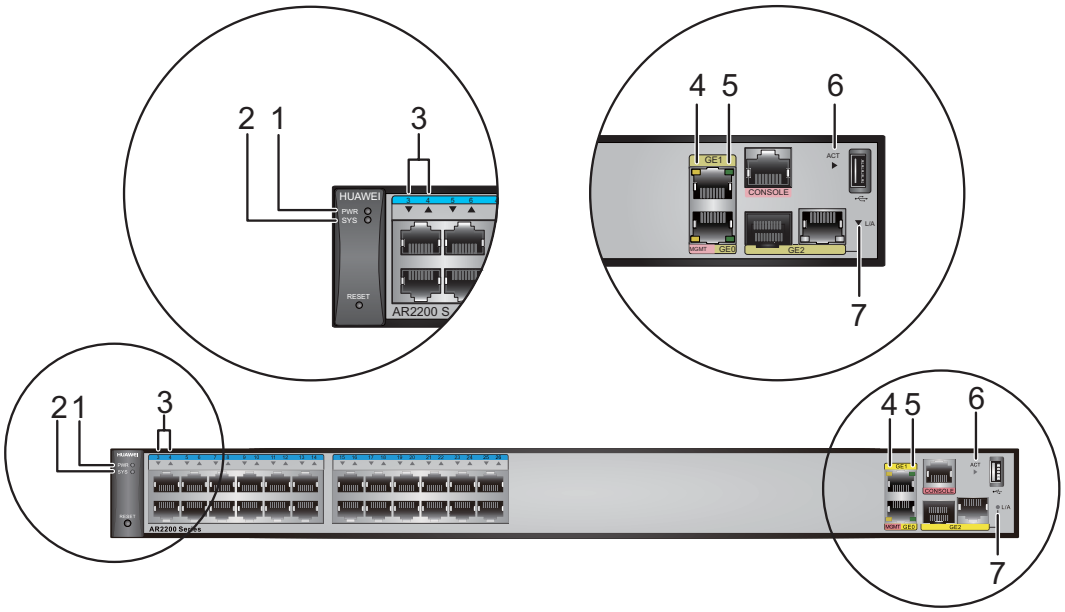
Figure 2-300 Indicators on the AR2204-27GE



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the GE electrical interface.
			Blinking: Data is being transmitted or received on the GE electrical interface.
			Off: No link is established on the GE electrical interface.

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Number	Indicator	Color	Description
4 and 5	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
6	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
7	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-753** lists attributes of a console interface.

Table 2-753 Console interface attributes

Attribute	Description
Connector type	RJ45

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Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-754** lists attributes of a GE electrical interface.

Table 2-754 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

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NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-755** lists attributes of a USB interface.

Table 2-755 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

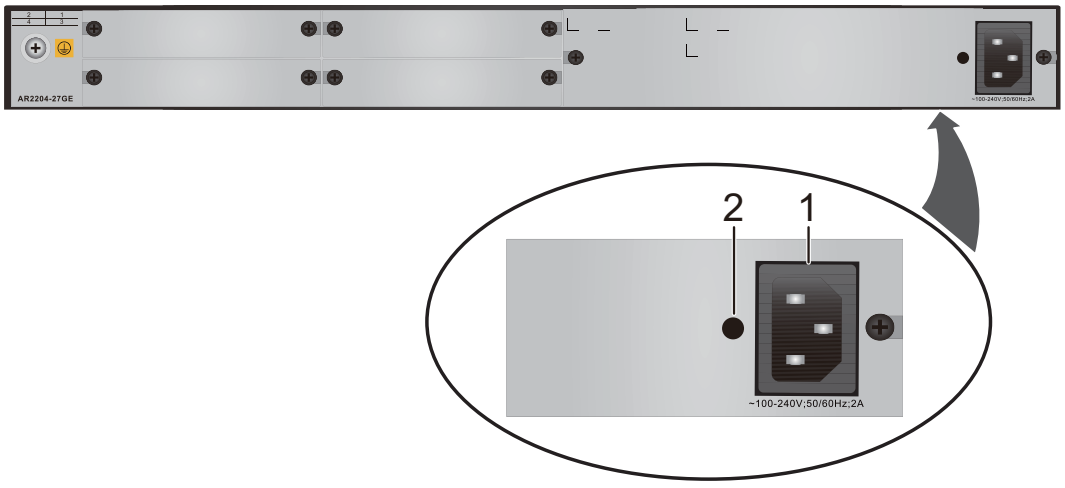
Power Supply System

The AR2204-27GE has one built-in 60 W AC power module.

60 W AC Power Module

The 60 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-301** shows the appearance of this power module.

Figure 2-301 Appearance of the 60 W AC power module



Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.

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Number	Name	Description
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-756 describes functions of the built-in 60 W AC power module.

Table 2-756 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-757 lists technical specifications of the 60 W AC power module.

Table 2-757 Technical specifications of the 60 W AC power module

Item	Specification
Type	Built-in module
Input	

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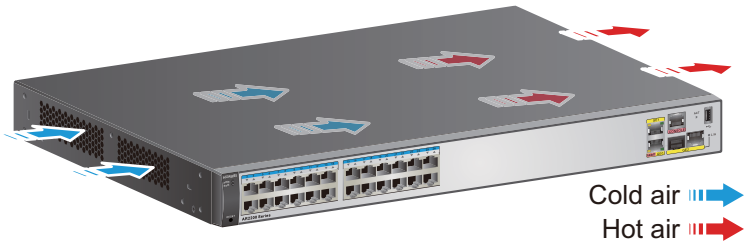
Item	Specification
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

Heat Dissipation

The AR2204-27GE router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-302**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-302 Airflow



Technical Specifications

Table 2-758 lists technical specifications of the AR2204-27GE routers.

Table 2-758 AR2204-27GE routers technical specifications

Item	Specification
System parameters	

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Item	Specification
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.)
Weight	5 kg
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)

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Item	Specification
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface LAN interfaces: 24 GE electrical interfaces
Extended slots	4×SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.10.11 AR2204E

Version Mapping

Table 2-759 lists the mapping between the AR2204E router and software versions.

Table 2-759 Mapping between the AR2204E router and software versions

Router Model	Software Version
AR2204E	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-303 shows the appearance of the AR2204E router.

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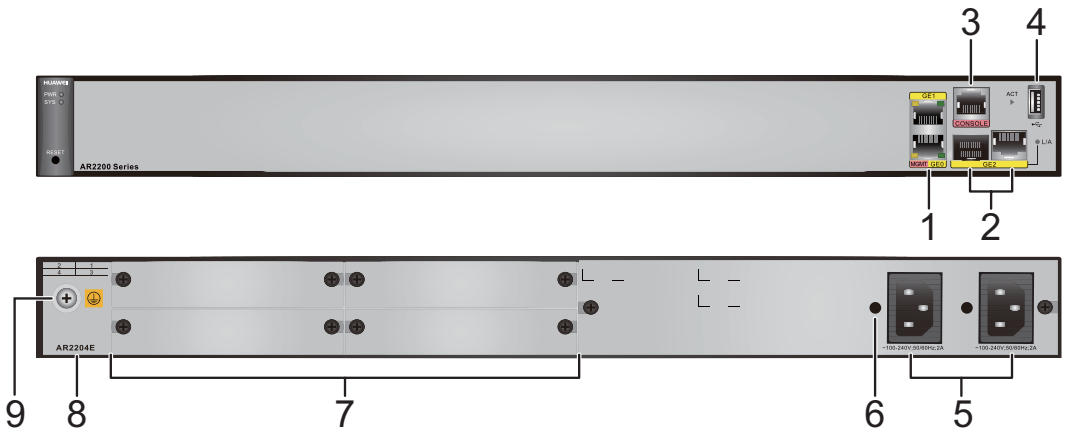
Figure 2-303 AR2204E appearance



1	WAN interfaces: two **GE electrical interfaces** **NOTE** GE0 is a management interface and is used to upgrade the router.	2	WAN interface: **GE combo interface**
3	**CONSOLE interface**	4	One **USB interface (host)**
5	Two AC power jacks **NOTE** Use an **AC power cable** to connect the router to an external power source.	6	Jack for power cable locking strap **NOTICE** Insert a power cable locking strap in this jack to secure the power cable.
7	Four SIC slots	8	Product model silkscreen
9	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.	-	-

Slot Distribution

Figure 2-304 shows the slot distribution of the AR2204E.

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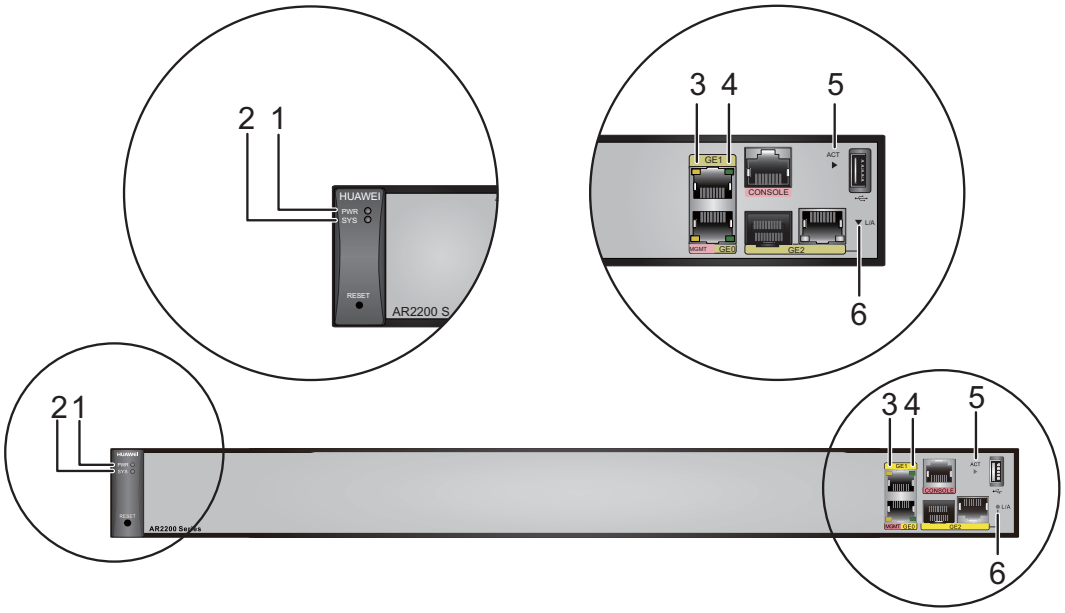
Figure 2-304 Slot distribution of the AR2204E

Device Model		Slot Distribution	Slot Combination
AR2204E	Front view	NA	NA
	Rear view	2(SIC) 1(SIC) 4(SIC) 3(SIC) NA	NA

Indicator Description

Figure 2-305 shows the locations of AR2204E indicators.

Figure 2-305 Indicators on the AR2204E



Number	Indicator	Color	Description
1	PWR	Green	The router is powered by the internal power modules normally.
		Off	The router is powered off.

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Number	Indicator	Color	Description
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
3 and 4	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
5	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
6	L/A (GE combo interface)	Green	Steady on: A link has been established on the GE combo interface.
			Blinking: Data is being transmitted or received on the GE combo interface.
			Off: No link is established on the GE combo interface.

Interface Description

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Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 2-760** lists attributes of a console interface.

Table 2-760 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**4.1.6 Console Cable**

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 2-761** lists attributes of a GE electrical interface.

Table 2-761 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The

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electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- The GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s.

NOTE

By default, a combo interface works as an electrical interface and uses an Ethernet cable to transmit and receive data.

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 2-762** lists attributes of a USB interface.

Table 2-762 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB2.0
Working mode	Host

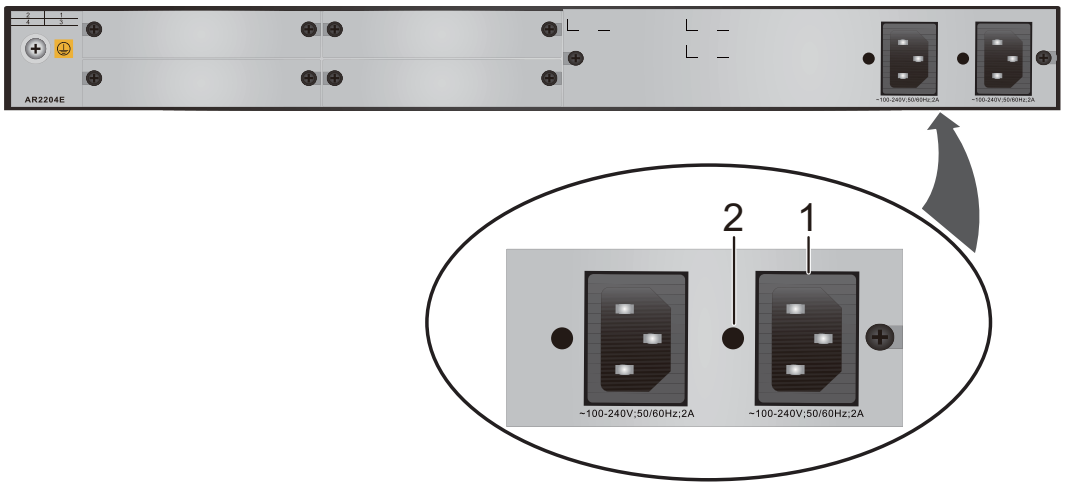
Power Supply System

The AR2204E has two built-in 60 W AC power modules for 1+1 power redundancy.

60 W AC Power Module

The 60 W AC power module is fixed in the chassis and cannot be removed. **Figure 2-306** shows the appearance of this power module.

Figure 2-306 Appearance of the 60 W AC power module



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Number	Name	Description
1	AC power jack	Use an **AC power cable** to connect the router to an external power source.
2	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-763 describes functions of the built-in 60 W AC power module.

Table 2-763 Functions of the built-in 60 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Not supported

Table 2-764 lists technical specifications of the 60 W AC power module.

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Table 2-764 Technical specifications of the 60 W AC power module

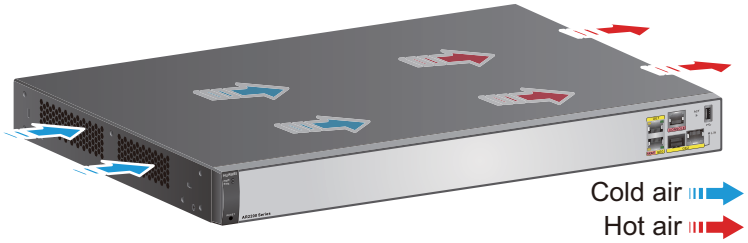
Item	Specification
Type	Built-in module
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	60 W

Heat Dissipation

The AR2204E router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-307**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-307 Airflow



Technical Specifications

Table 2-765 lists technical specifications of the AR2204E routers.

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Table 2-765 AR2204E routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash memory	512 MB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.5 mm (17.4 in. x 16.5 in. x 1.75 in.) ● With mounting brackets installed: 482.6 mm x 420.0 mm x 44.5 mm (19.0 in. x 16.5 in. x 1.75 in.)
Weight	5 kg (11.02 lb)
Power specifications	
Rated input voltage (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	25 W
Maximum power consumption	30 W
Heat dissipation	
Fan module	Built-in, unpluggable fans
Airflow (facing the front panel)	Left-to-right
Interface density	

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Item	Specification
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: two GE electrical interfaces and one GE combo interface
Extended slots	4xSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.10.12 AR2240C

Version Mapping

Table 2-766 lists the mapping between the AR2240C router and software versions.

Table 2-766 Mapping between AR2240C router and software versions

Router Model	Software Version
AR2240C	V200R007C00 and later versions

Appearance and Structure

Appearance

Figure 2-308 shows the appearance of the AR2240C router.

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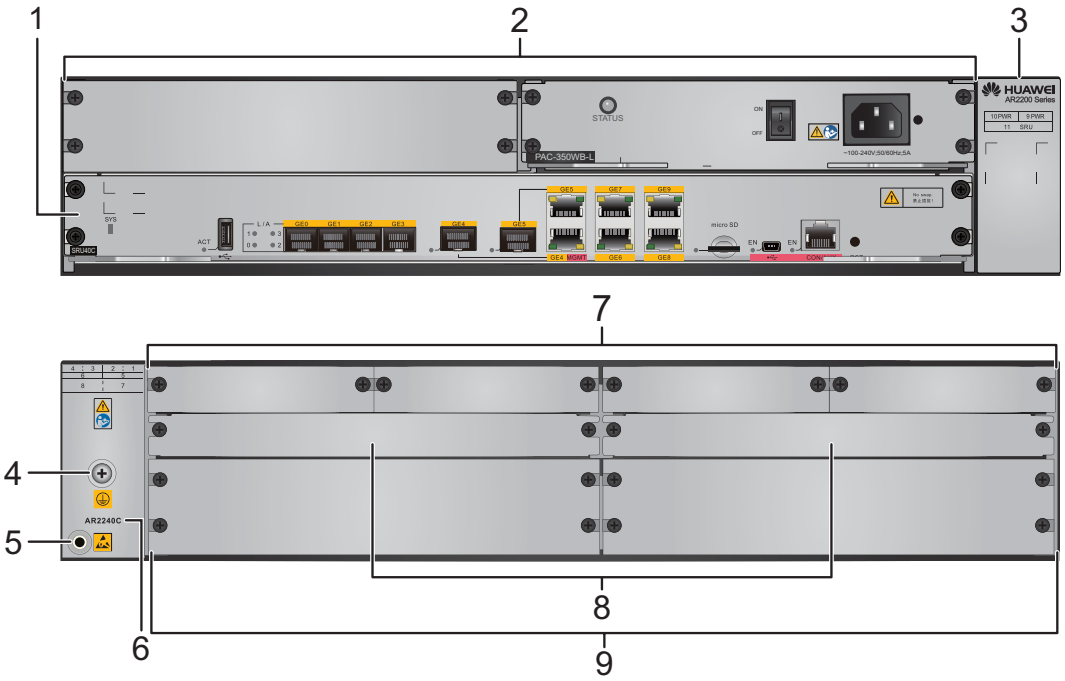
Figure 2-308 AR2240C appearance



1	**SRU** slots	2	Two power module slots Applicable power modules: ● **350 W AC Power Module** ● **350 W DC Power Module** ● **850 W AC PoE Power Module** **NOTE** AC and DC power modules cannot be used together in a router.
3	Built-in fan module	4	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
5	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	6	Product model silkscreen
7	Four SIC slots	8	Two WSIC slots
9	Two XSIC slots	-	-

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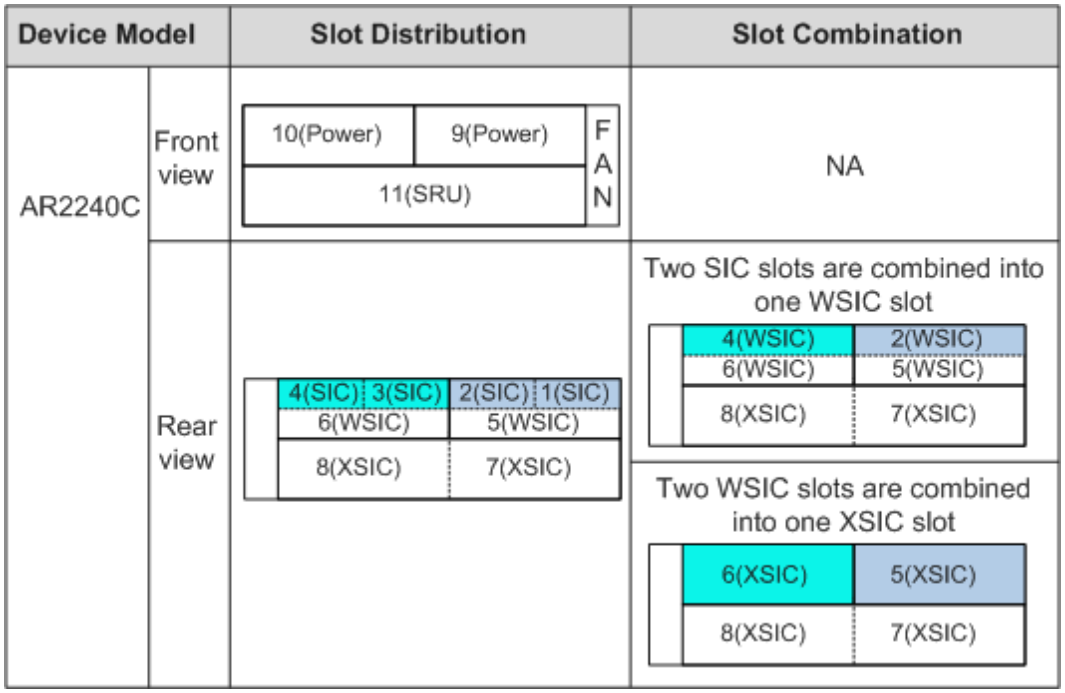
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot with a special component. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 2-309 shows the slot distribution of the AR2240C.

Figure 2-309 Slot distribution of the AR2240C



- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

All the indicators seen on the AR2240C front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Power Supply System

The AR2240C uses two 350 W AC or DC power modules for 1+1 power redundancy, and can have an 850 W AC PoE power module installed.

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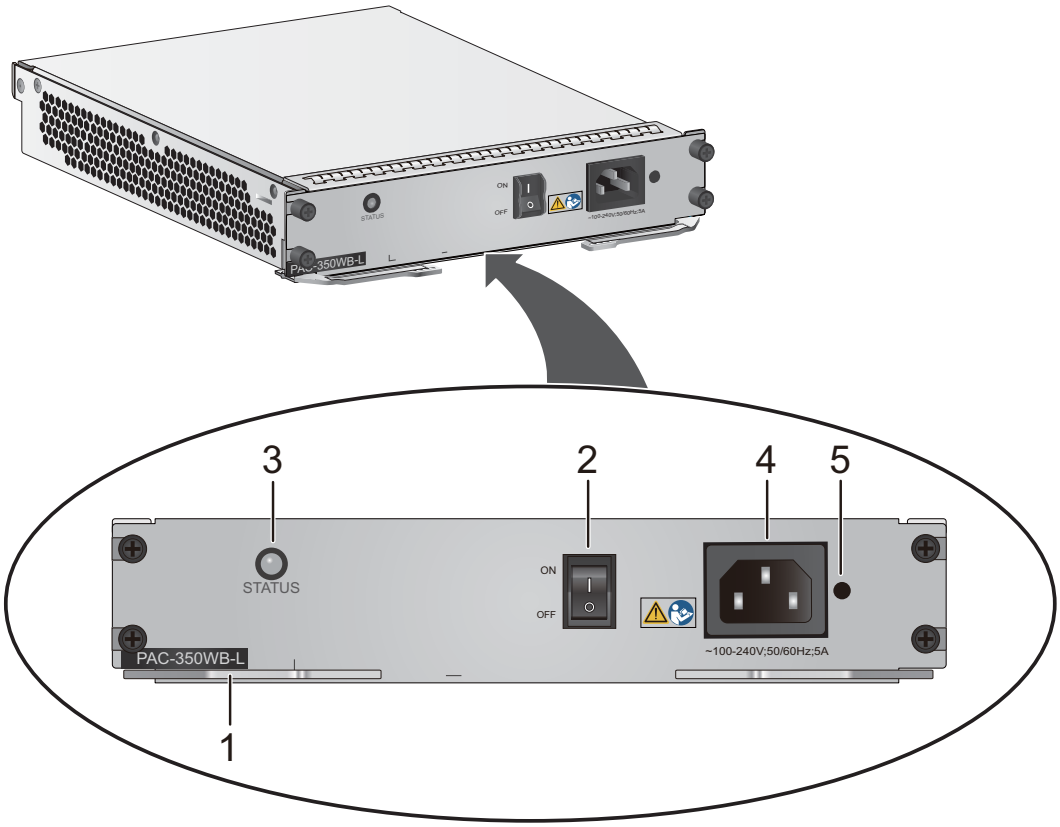
350 W AC Power Module

Figure 2-310 shows the appearance of the 350 W AC power module.

Figure 2-310 Appearance of the 350 W AC power module



Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The AC output power is within the allowed range. ● Steady red: The AC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	AC power jack	Use **AC Power Cable** to connect the router to an external power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-767 describes functions of the 350 W AC power module.

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Table 2-767 Functions of a 350 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-768 describes technical specifications of the 350 W AC power module.

Table 2-768 Technical specifications of an 350 W AC power module

Item	Description
Silkscreen	PWR350A
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.5 kg
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz

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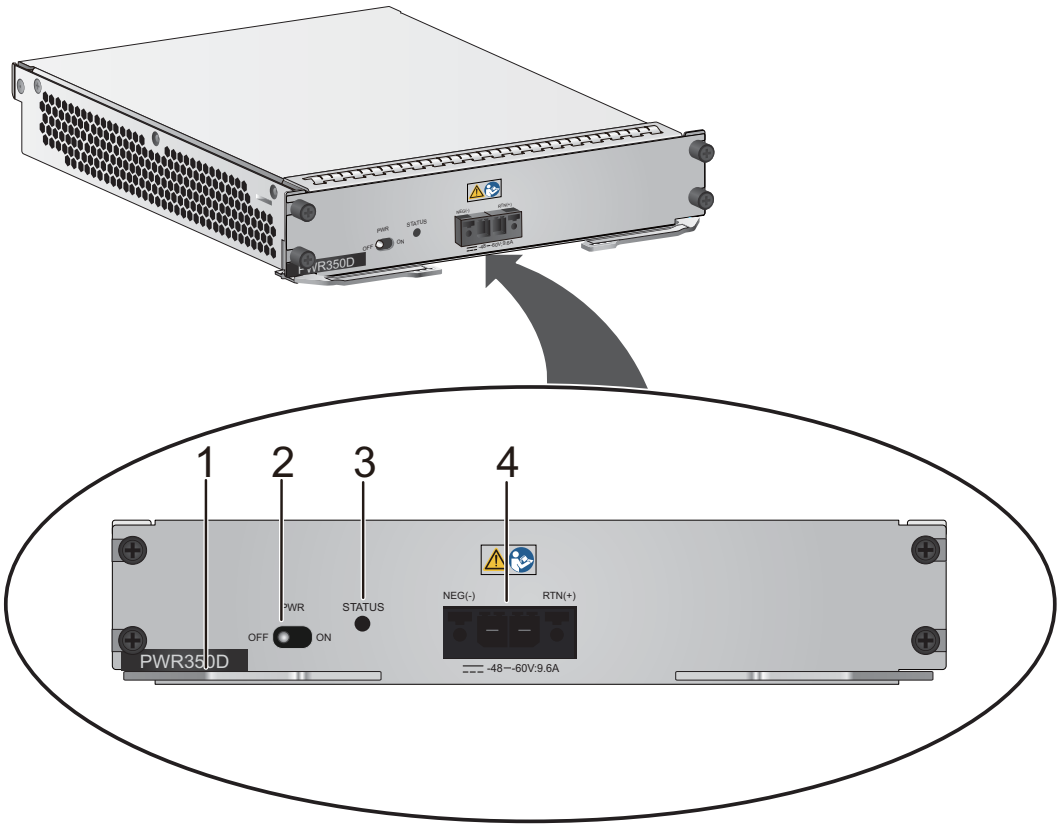
Item	Description
Maximum input current	5 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	350 W

350 W DC Power Module

Figure 2-311 shows the appearance of a 350 W DC power module.

Figure 2-311 Appearance of a 350 W DC power module



Number	Name	Description
1	Wrench	Install or remove a power module.

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Number	Name	Description
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The DC output power is within the allowed range. ● Steady red: The DC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	DC power interface	Use a DC power cable to connect the router to an external power source.

Table 2-769 describes functions of the 350 W DC power module.

Table 2-769 Functions of a 350 W DC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	The power module can automatically resume power supply in this protection state.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-770 describes technical specifications of a 350 W DC power module.

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Table 2-770 Technical specifications of a 350 W DC power module

Item	Description
Silkscreen	PWR350D
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.5 kg
Input	
Rated input voltage range	-48 V DC to -60 V DC
Maximum input voltage range	-38.4 V DC to -72 V DC
Maximum input current	6 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	350 W

850 W AC PoE Power Module

Figure 2-312 shows the appearance of the 850 W AC PoE power supply.

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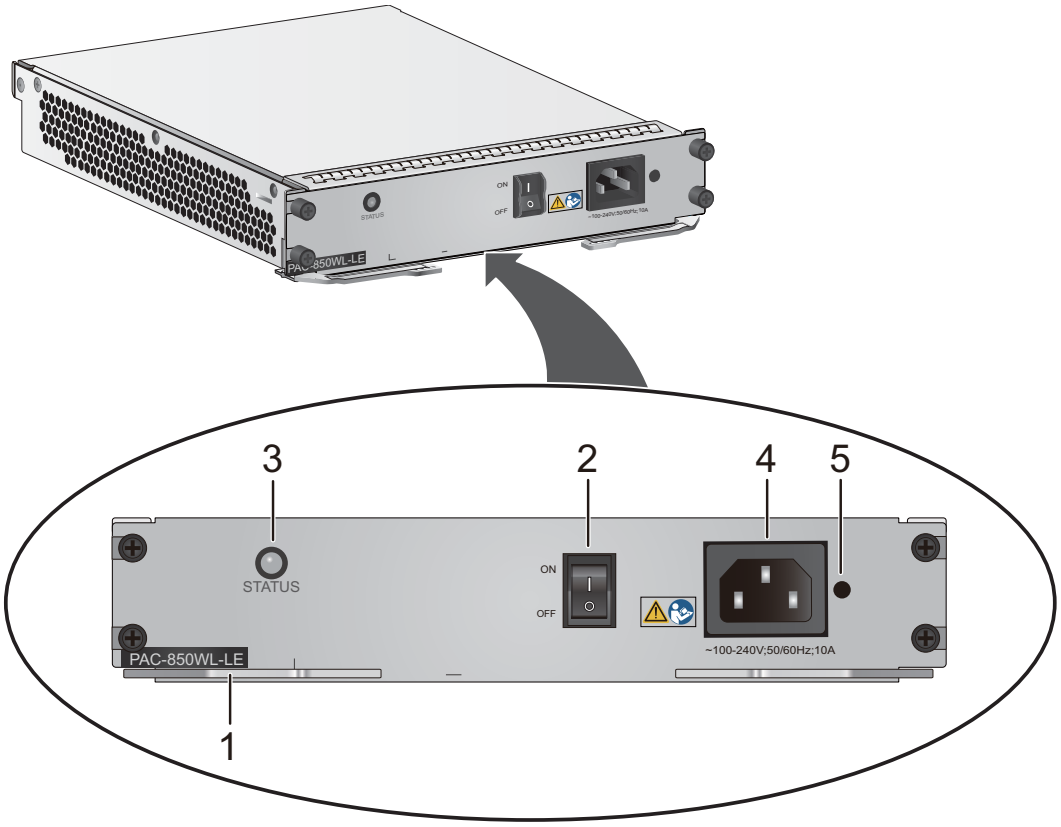
Figure 2-312 Appearance of the 850 W AC PoE power module



Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The AC output power is within the allowed range. ● Steady red: The AC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	AC power jack	Use **AC Power Cable** to connect the router to an external power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-771 describes functions of the 850 W AC PoE power module.

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Table 2-771 Functions of an 850 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-772 lists technical specifications of an 850 W AC PoE power module.

Table 2-772 Technical specifications of the 850 W AC PoE power module

Item	Description
Silkscreen	PAC-850WL-LE
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.85 kg
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz

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Item	Description
Maximum input current	10 A
Output	
Rated output voltage	12 V DC/-53.5 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC/-51.895 V DC to -55.105 V DC
Maximum output power	850 W

Heat Dissipation

The AR2240C router has built-in fans to cool the system. The fans are not pluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-313**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-313 Airflow

Technical Specifications

Table 2-773 lists technical specifications of the AR2240C routers.

Table 2-773 AR2240C routers technical specifications

Item	Specification
System parameters	
Processor	6-core, 1.2 GHz
Memory	2 GB

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Item	Specification
Flash memory	32 MB
Micro SD card (default: sd1)	2 GB
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 470.0 mm x 88.1 mm (17.4 in. x 18.5 in. x 3.47 in.) ● With mounting brackets installed: 482.6 mm x 470.0 mm x 88.1 mm (19.0 in. x 18.5 in. x 3.47 in.)
Weight	8.85 kg
Power specifications	
AC chassis model (350 W AC Power)	Support double hot-swappable power modules
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	5 A
Maximum output power	350 W
RPS	Not supported
PoE	Not supported
AC PoE chassis model (850 W AC PoE Power)	Support double hot-swappable power modules
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	10 A
Maximum output power	850 W
RPS	Not supported
PoE	Supported

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Item	Specification
DC chassis model (350 W DC Power)	Support double hot-swappable power modules
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum input voltage (DC)	-38.4 V DC to -72 V DC
Maximum input current	6 A
Maximum output power	350 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	110 W
Maximum power consumption	125 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: four GE electrical interfaces, two GE combo interfaces, and four GE optical interfaces
Extended slotss	● 4×SIC ● 2×WSIC ● 2×XSIC
Environment parameters	

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Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.11 AR3200 Series

2.11.1 AR3260

Version Mapping

Table 2-774 lists the mapping between the AR3260 router and software versions.

Table 2-774 Mapping between the AR3260 router and software versions

Router Model	Software Version
AR3260	V200R001C00 and later versions

Appearance and Structure

Appearance

Figure 2-314 shows the appearance of the AR3260 router.

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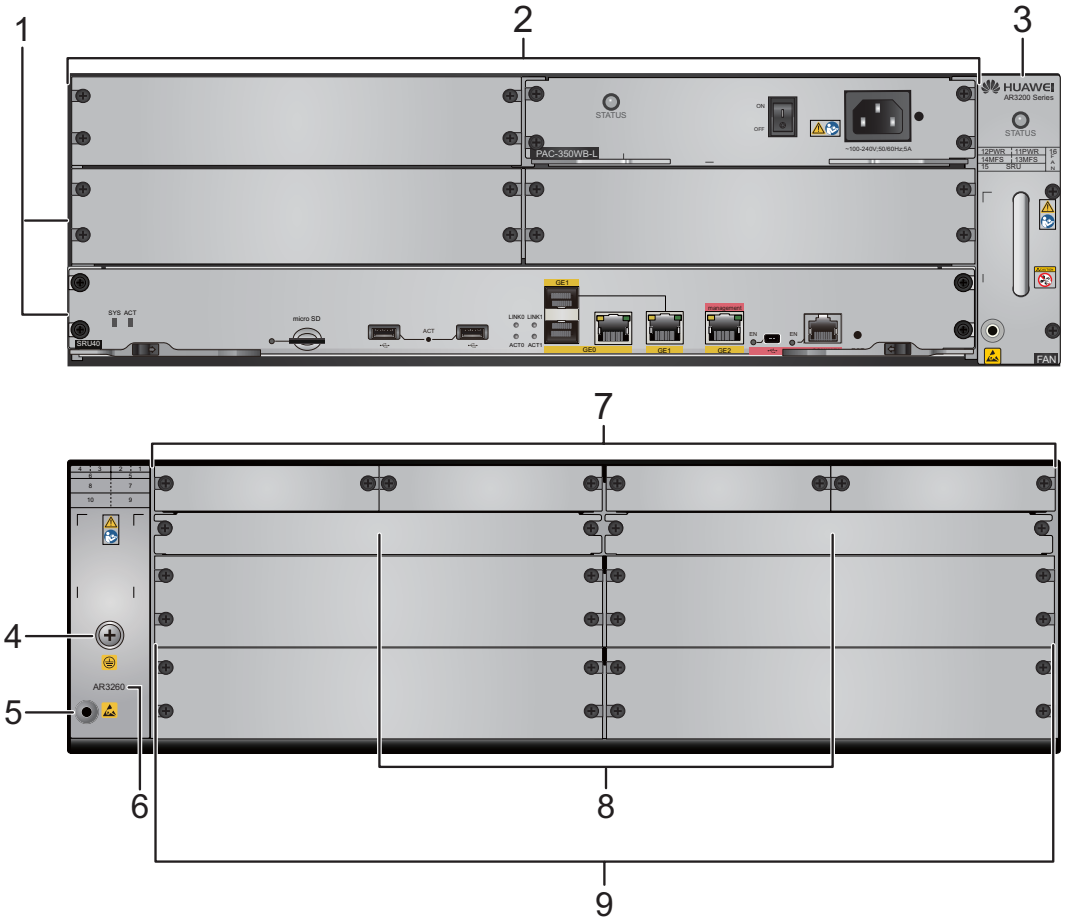
Figure 2-314 AR3260 appearance



1	Two **SRU** slots **NOTE** ● Versions earlier than V200R005C00: support a single SRU and reserve the capability to support double SRUs. ● V200R005C00 and later versions: support double SRUs working in hot standby mode.	2	Two power module slots Applicable power modules: ● **350 W AC Power Module** ● **350 W DC Power Module** ● **850 W AC PoE Power Module** **NOTE** AC and DC power modules cannot be used together in a router.
3	Fan module slot Applicable fan module: **Fan Module**	4	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.

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5	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	6	Product model silkscreen
7	Four SIC slots	8	Two WSIC slots
9	Four XSIC slots	-	-

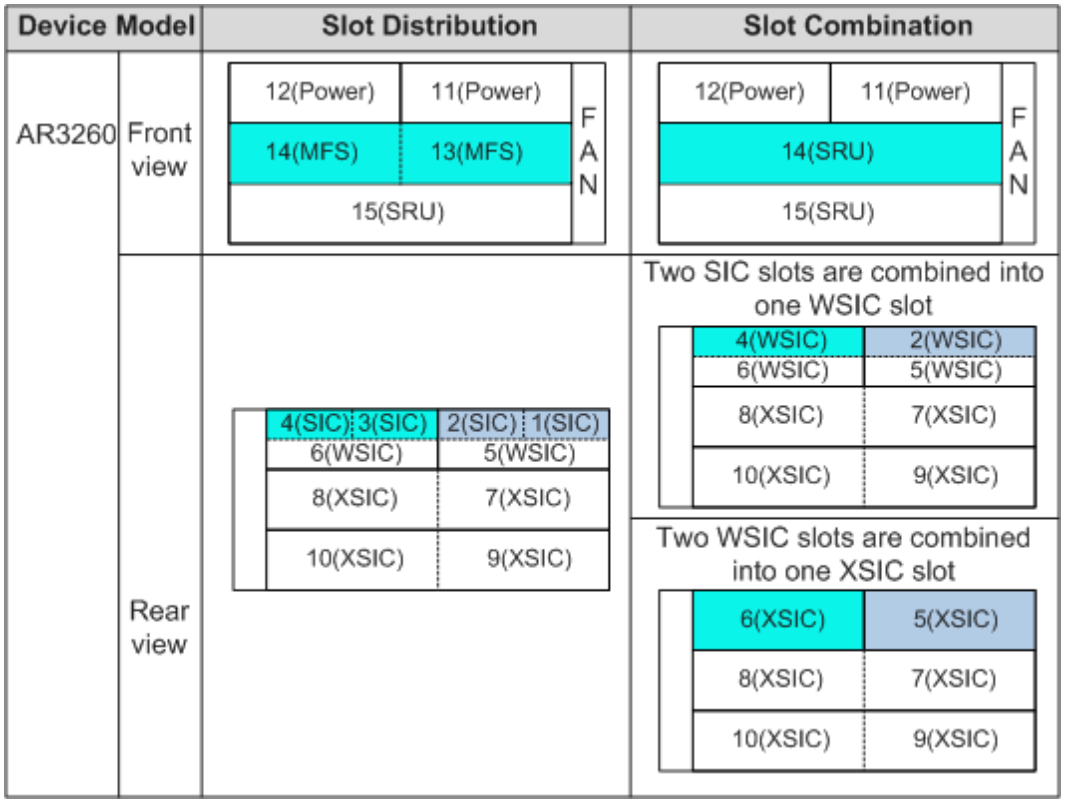
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot with a special component. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 2-315 shows the slot distribution of the AR3260.

Figure 2-315 AR3260 slot distribution



- Slot 1 and slot 2 are combined into new slot 2.

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- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.
- New slot 13 and slot 14 are combined into new slot 14 to function as the standby MPU slot.

Indicator Description

All the indicators seen on the AR3260 front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

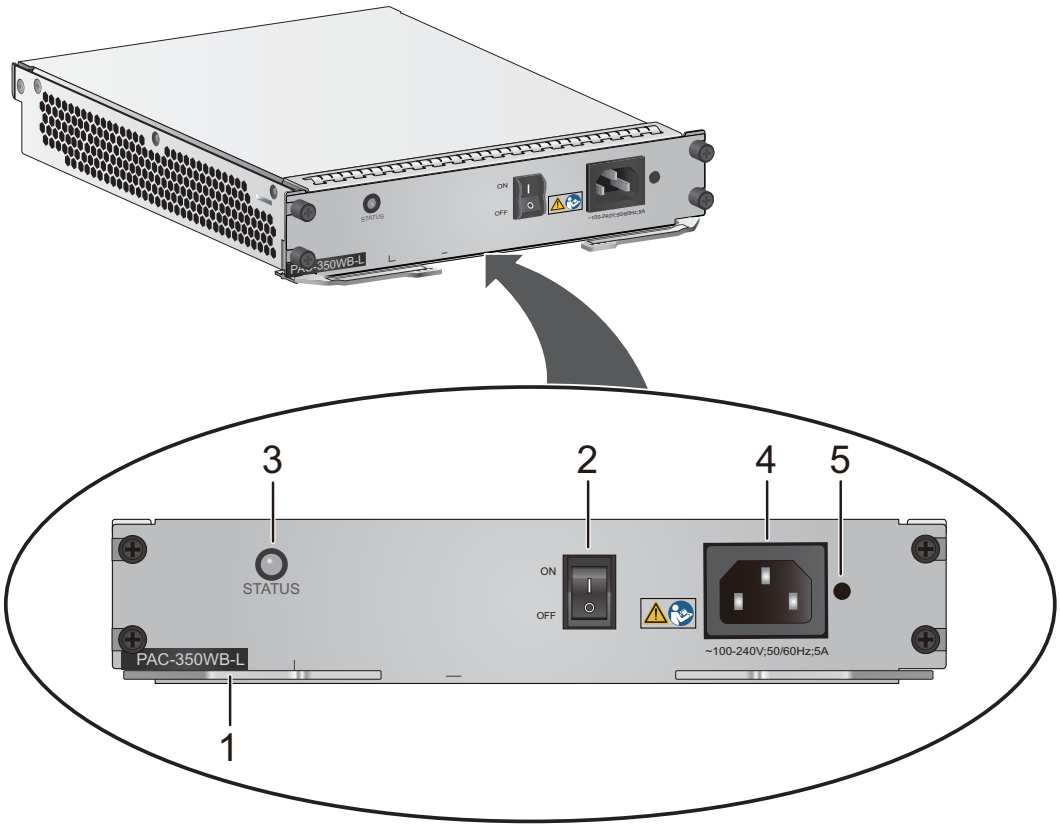
Power Supply System

The AR3260 power supply system consists of two 350 W AC or DC power modules that work in 1+1 backup mode, and can have an 850 W AC PoE power module installed.

350 W AC Power Module

Figure 2-316 shows the appearance of the 350 W AC power module.

Figure 2-316 Appearance of the 350 W AC power module



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Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The AC output power is within the allowed range. ● Steady red: The AC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	AC power jack	Use **AC Power Cable** to connect the router to an external power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-775 describes functions of the 350 W AC power module.

Table 2-775 Functions of a 350 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection

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Function	Description
Hot swapping	Supported

Table 2-776 describes technical specifications of the 350 W AC power module.

Table 2-776 Technical specifications of an 350 W AC power module

Item	Description
Silkscreen	PWR350A
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.5 kg
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	5 A
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	350 W

350 W DC Power Module

Figure 2-317 shows the appearance of a 350 W DC power module.

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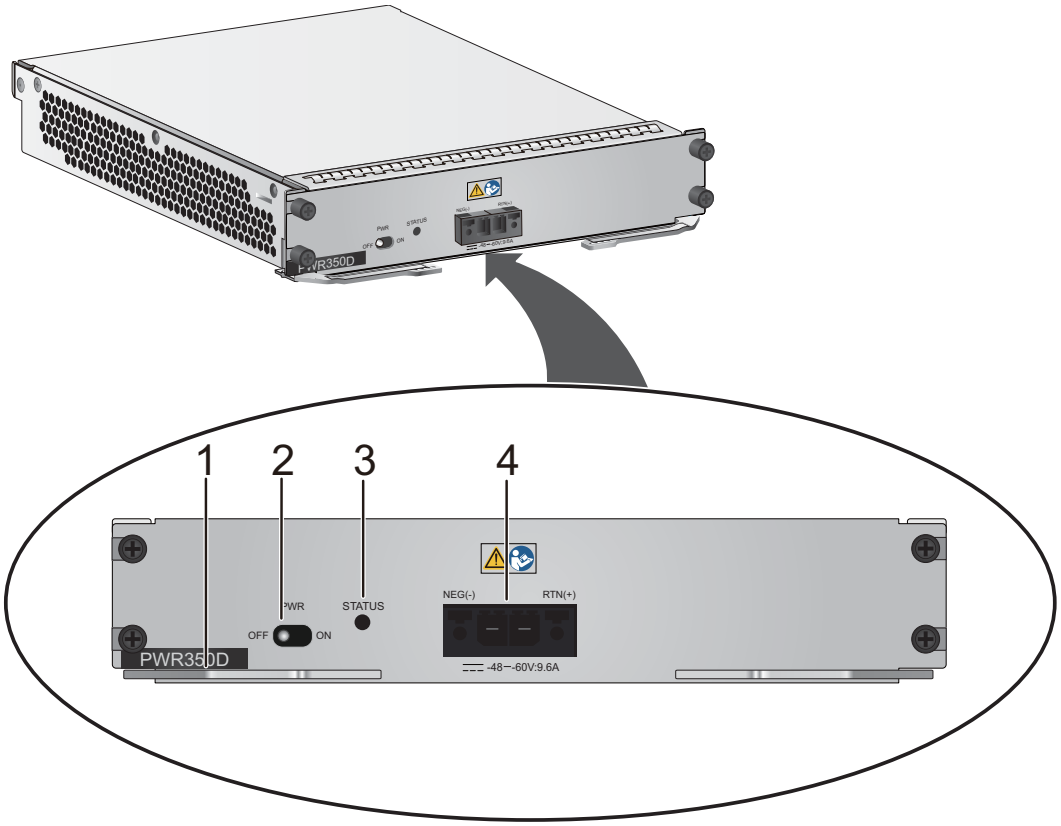
Figure 2-317 Appearance of a 350 W DC power module



Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The DC output power is within the allowed range. ● Steady red: The DC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	DC power interface	Use a DC power cable to connect the router to an external power source.

Table 2-777 describes functions of the 350 W DC power module.

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Table 2-777 Functions of a 350 W DC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	The power module can automatically resume power supply in this protection state.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-778 describes technical specifications of a 350 W DC power module.

Table 2-778 Technical specifications of a 350 W DC power module

Item	Description
Silkscreen	PWR350D
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.5 kg
Input	
Rated input voltage range	-48 V DC to -60 V DC
Maximum input voltage range	-38.4 V DC to -72 V DC
Maximum input current	6 A

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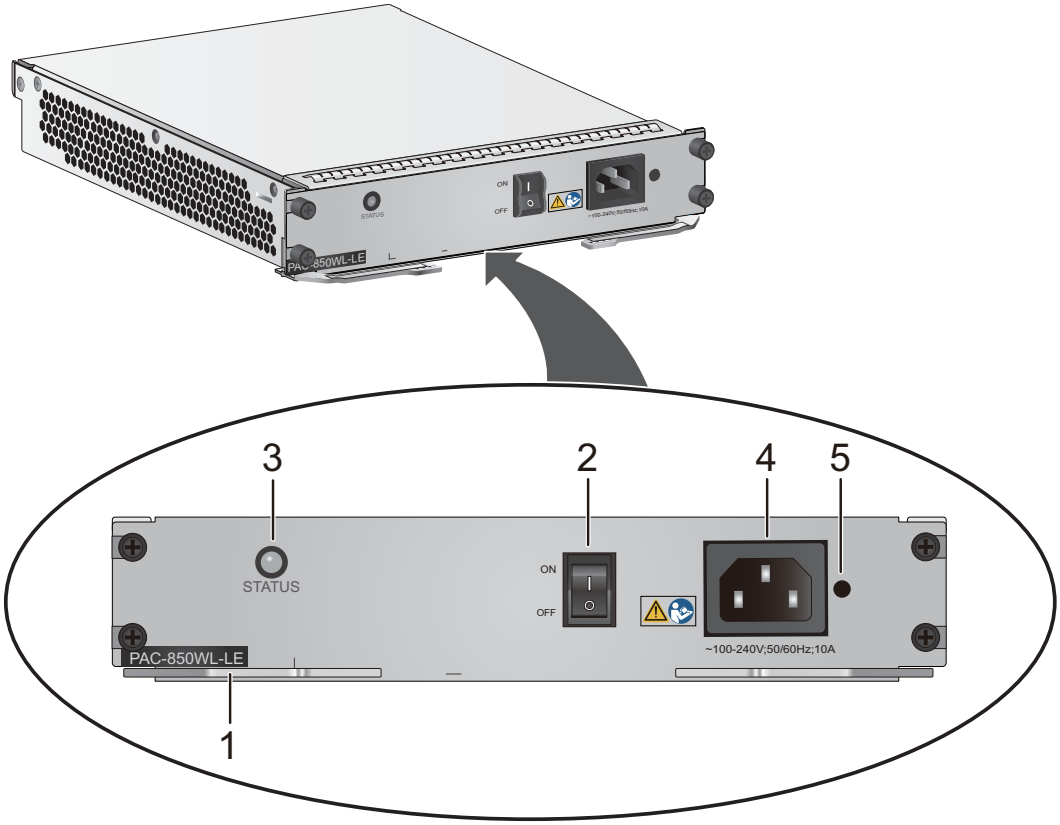
Item	Description
Output	
Rated output voltage	12 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC
Maximum output power	350 W

850 W AC PoE Power Module

Figure 2-318 shows the appearance of the 850 W AC PoE power supply.

Figure 2-318 Appearance of the 850 W AC PoE power module



Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.

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Number	Name	Description
3	Power module indicator (STATUS)	● Steady green: The AC output power is within the allowed range. ● Steady red: The AC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	AC power jack	Use **AC Power Cable** to connect the router to an external power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-779 describes functions of the 850 W AC PoE power module.

Table 2-779 Functions of an 850 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-780 lists technical specifications of an 850 W AC PoE power module.

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Table 2-780 Technical specifications of the 850 W AC PoE power module

Item	Description
Silkscreen	PAC-850WL-LE
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.85 kg
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	10 A
Output	
Rated output voltage	12 V DC/-53.5 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC/-51.895 V DC to -55.105 V DC
Maximum output power	850 W

Heat Dissipation

The AR3260 uses two independent pluggable fan modules to cool the system.

Air Channel

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-319**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-319 Airflow

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Fan Module

Fan modules are hot swappable and each consists of a fan tray, fans and a FAN Control Board (FCB), as shown in **Figure 2-320** .

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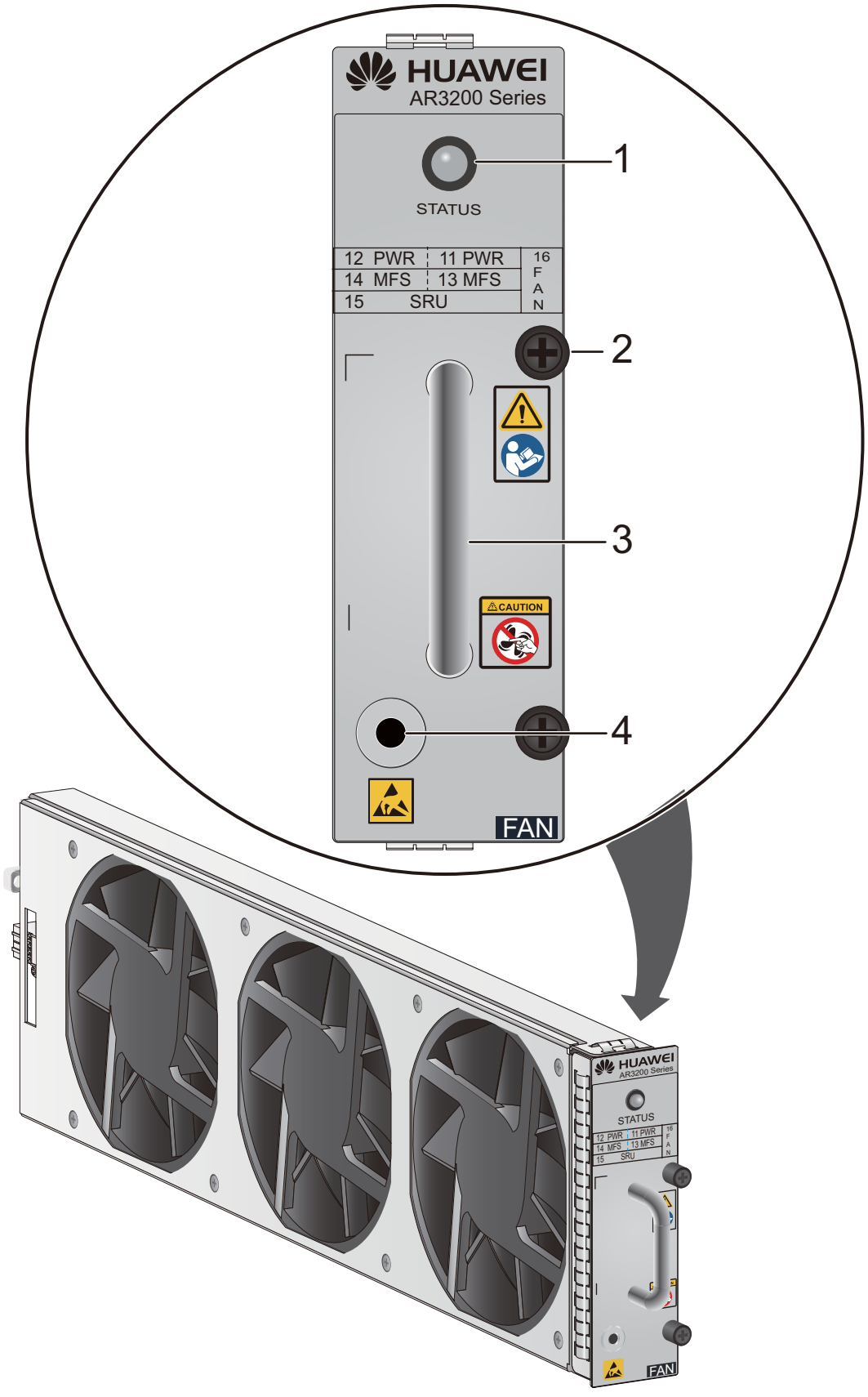
Figure 2-320 Appearance of a fan module



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Number	Name	Description
1	STATUS indicator of the fan module (red and green)	● Slow blinking green: The fan module is running properly. ● Fast blinking green: The fan module cannot communicate with the system. ● Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Fix the fan module
3	Handle	Install or remove a power module.
4	ESD jack	Connect to an ESD wrist strap, and ensure that the grounding terminal has been connected to the PGND cable.

Table 2-781 lists technical specifications of a fan module.

Table 2-781 Technical specifications of a fan module

Item	Specification
Silkscreen	FAN
Dimensions (W x D x H)	27.4 mm x 478.6 mm x 125.7 mm (1.08 in. x 18.84 in. x 4.95 in.)
Fans	3
Weight	1.45 kg
Maximum power consumption	90 W
Maximum wind pressure	226 Pa
Maximum wind rate	543 CFM
Maximum noise	75.2 dB
Operating voltage of a fan	7 V DC to 15 V DC

Technical Specifications

Table 2-782 lists technical specifications of the AR3260 routers.

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Table 2-782 AR3260 routers technical specifications

Item	Specification
System parameters	
Processor	● SRU40: 8-core 600 MHz ● SRU60: 8-core 600 MHz ● SRU80: 12-core 750 MHz ● SRU100: 12-core 750 MHz ● SRU200/SRU400: 32-core 1.2 GHz ● SRU100E/SRU200E: 12-core, 1.2 GHz
Memory	● SRU40: 2 GB ● SRU60: 2 GB ● SRU80: 2 GB ● SRU100: 2 GB ● SRU200/SRU400: 4 GB ● SRU100E/SRU200E: 4 GB
Flash memory	16 MB
Micro SD card (default: sd1)	2 GB
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 470.0 mm x 130.5 mm (17.4 in. x 18.5 in. x 5.14 in.) ● With mounting brackets installed: 482.6 mm x 470.0 mm x 130.5 mm (19.0 in. x 18.5 in. x 5.14 in.)
Weight	11 kg
Power specifications	
AC chassis model (350 W AC Power)	Support double hot-swappable power modules
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	5 A
Maximum output power	350 W
RPS	Not supported

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Item	Specification
PoE	Not supported
AC PoE chassis model (850 W AC PoE Power)	Support double hot-swappable power modules
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	10 A
Maximum output power	850 W
RPS	Not supported
PoE	Supported
DC chassis model (350 W DC Power)	Support double hot-swappable power modules
Rated input voltage (DC)	-48 V DC to -60 V DC
Maximum input voltage (DC)	-38.4 V DC to -72 V DC
Maximum input current	6 A
Maximum output power	350 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption (empty chassis)	
Typical power consumption	● SRU40: 67 W ● SRU60: 67 W ● SRU80: 104 W ● SRU100: 104 W ● SRU200/SRU400: 140 W ● SRU100E/SRU200E: 62 W

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Item	Specification
Maximum power consumption	● SRU40: 97 W ● SRU60: 97 W ● SRU80: 179 W ● SRU100: 179 W ● SRU200/SRU400: 210 W ● SRU100E/SRU200E: 92 W
Heat dissipation	
Fans	Independent pluggable fan modules
Airflow (facing the front panel)	Left to right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	● SRU40: Two ● SRU60: Two ● SRU80: Two ● SRU100: Two ● SRU200: 1 ● SRU400: 1 ● SRU100E: 1 ● SRU200E: 1
Service interfaces (standard configuration)	● SRU40: Two GE Combo interface (WAN) and one GE electrical interface (WAN). ● SRU60: Two GE Combo interface (WAN) and one GE electrical interface (WAN). ● SRU80: Two GE Combo interface (WAN) and one GE electrical interface (WAN). ● SRU100: Two GE Combo interface (WAN) and one GE electrical interface (WAN). ● SRU200: Four GE Combo interfaces (WAN) and two 10 GE optical interfaces (WAN). ● SRU400: Four GE Combo interfaces (WAN) and two 10 GE optical interfaces (WAN). ● SRU100E: Four GE Combo interfaces (WAN) and two GE optical interfaces (WAN). ● SRU200E: Four GE Combo interfaces (WAN) and two 10 GE optical interfaces (WAN).

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Item	Specification
Extended slotss	● 4×SIC ● 2×WSIC ● 4×XSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

2.12 AR3600 Series

2.12.1 AR3670

Version Mapping

Table 2-783 lists the mapping between the AR3670 router and software versions.

Table 2-783 Mapping between the AR3670 router and software versions

Router Model	Software Version
AR3670	V200R006C10 and later versions

Appearance and Structure

Appearance

Figure 2-321 shows the appearance of the AR3670 router.

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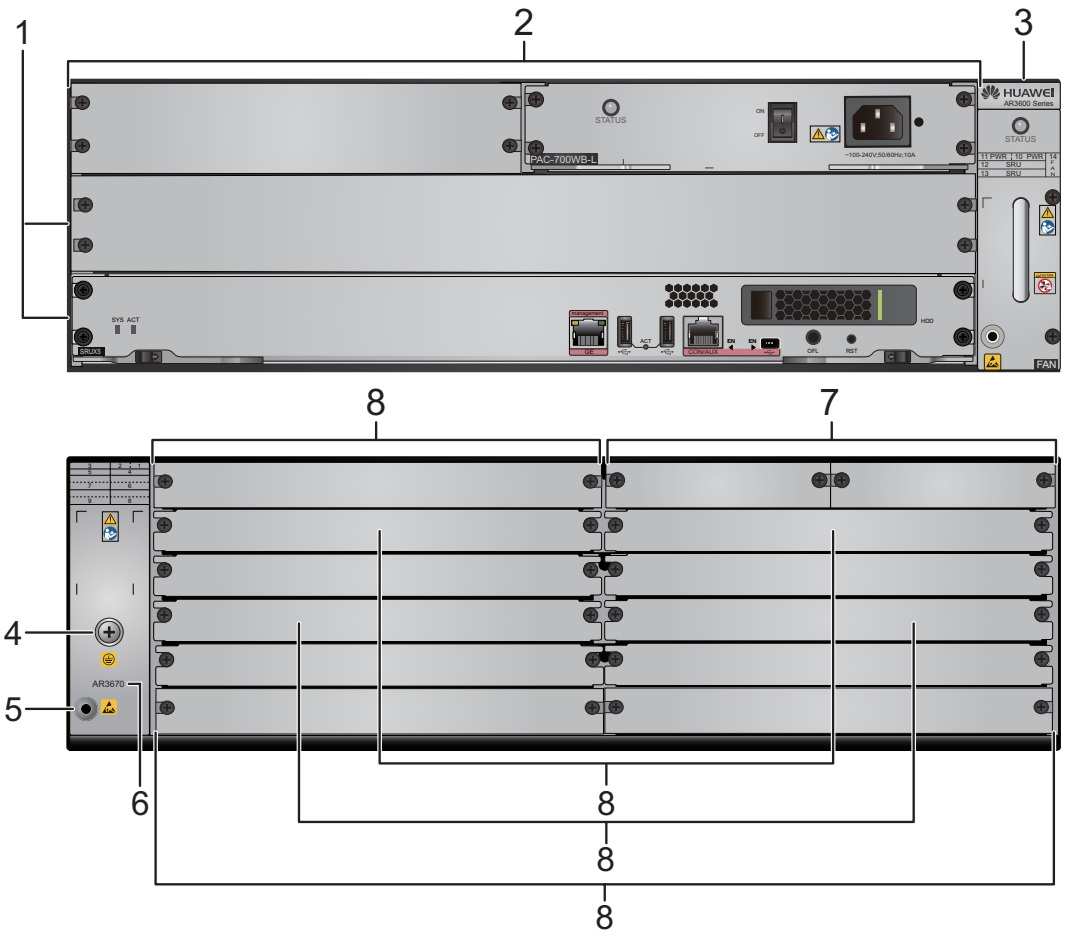
Figure 2-321 AR3670 appearance



1	Two **SRU** slots	2	Two power module slots Applicable power module: ● **700 W AC Power Module** ● **850 W AC PoE Power Module**
3	**3G/LTE antenna interface** Applicable fan module: **Fan Module**	4	Ground point **NOTE** Reliably ground the router by connecting a **ground cable** to the ground point to protect the router against lightning and interference.
5	ESD jack **NOTE** When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	6	Product model silkscreen
7	Two SIC slots	8	Seven WSIC slots

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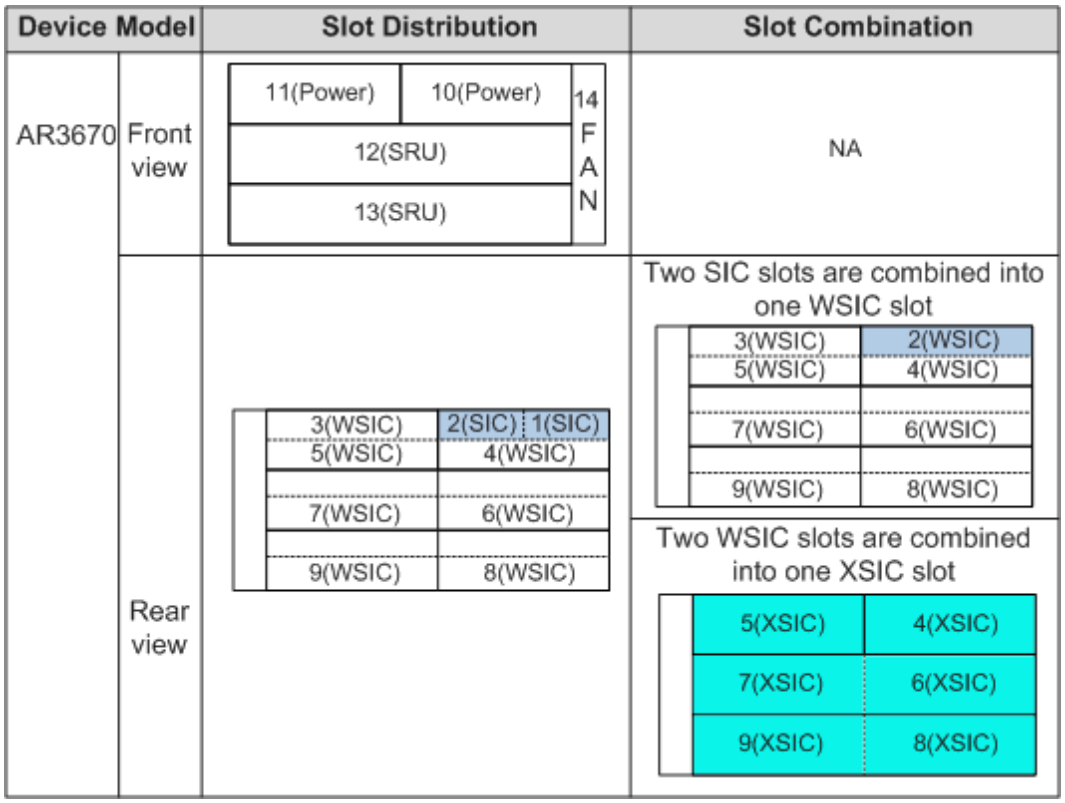
Slot Distribution

NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the slot ID is the larger one between the original two slots.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot with a special component. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 2-322 shows the slot distribution of the AR3670.

Figure 2-322 AR3670 slot distribution



- Slot 1 and slot 2 are combined into new slot 2.
- New slot 2 and slot 4 are combined into new slot 4.
- Slot 3 and slot 5 are combined into new slot 5.
- Slot 6 and the vacant slot above it are combined into new slot 6.
- Slot 7 and the vacant slot above it are combined into new slot 7.
- Slot 8 and the vacant slot above it are combined into new slot 8.
- Slot 9 and the vacant slot above it are combined into new slot 9.

Indicator Description

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All the indicators seen on the AR3670 front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

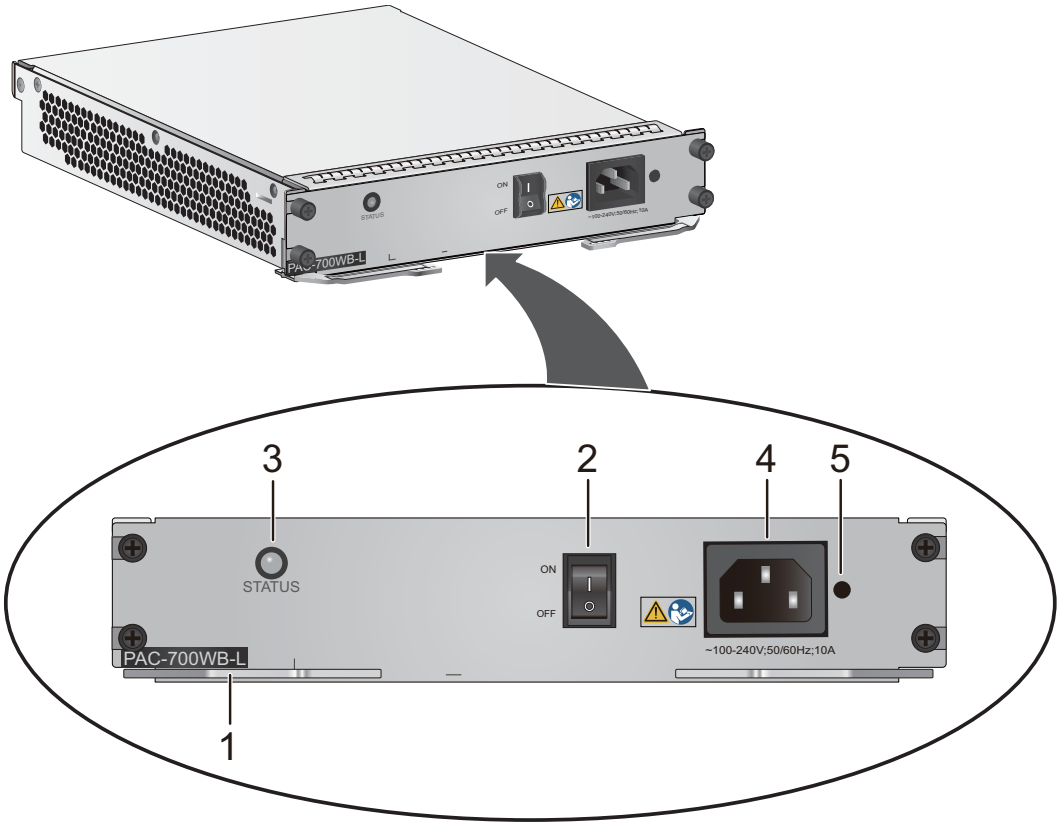
Power Supply System

The AR3670 uses two 700 W AC power modules for 1+1 power redundancy, and can have two 850 W AC PoE power modules installed.

700 W AC Power Module

Figure 2-323 shows the appearance of the 700 W AC power module.

Figure 2-323 Appearance of the 700 W AC power module



Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.

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Number	Name	Description
3	Power module indicator (STATUS)	● Steady green: The AC output power is within the allowed range. ● Steady red: The AC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	AC power jack	Use **AC Power Cable** to connect the router to an external power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-784 describes functions of the 700 W AC power module.

Table 2-784 Functions of the 700 W AC power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swap	Supported

Table 2-785 lists technical specifications of the 700 W AC power module.

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Table 2-785 Technical specifications of the 700 W AC power module

Item	Specification
Silkscreen	PAC-700WB-L
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.7 kg
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	10 A
Output	
Rated output voltage	12 V DC
Maximum input voltage range	11.64 V DC to 12.36 V DC
Maximum output power	700 W

850 W AC PoE Power Module

Figure 2-324 shows the appearance of the 850 W AC PoE power supply.

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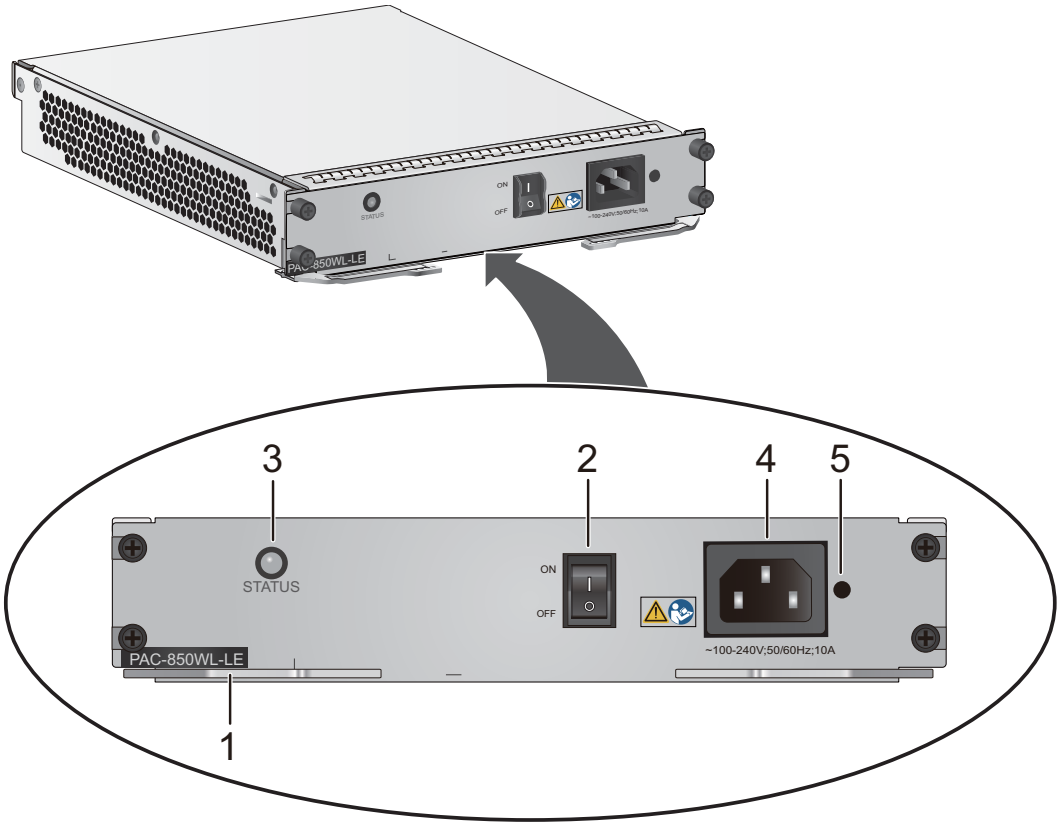
Figure 2-324 Appearance of the 850 W AC PoE power module



Number	Name	Description
1	Wrench	Install or remove a power module.
2	Power switch	Turn on or off the power.
3	Power module indicator (STATUS)	● Steady green: The AC output power is within the allowed range. ● Steady red: The AC output power is out of range or in protection (The indicator blinks if the power module is in hiccup protection mode).
4	AC power jack	Use **AC Power Cable** to connect the router to an external power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Table 2-786 describes functions of the 850 W AC PoE power module.

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Table 2-786 Functions of an 850 W AC PoE power module

Function	Description
Input undervoltage protection	The power module can automatically resume power supply in this protection state.
Input overvoltage protection	The power module can automatically resume power supply in this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply in this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply in this protection state.
Output current limiting protection	The power module cannot automatically resume power supply in this protection state.
Output short-circuit protection	The power module can automatically resume power supply in this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Input protection	Input undervoltage protection, input overvoltage protection, and input overcurrent protection
Output protection	Output overvoltage protection, output current limiting protection, and output short-circuit protection
Hot swapping	Supported

Table 2-787 lists technical specifications of an 850 W AC PoE power module.

Table 2-787 Technical specifications of the 850 W AC PoE power module

Item	Description
Silkscreen	PAC-850WL-LE
Dimensions (W x D x H)	201 mm x 253 mm x 40 mm (7.91 in. x 9.96 in. x 1.57 in.)
Weight	1.85 kg
Input	
Rated input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz

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Item	Description
Maximum input current	10 A
Output	
Rated output voltage	12 V DC/-53.5 V DC
Maximum output voltage range	11.64 V DC to 12.36 V DC/-51.895 V DC to -55.105 V DC
Maximum output power	850 W

Heat Dissipation

The AR3670 uses two independent pluggable fan modules to cool the system.

Air Channel

Seen from the front panel, the airflow is left to right, as shown in **Figure 2-325**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 2-325 Airflow

Fan Module

Fan modules are hot swappable and each consists of a fan tray, fans and a FAN Control Board (FCB), as shown in **Figure 2-326**.

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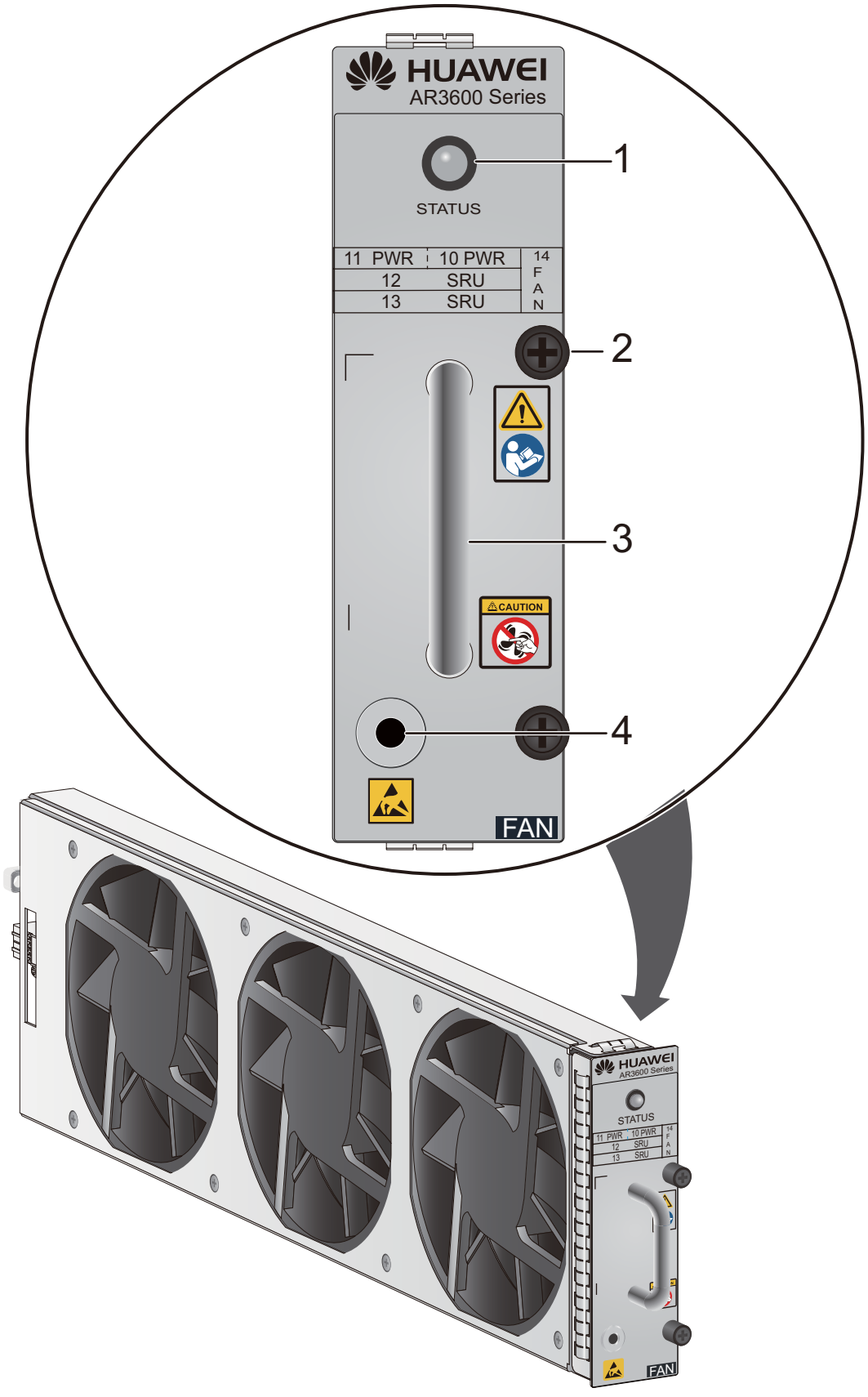
Figure 2-326 Appearance of a fan module



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Number	Name	Description
1	STATUS indicator of the fan module (red and green)	● Slow blinking green: The fan module is running properly. ● Fast blinking green: The fan module cannot communicate with the system. ● Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Fix the fan module
3	Handle	Install or remove a power module.
4	ESD jack	Connect to an ESD wrist strap, and ensure that the grounding terminal has been connected to the PGND cable.

Table 2-788 lists technical specifications of a fan module.

Table 2-788 Technical specifications of a fan module

Item	Specification
Silkscreen	FAN
Dimensions (W x D x H)	27.4 mm x 478.6 mm x 125.7 mm (1.08 in. x 18.8 in. x 4.95 in.)
Fans	3
Weight	1.45 kg
Maximum power consumption	90 W
Maximum wind pressure	226 Pa
Maximum wind rate	543 CFM
Maximum noise	75.2 dB
Operating voltage of a fan	7 V DC to 15 V DC

Technical Specifications

Table 2-789 lists technical specifications of the AR3670 routers.

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Table 2-789 AR3670 routers technical specifications

Item	Specification
System parameters	
Processor	6-core 2.2 GHz
Memory (default)	8 GB
Flash memory	8 GB
Micro SD card (default: sd1)	Not supported
Hard disk	Supported
Dimensions and weight	
Dimensions (W x D x H)	● With no mounting bracket installed: 442.0 mm x 470.0 mm x 130.5 mm (17.4 in. x 18.5 in. x 5.14 in.) ● With mounting brackets installed: 482.6 mm x 470.0 mm x 130.5 mm (19.0 in. x 18.5 in. x 5.14 in.)
Weight	11 kg
Power specifications	
AC chassis model (700 W AC Power)	Support double hot-swappable power modules
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	10 A
Maximum output power	700 W
RPS power supply	Not supported
PoE power supply	Not supported
AC PoE chassis model (850 W AC PoE Power)	Support double hot-swappable power modules
Rated input voltage (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	10 A

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Item	Specification
Maximum output power	850 W
RPS power supply	Not supported
PoE power supply	Supported
Power consumption (empty chassis)	
Typical power consumption	128 W
Maximum power consumption	184 W
Heat dissipation	
Fan module	Independent pluggable fan modules
Airflow (facing the front panel)	Left-to-right
Interface density	
Management interfaces	1 (RJ45)
CON/AUX interface	1 (RJ45)
USB 2.0 interfaces	2
Service interfaces (standard configuration)	None
Extended slotss	● 2×SIC ● 7×WSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)

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3 Cards

About This Chapter

3.1 Basic Concepts
3.2 SRU
3.3 Ethernet LAN Interface Card
3.4 WAN Interface Card
3.5 Voice Interface Card
3.6 xDSL/xPON Interface Card

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3.1 Basic Concepts

3.1.1 Card Category

Table 3-1 describes the cards supports by the AR series router.

Table 3-1 cards supports by the AR series router

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight
MPU	SRU40	Service and Router Unit 40	66.9 W	2.1 kg (4.63 lb)
	SRU60	Service and Router Unit 60	66.9 W	2.1 kg (4.63 lb)
	SRU80	Service and Router Unit 80	96.2 W	2.1 kg (4.63 lb)
	SRU200	Service and Router Unit 200	123 W	2.3 kg (5.07 lb)
	SRU400	Service and Router Unit 400	123 W	2.3 kg (5.07 lb)
	SRUX5	Service and Router Unit X5	130 W	2.0 kg (4.4 lb)
	SRU40C	Service and Router Unit 40C	83 W	2.3 kg (5.07 lb)
	SRU100E	Service and Router Unit 100E	62 W	2.3 kg (5.07 lb)
	SRU200E	Service and Router Unit 200E	62 W	2.3 kg (5.07 lb)
Ethernet LAN interface card	8FE1GE	8-port 100M-RJ45+1-port 1000M-RJ45-L2/L3 Ethernet electrical interface card	11.2 W	0.6 kg (1.33 lb)

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight
	9ES2	8 Port 100BASE-RJ45 and 1 Port 1000BASE-RJ45 L2 Ethernet Interface Card	7.6 W	0.6 kg (1.33 lb)
	24GE	24-port 1000M-RJ45-L2/L3 Ethernet electrical interface card	25.7 W	0.85 kg (1.88 lb)
	24ES2GP	24-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card	30 W	0.85 kg (1.88 lb)
	4GE-2S	4-Port 1000BASE-SFP-L2 Ethernet Interface Card	8 W	0.3 kg (0.66 lb)
	4ES2G-S	4-Port 1000BASE-RJ45 L2 Ethernet Interface Card	6.7 W	0.3 kg (0.66 lb)
	4ES2GP-S	4-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card	6.7 W	0.3 kg (0.66 lb)
WAN interface card	1GEC	1-port-GE combo WAN interface card	3.2 W	0.25 kg (0.55 lb)
	4GECS	4-port-GE combo WAN interface card	14 W	0.6 kg (1.33 lb)
	2FE	2-port-FE WAN interface card	3.1 W	0.3 kg (0.66 lb)

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight
	2X10GL	2-Port 10GE Optical Ports Interface Card	22.1 W	0.5 kg (1.1 lb)
	1E1/T1-M/2E1/T1-M/4E1/T1-M/8E1/T1-M **NOTE** 2E1/T1-M-W will be replaced by 2E1/T1-M after December 31, 2013.	1/2/4/8-port-channelized E1/T1/PRI/VE1 multifunctional interface card	● 1E1/T1-M: 4.7 W ● 2E1/T1-M : 4.8 W ● 2E1/T1-M-W: 4.8 W ● 4E1/T1-M: 11 W ● 8E1/T1-M: 12 W	● 1E1/T1-M/2E1/T1-M/2E1/T1-M-W: 0.3 kg (0.66 lb) ● 4E1/T1-M/8E1/T1-M: 0.6 kg (1.33 lb)
	1E1/T1-F/2E1/T1-F/4E1/T1-F/8E1/T1-F	1/2/4/8-port-fractional channelized E1/T1 WAN interface card	● 1E1/T1-F: 4.7 W ● 2E1/T1-F: 4.8 W ● 4E1/T1-F: 11 W ● 8E1/T1-F: 12 W	● 1E1/T1-F/2E1/T1-F: 0.3 kg (0.66 lb) ● 4E1/T1-F/8E1/T1-F: 0.6 kg (1.33 lb)
	1E3/CE3/T3/CT3	1-Port Channelized/ Unchannelized E3/T3 WAN Interface Card	11.2 W	0.6 kg (1.33 lb)
	1SA/2SA	1/2-port-synchronous/ asynchronous WAN interface card	● 1SA: 5.5 W ● 2SA: 6.2 W	0.3 kg (0.66 lb)
	8SA	8-Port Synchronous/ Asynchronous WAN Interface Card	25 W	0.6 kg (1.33 lb)
	6E&M	6-Port E&M-RJ45 Analog Trunk Interface Card	21 W	0.6 kg (1.33 lb)

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight
	8AS	8-port-asynchronous WAN interface card	4.7 W	0.6 kg (1.33 lb)
	1BST	1-port ISDN S/T WAN interface card	7.4 W	0.3 kg (0.66 lb)
	1CPOS-155M **NOTE** This card will be replaced by 1CPOS-155M-W after June 30, 2014.	1-port CPOS interface card	12 W	0.3 kg (0.66 lb)
	1CPOS-155M-W **NOTE** This card will replace 1CPOS-155M after June 30, 2014.	1-port CPOS interface card	12 W	0.3 kg (0.66 lb)
	3G-HSPA+7	3G interface card	6.5 W	0.2 kg (0.44 lb)
	3G-EVDO	3G CDMA2000 EVDO Interface Card	7 W	0.2 kg (0.44 lb)
	1LTE-H 1LTE-L 1LTE-LV	WCDMA LTE Data Card	7 W	0.2 kg (0.44 lb)
	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card	10.1 W	0.2 kg (0.44 lb)
	4GEW-T	4-port-GE electrical WAN interface card	10.2 W	0.3 kg (0.66 lb)
	4GEW-S	4-port-GE optical WAN interface card	8 W	0.3 kg (0.66 lb)

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight
	1STM1/1STM4	1-Port-155M/622M POS Optical Interface Card	12 W	0.6 kg (1.33 lb)
	4STM1	4-Port 155M Packet over SDH/SONET Optical Interface Card	16.6 W	0.6 kg (1.33 lb)
	4E1-IMA	4-port-E1 ATM IMA interface card	12 W	0.6 kg (1.33 lb)
Voice interface card	2BST **NOTE** This card will replace 2BST-W after December 31, 2013.	2-port-ISDN S/T voice interface card	14.2 W	0.3 kg (0.66 lb)
	2BST-W **NOTE** This card will be replaced by 2BST after December 31, 2013.	2-port-ISDN S/T voice interface card	14.2 W	0.3 kg (0.66 lb)
	4FXS1FXO	4-port FXS + 1-port FXO voice interface card	12.78 W	0.3 kg (0.66 lb)
	16/32/64/128-channel DSP module	DSP module	2.89 W	0.05 kg (0.11 lb)
	16/32FXS	16/32-port-FXS voice interface card	● 16FXS: 29 W ● 32FXS: 37.24 W	0.6 kg (1.33 lb)
	4FXO	4-port-FXO voice interface card	6.6 W	0.1 kg (0.22 lb)
	1VE1	1-Port Voice E1 Interface Card	4.7 W	0.3 kg (0.66 lb)

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight
xDSL/xPON interface card	1ADSL-A/M and 1ADSL-B/J	1-port-ADSL2+ ANNEX A/M and B/J WAN interface card	● 1ADSL-A/M:5.5 W ● 1ADSL-B/J: 5.5 W	● 1ADSL-A/M:0.3 kg (0.66 lb) ● 1ADSL-B/J: 0.3 kg (0.66 lb)
	4G.SHDSL	1-port-4G.SHDSL WAN interface card	8.2 W	0.35 kg (0.77 lb)
	1GBIS4W	1-Port 4 Pair G.SHDSL WAN Interface Card (WSIC)	7.8 W	0.35 kg (0.77 lb)
	1PON	1-port-EPON/GPON interface card	8.72 W	0.3 kg (0.66 lb)
	VDSL2	1-port-VDSL2 over POTS WAN interface card	9.5 W	0.2 kg (0.44 lb)

3.1.2 Card Structure and Dimensions

Card Structure

NOTE

The AR series routers support service interface card (SIC), wide service interface card (WSIC), extended service interface card (XSIC), and service and router unit (SRU) cards. These cards have the same structure, and a WSIC card is used as an example here.

Figure 3-1 shows the appearance of a WSIC card.

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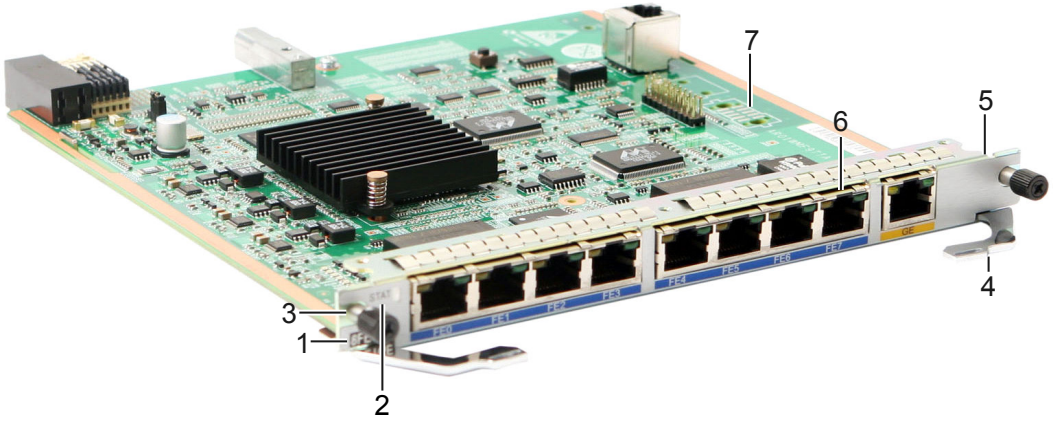
Figure 3-1 Appearance of a WSIC card



1. Card name silkscreen	2. Indicator	3. Captive screw
4. Handle	5. Front panel plate	6. Ports
7. Printed circuit board (PCB)	-	-

A card consists of:

- PCB

  The PCB contains all the functional chips of the card and is the core of the card The PCB provides indicators, buttons, and ports on the front panel. PBCs of some cards provide space for installing daughter cards.

  NOTE

  Different cards provide different indicators, buttons, and ports. Some cards support daughter cards, while some cards do not. For details, see the description of specific cards.

- Front panel, consisting of screws, ejector levers, and plate.
  - Screws: fix the card into the chassis.
  - Ejector lever: allows you to insert and remove the card.
  - Plate: connects the ejector levers and the PCB. Labels, such as the bar code and laser label, are also attached on the plate.

Card Dimensions

Figure 3-2 illustrates the dimensions of a card.

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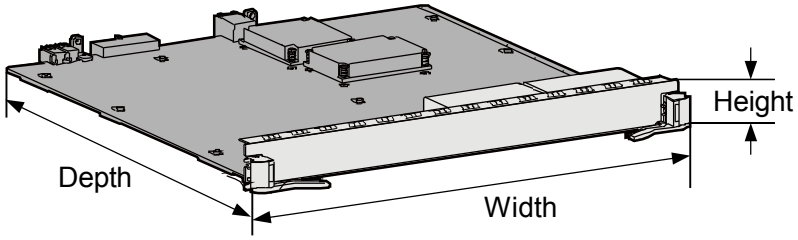
Figure 3-2 Card dimensions



NOTE

The card dimensions are defined as follows:

- Depth: distance between the top of an ejector lever and the end of PCB
- Width: longest distance between the tops of two ejector levers
- Height: height of the front panel

Figure 3-3 shows the cards supported by the AR router and **Table 3-2** lists the card dimensions.

Figure 3-3 Card appearances

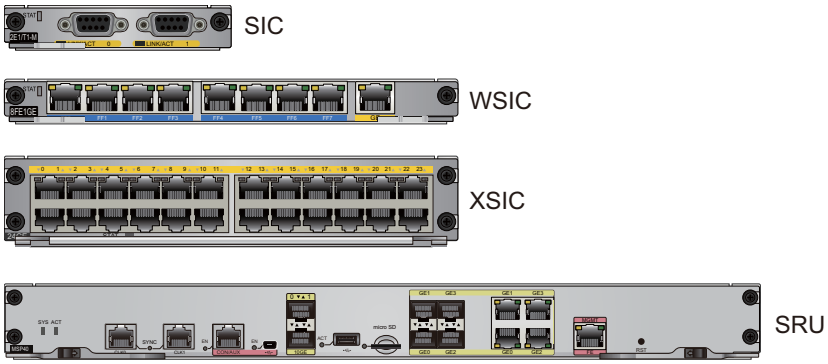


Table 3-2 Card dimensions

Card Type	Dimensions (Height x Width x Depth)
SIC card	19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.)
WSIC card	19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.)
XSIC card	40.14 mm x 201 mm x 223.5 mm (1.58 in. x 7.91 in. x 8.8 in.)
SRU	40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.)

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3.1.3 Interface Numbering

On the AR router, interfaces are numbered in the format of slot ID/subcard ID/interface sequence number.

- Slot ID

  The slot ID identifies in which slot a card is installed.

  NOTE

  - The SRU slot is 0.
  - When slots are combined into one slot, the greater slot ID is used as the new slot ID. For example, when slot 1 and slot 2 are combined, slot ID 2 is used as the new slot ID.

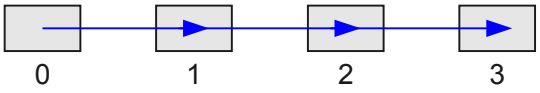
- Subcard ID

  The subcard ID specifies the ID of a subcard. The AR router does not support subcards. Therefore, the subcard ID of the AR router is always 0.

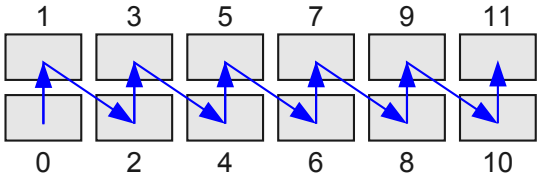
- Interface sequence number

  The interface sequence number indicates the number of each interface on a card.

  - There is only one row of interfaces on a card. These interfaces are numbered from left to right starting with 0.

  - There are two rows of interfaces on a card. These interfaces are numbered from bottom to top and left to right starting with 0.

3.2 SRU

3.2.1 Card Overview

An SRU integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system loading, and system upgrade.
- Switching plane: provides high-speed and non-blocking data channels to implement service switching between service modules.

The SRUs are classified into SRU40, SRU60, SRU80, SRU200, SRU400, SRUX5, SRU40C, SRU100E, and SRU200E. **Table 3-3** describes the comparison between the SRUs.

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Table 3-3 Comparison of the SRUs

Card Name	CPU	Service Interface
SRU40	600 MHZ CPU with 8 kernels	Two GE combo interfaces and one GE electrical interface
SRU60	600 MHZ CPU with 8 kernels	Two GE combo interfaces and one GE electrical interface
SRU80	750 MHZ CPU with 12 kernels	Two GE combo interfaces and one GE electrical interface
SRU200	1.2 GHz CPU with 32 kernels	Four GE combo interfaces and two 10GE optical interfaces
SRU400	1.2 GHz CPU with 32 kernels	Four GE combo interfaces and two 10GE optical interfaces
SRUX5	2.2 GHz CPU with 6 kernels	None
SRU40C	1.2 GHz CPU with 6 kernels	Two GE combo interfaces, four GE electrical interfaces, and four GE optical interfaces
SRU100E	1.2 GHz CPU with 12 kernels	Four GE combo interfaces and two GE optical interfaces
SRU200E	1.2 GHz CPU with 12 kernels	Four GE combo interfaces and two 10GE optical interfaces

NOTE

- The SRU40, SRU60, and SRU80 panels are identical except for having different silkscreens. The SRU40 is used as an example.
- The SRU200, and SRU400 panels are identical except for having different silkscreens. The SRU200 is used as an example.

Figure 3-4 shows the appearance of the SRU40.

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Figure 3-4 Appearance of the SRU40

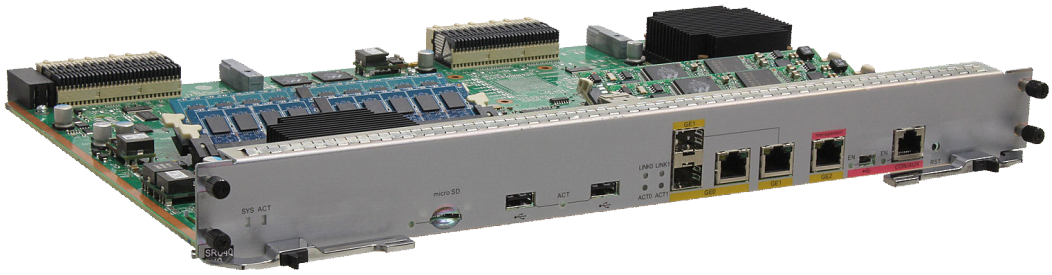

Figure 3-5 shows the appearance of the SRU200.

Figure 3-5 Appearance of the SRU200

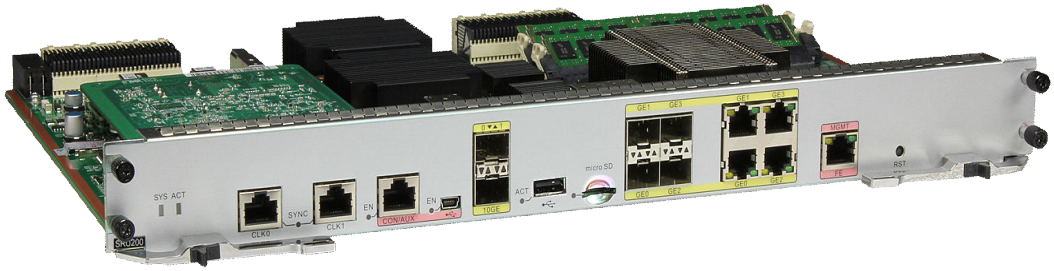

Figure 3-6 shows the appearance of the SRUX5.

Figure 3-6 Appearance of the SRUX5

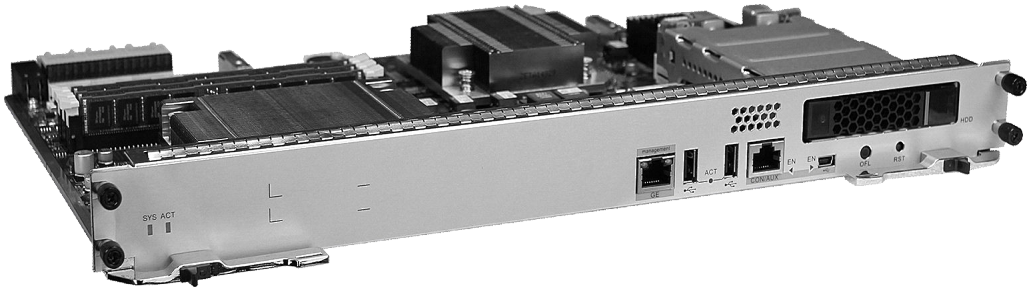

Figure 3-7 shows the appearance of the SRU40C.

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Figure 3-7 Appearance of the SRU40C

Figure 3-8 shows the appearance of the SRU100E.

Figure 3-8 Appearance of the SRU100E

Figure 3-9 shows the appearance of the SRU200E.

Figure 3-9 Appearance of the SRU200E

3.2.2 Version Mapping

Table 3-4 describes the mapping between the SRU and software versions.

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Table 3-4 Mapping between the SRU and software versions

Card Name	AR2240	AR2240C	AR3260	AR3670
SRU40 **NOTE** This card is supported in V200R001C00 and later versions.	Y	N	Y	N
SRU60 **NOTE** Huawei will stop service on this card after June 30, 2014. V200R003C00 and later versions.	Y	N	Y	N
SRU80 **NOTE** This card is supported in V200R001C00 and later versions.	Y	N	Y	N
SRU200 **NOTE** This card is supported in V200R005C10 and later versions.	Y	N	Y	N
SRU400 **NOTE** This card is supported in V200R005C10 and later versions.	Y	N	Y	N
SRUX5 **NOTE** This card is supported in V200R006C10 and later versions.	N	N	N	Y

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Card Name	AR2240	AR2240C	AR3260	AR3670
SRU40C **NOTE** This card is supported in V200R007C00 and later versions.	N	Y	N	N
SRU100E **NOTE** This card is supported in V200R007C00 and later versions.	Y	N	Y	N
SRU200E **NOTE** This card is supported in V200R007C00 and later versions.	Y	N	Y	N

NOTE

- Y: supported
- N: not supported

3.2.3 Functions and Features

Table 3-5 describes the functions and features of the SRU.

Table 3-5 Functions and features of the SRU

Function and Feature	Description
Basic functions	Stores information such as system configuration data, startup files, upgrade software, and system logs.
Voice functions	SRU40, SRU60 and SRU80 provide voice functions. **NOTE** The SRU200, SRU400, SRUX5, SRU40C, SRU100E, and SRU200E will support voice functions in later versions.
Control module	Functions as the control and management plane for the system, implementing protocol processing, route calculation, forwarding control, system management, and system security.

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Function and Feature	Description
Switching module	Functions as the service switching plane and provides high-speed service channels to implement service switching, including voice switching, data switching, and conversion between voice and data services.
Power module	Provides power for the SRU.
Clock module	Provides synchronous clock signals for voice cards and local voice switching.

3.2.4 Indicators and Interfaces

Indicator Description

Figure 3-10 shows indicators on the SRU40, SRU60, and SRU80 panels, and **Table 3-6** describes the indicator states and meanings.

Figure 3-10 Indicators on the SRU40, SRU60, and SRU80 panels

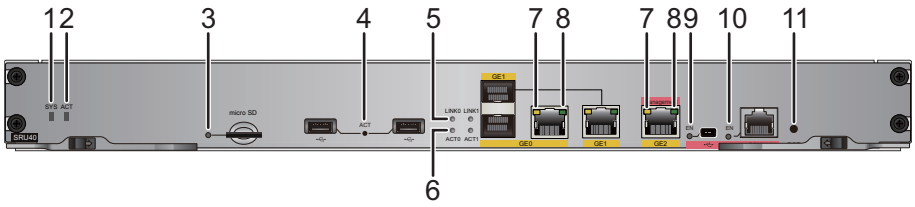

Table 3-6 Description of indicators on the SRU40, SRU60, and SRU80 panels

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	The system software is not running or is resetting.

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Number	Indicator	Color	Description
2	ACT (active/standby status indicator) **NOTE** The AR2240 can have only one SRU installed, which functions as the active SRU.	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is installed or the SD card is damaged.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE optical interface indicators: ● 5: LINK indicator, green ● 6: ACT indicator, yellow	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7 and 8	GE electrical interface indicators: ● 8: LINK indicator, green	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.

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Number	Indicator	Color	Description
	● 7: ACT indicator, yellow		Off: No data is being transmitted or received.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
11	RST button	**NOTICE** The RESET button is used to reset cards manually. Resetting a card will cause service interruption. Confirm your action before you press the RESET button.	

Figure 3-11 shows indicators on the SRU200, and SRU400 panels, and **Table 3-7** describes the indicator states and meanings.

Figure 3-11 Indicators on the SRU200, and SRU400 panels

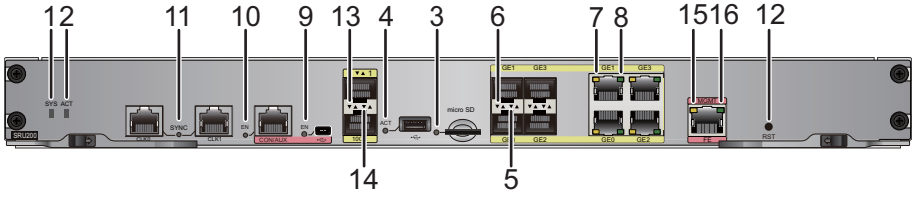

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Table 3-7 Description of indicators on the SRU200, and SRU400 panels

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	The system software is not running or is resetting.
2	ACT (active/ standby status indicator) **NOTE** The AR2240 can have only one SRU installed, which functions as the active SRU.	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: There is no SD card.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE optical interface indicators:	Green	Steady on: A link has been established.
			Off: No link is established.

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Number	Indicator	Color	Description
	● 5: LINK indicator, green ● 6: ACT indicator, yellow	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
7 and 8	GE electrical interface indicators: ● 8: LINK indicator, green ● 7: ACT indicator, yellow	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
9	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
11	SYNC (clock synchronization indicator)	Green	Steady on: The system is synchronizing its clock.
			Off: The system is not synchronizing its clock.

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Number	Indicator	Color	Description
12	RST button	**NOTICE** The RESET button is used to reset cards manually. Resetting a card will cause service interruption. Confirm your action before you press the RESET button.	
13 and 14	10GE optical interface indicators: ● 14: LINK indicator, green ● 13: ACT indicator, yellow	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
15 and 16	FE electrical interface indicators: ● 16: LINK indicator, green ● 15: ACT indicator, yellow	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Figure 3-12 shows indicators on the SRUX5 panel, and **Table 3-8** describes the indicator states and meanings.

Figure 3-12 Indicators on the SRUX5 panel

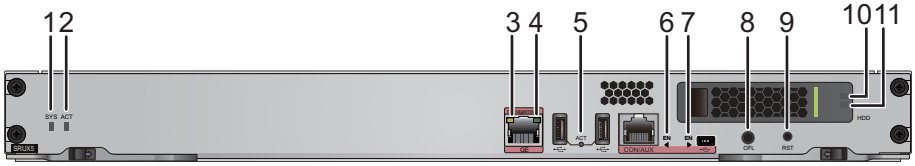

Table 3-8 Description of indicators on the SRUX5 panel

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.

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Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
2	ACT (active/ standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3 and 4	GE electrical interface indicators: ● 4: LINK indicator, green ● 3: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
5	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
6	CON/AUX EN	Green	Steady on: The CON/AUX interface is enabled.

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Number	Indicator	Color	Description
	NOTE ● The CON/AUX interface and the Mini USB interface share the same interface, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The CON/AUX interface is disabled.
7	EN (Mini USB interface)	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
8	OFL	Blue	Steady on: The OFL button has been held down for more than 4s, and the hard disk is removable. Off: The hard disk cannot be removed. **NOTE** The OFL indicator only shows whether the hard disk is removable while the power is on. It cannot identify service status in the hard disk.
9	RST button	**NOTICE** This button is used to reset the SRU. Resetting the SRU will cause service interruption. Exercise caution when deciding to press this button.	
10	Hard disk error indicator	Red	Steady on: The hard disk does not work normally. Off: The hard disk is working normally.

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Number	Indicator	Color	Description
11	Hard disk act indicator	Green	Steady on: The hard disk is available. Blinking: The system is performing read-write operation the hard disk. Off: No hard disk is available. **NOTE** After you run the hard disk formatting command on the router, the hard disk act indicator blinks during the disk formatting.

Figure 3-13 and **Table 3-9** describe the indicator states and meanings.

Figure 3-13 SRU40C indicators

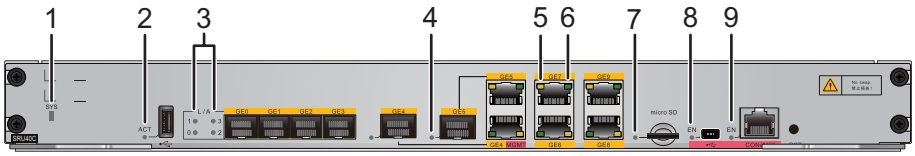

Table 3-9 Indicators on the SRU40C panel

Number	Indicator	Color	Meaning
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
2	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.

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Number	Indicator	Color	Meaning
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
3	GE optical interface indicators (L/A)	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established on the GE optical interface.
4	GE optical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established on the GE optical interface.
5 and 6	GE electrical interface indicators: ● 5: ACT indicator, yellow ● 6: LINK indicator, green	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
7	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is available.
8	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
9	CON/AUX EN	Green	Steady on: The CON/AUX interface is enabled.

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Number	Indicator	Color	Meaning
	NOTE ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.		Off: The CON/AUX interface is disabled.

Figure 3-14 shows indicators on the SRU100E panel, and **Table 3-10** describes the indicator states and meanings.

Figure 3-14 Indicators on the SRU100E panel

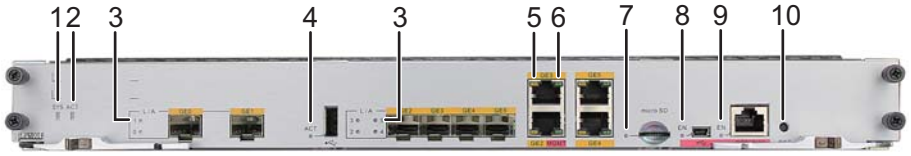

Table 3-10 Description of indicators on the SRU100E panel

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

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Number	Indicator	Color	Description
		Off	The system software is not running or is resetting.
2	ACT (active/standby status indicator) **NOTE** The AR2240 can have only one SRU installed, which functions as the active SRU.	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	GE optical interface indicator (L/A)	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5 and 6	GE electrical interface indicators ● 8: LINK indicator, green ● 7: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
7	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.

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Number	Indicator	Color	Description
			Off: No SD card is installed or the SD card is damaged.
8	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
9	CON/AUX EN **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.
10	RST button	**NOTICE** The RESET button is used to reset cards manually. Resetting a card will cause service interruption. Confirm your action before you press the RESET button.	

Figure 3-15 shows indicators on the SRU200E panel, and **Table 3-11** describes the indicator states and meanings.

Figure 3-15 Indicators on the SRU200E panel

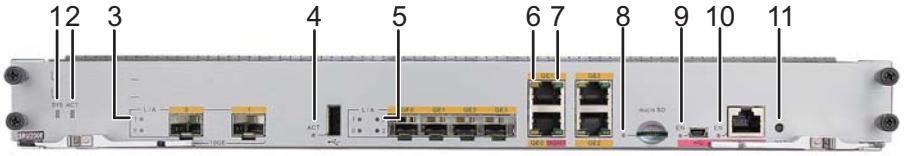

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Table 3-11 Description of indicators on the SRU200E panel

Number	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	The system software is not running or is resetting.
2	ACT (active/ standby status indicator) **NOTE** The AR2240 can have only one SRU installed, which functions as the active SRU.	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	10GE optical interface indicator (L/A)	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.
4	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
5	GE optical interface indicator (L/A)	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.

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Number	Indicator	Color	Description
			Off: No link is established.
6 and 7	GE electrical interface indicators ● 7: LINK indicator, green ● 6: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.
8	Micro SD	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No SD card is installed or the SD card is damaged.
9	Mini USB EN	Green	Steady on: The Mini USB interface is enabled.
			Off: The Mini USB interface is disabled.
10	CON/AUX EN **NOTE** ● The CON/AUX interface and the Mini USB interface are multiplexed, and only one of them can be used at a time. ● By default, the CON/AUX interface is effective and the EN indicator is steady green, regardless of whether a cable is connected to the interface.	Green	Steady on: The CON/AUX interface is enabled.
			Off: The CON/AUX interface is disabled.

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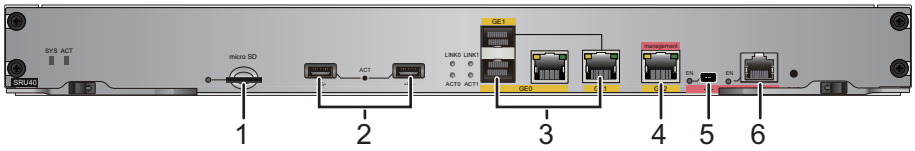
Number	Indicator	Color	Description
11	RST button	**NOTICE** The RESET button is used to reset cards manually. Resetting a card will cause service interruption. Confirm your action before you press the RESET button.	

Interface Description

Figure 3-16 shows interfaces on the SRU40, SRU60, and SRU80.

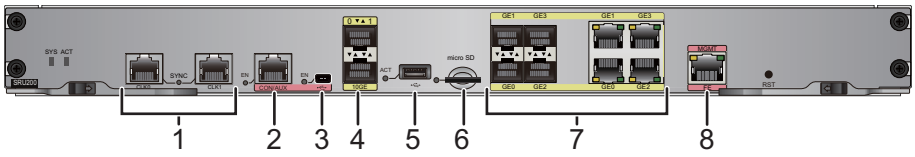
Figure 3-16 Interfaces on the SRU40, SRU60, and SRU80



1. Micro SD card interface **NOTE** This is an extended SD card slot, where an SD card can be installed.	2. USB interface	3. GE combo interface
4. GE electrical interface (management interface)	5. Mini USB interface	6. CON/AUX interface

Figure 3-17 shows interfaces on the SRU200 and SRU400.

Figure 3-17 Interfaces on the SRU200 and SRU400



1. Two clock synchronization interfaces **NOTE** They are reserved hardware interfaces. The router does not support clock synchronization currently.	2. CON/AUX interface	3. Mini USB interface

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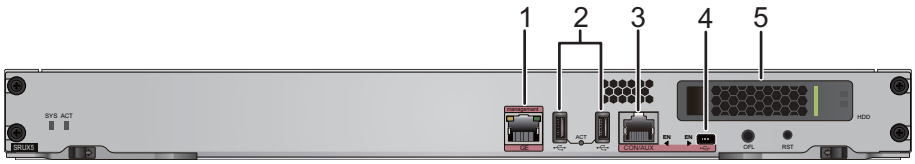
4. Two 10GE optical interfaces	5. USB interface	6. Micro SD card interface **NOTE** This is an extended SD card slot, where an SD card can be installed.
7. Four GE combo interfaces	8. FE electrical interface (management interface)	-

Figure 3-18 shows interfaces on the SRUX5.

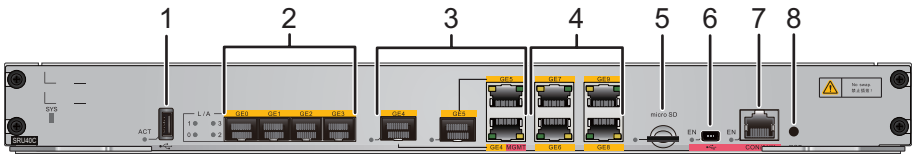
Figure 3-18 Interfaces on the SRUX5



1. GE electrical interface (management interface)	2. USB interface	3. CON/AUX interface
4. Mini USB interface	5. SATA interface **NOTICE** ● Before using a non-Huawei-certified hard disk, format the hard disk. ● Do not power off or restart the router when it is performing read-write operating on the SATA hard disk.	-

Figure 3-19 shows interfaces on the SRU40C.

Figure 3-19 Interfaces on the SRU40C



1. USB interface	2. Four GE optical interfaces	3. Two GE combo interfaces

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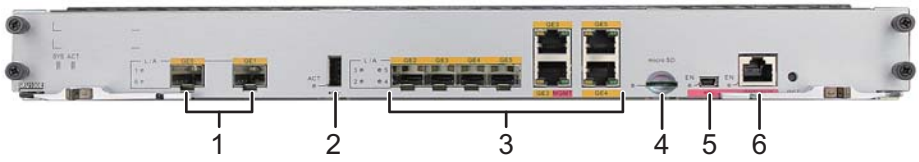
4. Four GE electrical interfaces	5. Micro SD card interface **NOTE** This is an extended SD card slot, where an SD card can be installed.	6. Mini USB interface
7. CON/AUX interface	8. RST button **NOTICE** This button is used to reset the SRU. Resetting the SRU will cause service interruption. Exercise caution when deciding to press this button.	-

Figure 3-20 shows interfaces on the SRU100E.

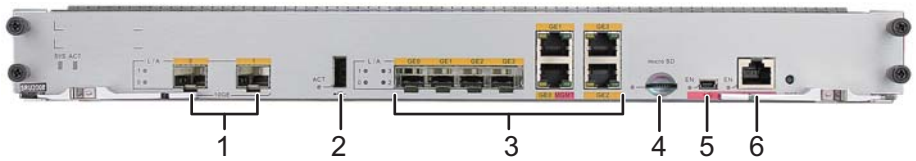
Figure 3-20 Interfaces on the SRU100E



1. Two GE optical interfaces	2. USB interface **NOTE** USB1.1 is not supported.	3. Four GE combo interfaces **NOTE** GE2 is a management interface used to upgrade the router.
4. Micro SD card interface **NOTE** This is an extended SD card slot, where an SD card can be installed.	5. Mini USB interface	6. CON/AUX interface

Figure 3-21 shows interfaces on the SRU200E.

Figure 3-21 Interfaces on the SRU200E



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1. Two 10GE optical interfaces	2. USB interface **NOTE** USB1.1 is not supported.	3. Four GE combo interfaces **NOTE** GE0 is a management interface used to upgrade the router.
4. Micro SD card interface **NOTE** This is an extended SD card slot, where an SD card can be installed.	5. Mini USB interface	6. CON/AUX interface

Micro SD card interface

The micro SD card interface connects to the MiniSD card to store system data.

USB interface

The USB interface connects to the USB flash drive and is used to deploy devices.

Mini USB interface

A Mini USB interface connects to an operation terminal for on-site configuration. The Mini USB interface and console interface cannot be used together. By default, the console interface works.

CON/AUX interface

The console interface of a router can connect to an operation terminal for onsite configuration. An AUX interface can connect to a remote management center through a modem for remote configuration. **Table 3-12** lists the CON/AUX interface attributes.

Table 3-12 CON/AUX interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex universal asynchronous receiver/transmitter (UART)
Data equipment type	● Data circuit-terminating equipment (DCE) ● AUX interface: data terminal equipment (DTE)
Cable type	**4.1.6 Console Cable**

Combo interface

A combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. Each combo interface has only one internal forwarding interface. The electrical and optical interfaces of a combo interface are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down. It must be used with **4.1.7 Ethernet Cable** or **GE Optical Module** and **4.1.8 Optical Fiber**.

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NOTE

By default, a combo interface works as an electrical interface and uses network cables to transmit data.

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-13** lists attributes of a GE electrical interface.

Table 3-13 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE optical interface

A GE optical interface can send and receive services at 100 Mbit/s or 1 Gbit/s. **Table 3-14** describes the attributes of a GE optical interface.

Table 3-14 Attributes of a GE optical interface

Attribute	Description
Connector type	LC/PC

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Attribute	Description
Optical interface attributes	Optical modules supported: ● SFP-FE-SX-MM1310 (SFP) ● eSFP-FE-LX-SM1310 ● eSFP-FE-LH40-SM1310 ● eSFP-FE-LH80-SM1550 ● SFP-FE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-FE-LX-SM1550-BIDI (single-fiber-bidirectional) ● eSFP-GE-SX-MM850 ● SFP-GE-LX-SM1310 ● S-SFP-GE-LH40-SM1310 ● S-SFP-GE-LH40-SM1550 ● S-SFP-GE-LH80-SM1550 ● eSFP-GE-ZX100-SM1550 ● SFP-GE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-GE-LX-SM1490-BIDI (single-fiber-bidirectional) ● LE2MGSC40DE0 (single-fiber-bidirectional) ● LE2MGSC40ED0 (single-fiber-bidirectional) ● 1471, CWDM-SFPGE-1471 ● 1491, CWDM-SFPGE-1491 ● 1511, CWDM-SFPGE-1511 ● 1531, CWDM-SFPGE-1531 ● 1591, CWDM-SFPGE-1591 ● 1557.36, DWDM-SFPGE-1557-36 ● 1558.17, DWDM-SFPGE-1558-17 ● 1558.98, DWDM-SFPGE-1558-98 ● 1559.79, DWDM-SFPGE-1559-79 ● 1560.61, DWDM-SFPGE-1560-61 The optical interface attributes depend on the optical modules used. For details, see **GE Optical Module**, **GE-CWDM Optical Module**, **GE-DWDM Optical Module**, and **FE Optical Module**.
Standards compliance	IEEE 802.3z

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10GE optical interface

A 10GE optical interface supports GE/10GE auto-sensing and can send and receive data at 1 Gbit/s or 10 Gbit/s. **Table 3-15** describes the attributes of a 10GE optical interface.

Table 3-15 Attributes of a 10GE optical interface

Attribute	Description
Connector type	LC/PC
Optical interface attributes	Optical modules supported: ● OMXD22000 ● OMXD30001 ● OSX001001 ● OSX040N00 ● SFP-FE-SX-MM1310 (SFP) ● eSFP-FE-LX-SM1310 ● eSFP-FE-LH40-SM1310 ● eSFP-FE-LH80-SM1550 ● SFP-FE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-FE-LX-SM1550-BIDI (single-fiber-bidirectional) ● eSFP-GE-SX-MM850 ● SFP-GE-LX-SM1310 ● S-SFP-GE-LH40-SM1310 ● S-SFP-GE-LH40-SM1550 ● S-SFP-GE-LH80-SM1550 ● eSFP-GE-ZX100-SM1550 ● SFP-GE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-GE-LX-SM1490-BIDI (single-fiber-bidirectional) ● LE2MGSC40DE0 (single-fiber-bidirectional) ● LE2MGSC40ED0 (single-fiber-bidirectional) The optical interface attributes depend on the optical modules used. For details, see **10GE Optical Module** and **GE Optical Module**.
Standards compliance	IEEE802.3ae
Working mode	10GE/GE auto-sensing Full-duplex

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3.2.5 Technical Specifications

Table 3-16 describes the technical specifications of the SRU.

Table 3-16 Technical specifications of the SRU

Item	Specification
CPU	● SRU40: 8-core 600 MHz ● SRU60: 8-core 600 MHz ● SRU80: 12-core 750 MHz ● SRU200/SRU400: 32-core 1.2 GHz ● SRUX5: 6-core 2.2 GHz ● SRU40C: 6-core 1.2 GHz ● SRU100E/SRU200E: 12-core 1.2 GHz
Memory (default value)	● SRU40/SRU60/SRU80/SRU40C: 2 GB ● SRU100E/SRU200E: 4 GB ● SRU200/SRU400: 4 GB ● SRUX5: 24 GB
Flash memory	● SRU40/SRU60/SRU80/SRU200/SRU400/SRU100E/SRU200E: 16 MB ● SRU40C: 32 MB ● SRUX5: 8GB
Micro SD card (default)	● SRU40/SRU60/SRU80/SRU200/SRU400/SRU100E/SRU200E: 2 GB ● SRU40C: 2 GB ● SRUX5: None
Hard disk	● SRU40/SRU60/SRU80/SRU200/SRU400/SRU40C/SRU100E/SRU200E: Not supported ● SRUX5: Supported
In-service upgrade	In-service upgrade through the system management channel
Hot swap	Supported

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Item	Specification
Physical specifications	● Dimensions (height x width x depth):40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.) ● Maximum power consumption – SRU40: 66.9 W – SRU60: 66.9 W – SRU80: 96.2 W – SRU200/SRU400: 123 W – SRUX5: 130 W – SRU40C: 83 W – SRU100E/SRU200E: 62 W ● Weight – SRU40/SRU60/SRU80: 2.1 kg (4.63 lb) – SRU200/SRU400/SRU40C/SRU100E/SRU200E: 2.3 kg (5.07 lb) – SRUX5: 2.0 kg (4.4 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

3.2.6 Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-17 provides the ordering information.

Table 3-17 Ordering information

Part Number	Card Name	Card Description
03022UFT	SRU40	Service and Router Unit 40
03021SCA	SRU60	Service and Router Unit 60
03022UFU	SRU80	Service and Router Unit 80
03021XAM	SRU200	Service and Router Unit 200
03022NPN	SRU400	Service and Router Unit 400
03022SLF	SRUX5	Service and Router Unit X5

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Part Number	Card Name	Card Description
03023CEV	SRU40C	Service and Router Unit 40C
03023CNE	SRU100E	Service and Router Unit 100E
03023CNF	SRU200E	Service and Router Unit 200E

3.3 Ethernet LAN Interface Card

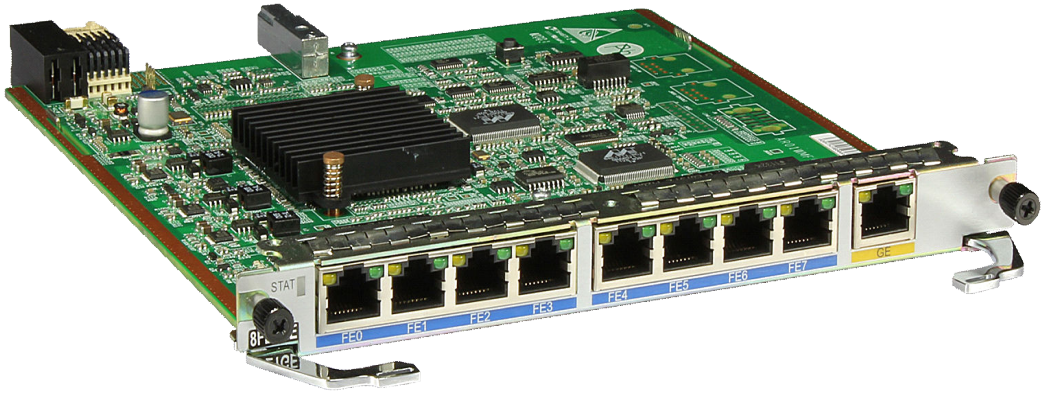
3.3.1 8FE1GE (8-Port 100M-RJ45+1-Port 1000M-RJ45-L2/L3 Ethernet Electrical Interface Card)

Card Overview

The 8FE1GE provides Ethernet access for medium- and small-scale enterprises and enterprise branches, and supports Layer 2 and Layer 3 line-speed switching and device management. It is a WSIC interface card and provides eight FE interfaces and one GE interface, which can connect to office terminals, PCs, IP phones, and switches.

Figure 3-22 shows the appearance of the 8FE1GE.

Figure 3-22 Appearance of the 8FE1GE



Version Mapping

Table 3-18 describes the mapping between the 8FE1GE and software versions.

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Table 3-18 Mapping between the 8FE1GE and software versions

Card Name	AR1200 Series (Except AR1220E Series)	AR2204 AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
8FE1GE **NOTE** V200R001C00 and later versions	Y	Y	Y	Y	Y

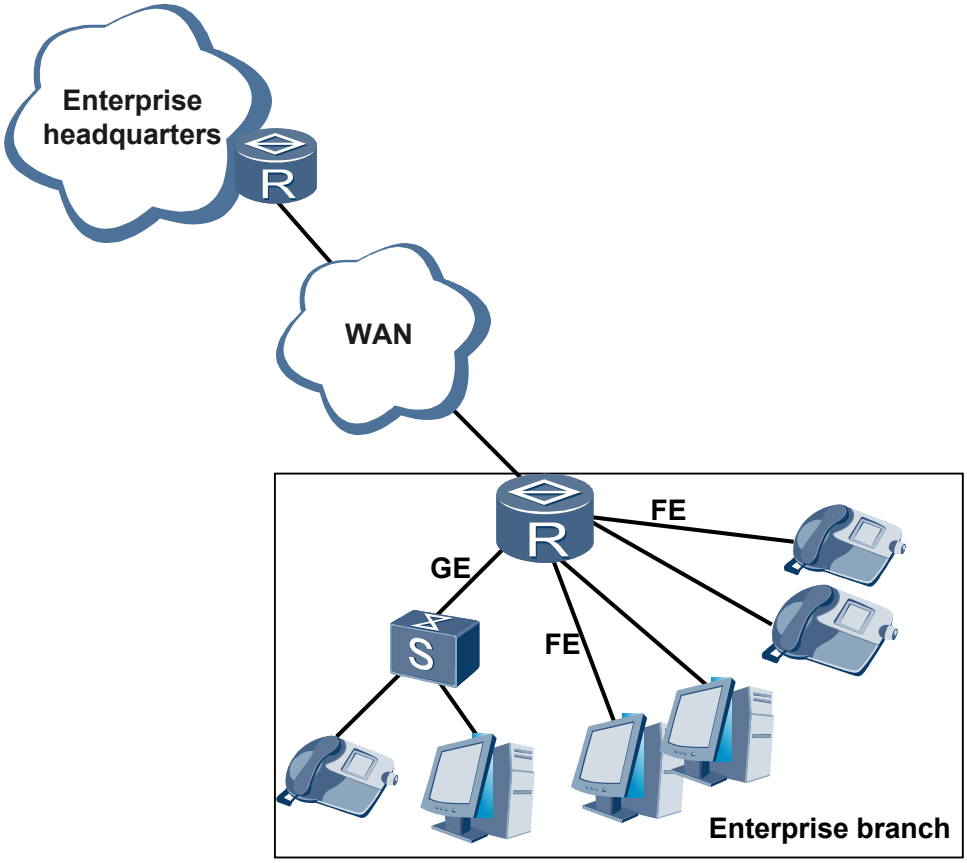
NOTE

Y: supported

Application

As shown in **Figure 3-23**, the 8FE1GE provides eight FE interfaces and one GE interface to connect to enterprise branch devices. FE electrical interfaces connect to various desktop terminals such as PCs and IP phones, and the GE electrical interface connects to a switch or server to implement line-speed forwarding of Layer 2 and Layer 3 data.

Figure 3-23 8FE1GE application



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Functions and Features

Table 3-19 describes the functions and features of the 8FE1GE.

Table 3-19 Functions and features of the 8FE1GE

Function and Feature	Description
Eight FE interfaces	Provides up to 100 Mbit/s line-speed switching.
One GE interface	Provides up to 1000 Mbit/s line-speed switching.
Duplex mode	Supports the half duplex mode and full duplex mode. The full duplex mode is most commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links to form a logical interface to increase bandwidth and improve link reliability.
VLANIF interface	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Supports MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Indicators and Interfaces

Indicators on the 8FE1GE

Figure 3-24 shows the indicators on the 8FE1GE panel, and Table 3-20 describes the indicator states and meaning.

Figure 3-24 Indicators on the 8FE1GE panel

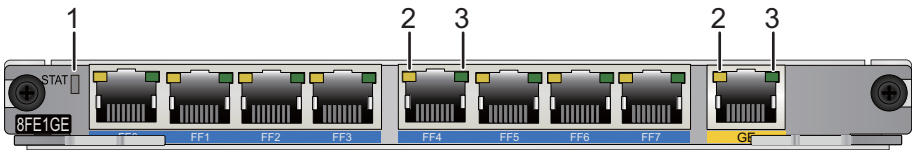

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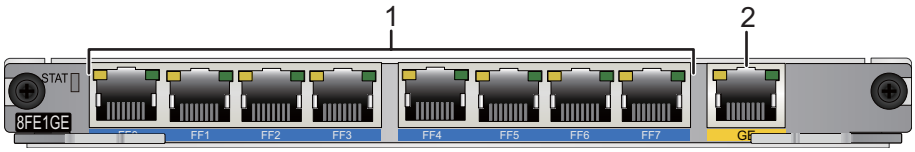
Table 3-20 Indicators on the 8FE1GE panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
3	LINK	Green	Steady on: A link has been established.
			Off: No link is established.

Description of Interfaces

Figure 3-25 shows the interfaces on the 8FE1GE.

Figure 3-25 Interfaces on the 8FE1GE



1. Eight FE electrical interfaces	2. One GE electrical interface

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 3-21** lists attributes of an FE electrical interface.

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Table 3-21 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-22** lists attributes of a GE electrical interface.

Table 3-22 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

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Technical Specifications

Table 3-23 describes the technical specifications of the 8FE1GE.

Table 3-23 Technical specifications of the 8FE1GE

Item	Specification
Card type	WSIC
External interfaces	Eight FE electrical interfaces and one GE electrical interface
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Transmission rate	● FE electrical interface: 10/100 Mbit/s, in auto-sensing mode ● GE electrical interface: 10/100/1000 Mbit/s, in auto-sensing mode
Connector type	RJ45
Cables	**4.1.7 Ethernet Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 11.2 W ● Weight: 0.6 kg (1.33 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 8FE1GE, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-24 provides the ordering information.

Table 3-24 Ordering information

Part Number	Card Name	Card Description
03020XTN	8FE1GE	8-Port 10/100BASE(RJ45) and 1-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Switch Interface Card

3.3.2 9ES2 (8 Port 100BASE-RJ45 and 1 Port 1000BASE- RJ45 L2 Ethernet Interface Card)

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Card Overview

NOTE

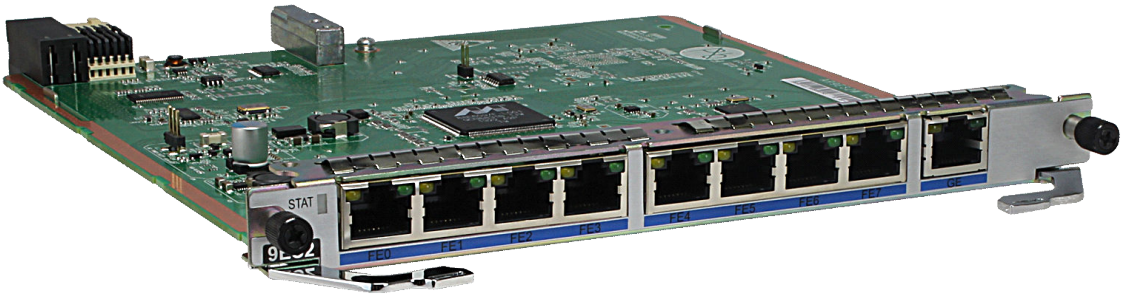
Meaning of characters in the card name:

- 9: nine RJ45 interfaces on the card
- ES: Ethernet switch
- 2: Layer 2

A 9ES2 card provides eight FE electrical interfaces and one GE electrical interface. This card is installed in a WSIC slot and provides line-speed Layer 2 switching and device management functions.

Figure 3-26 shows the appearance of a 9ES2 card.

Figure 3-26 9ES2 card appearance



Version Mapping

Table 3-25 describes the mapping between the 9ES2 card and software versions of different product models.

Table 3-25 Mapping between the 9ES2 card and software versions

Card Name	AR1200 Series (Except AR1220E Series)	AR2204 AR2220E	AR2220 AR2240 AR2240C	AR3260
9ES2 **NOTE** This card is supported in V200R005C00 and later versions.	Y	Y	Y	Y

NOTE

Y: supported

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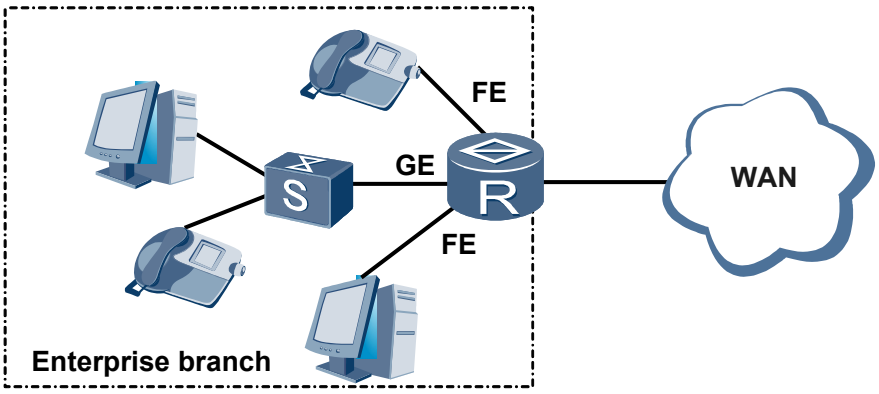
Application

9ES2 cards provide low-density Ethernet access for enterprise branches, as shown in **Figure 3-27**. The FE electrical interfaces on a 9ES2 card can connect to various terminals such as computers and IP phones, and the GE electrical interface can connect to a switch or server.

Figure 3-27 9ES2 card application



Functions and Features

Table 3-26 describes functions and features of a 9ES2 card.

Table 3-26 Functions and features of a 9ES2 card

Function and Feature	Specification
Eight FE interfaces	Each interface provides up to 100 Mbit/s line-speed switching.
One GE electrical interface	The interface provides up to 1000 Mbit/s line-speed switching.
Duplex mode	The interfaces support the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	4094 VLANs can be created.
Voice VLAN	Voice data traffic is transmitted in the voice VLAN with a high priority to ensure high-quality voice communication.
Link aggregation	Bundles multiple physical links into a logical link to increase link bandwidth and reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.

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Function and Feature	Specification
Layer 2 features	MAC, Generic VLAN Registration Protocol (GVRP), Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), and Link Layer Discovery Protocol (LLDP).

Indicators and Interfaces

Indicator Description

Figure 3-28 shows indicators on a 9ES2 card, and Table 3-27 describes the indicator states and meaning.

Figure 3-28 Indicators on a 9ES2 card

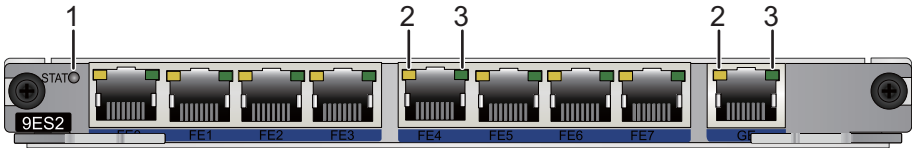

Table 3-27 9ES2 card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system software is running normally. Off: The card is not powered on.
2	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting or receiving data.
3	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.

Interface Description

Figure 3-29 shows interfaces on a 9ES2 card.

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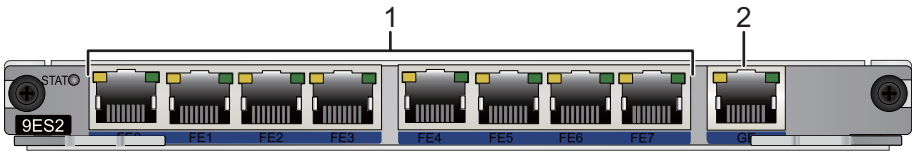
Figure 3-29 Interfaces on a 9ES2 card



1. Eight FE electrical interfaces	2. One GE electrical interface

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 3-28** lists attributes of an FE electrical interface.

Table 3-28 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-29** lists attributes of a GE electrical interface.

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Table 3-29 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

Technical Specifications

Table 3-30 lists technical specifications of a 9ES2 card.

Table 3-30 9ES2 card technical specifications

Item	Specification
Card type	WSIC
External interface	Eight FE electrical interfaces and one GE electrical interface
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface speed	● FE electrical interface: 10/100 Mbit/s auto-sensing ● GE electrical interface: 10/100/1000 Mbit/s auto-sensing
Connector type	RJ45
Cable	**4.1.7 Ethernet Cable**
Hot swap	Supported
Physical specifications	● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 9.2 in. x 0.78 in.) ● Maximum power consumption: 7.6 W ● Weight: 0.6 kg (1.32 lb)

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Item	Specification
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-31 provides the ordering information.

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Table 3-31 9ES2 ordering information

Part Number	Card Name	Card Description
03021UJL	9ES2	8 port 100BASE-RJ45 and 1 port 1000BASE-RJ45 L2 Ethernet interface card

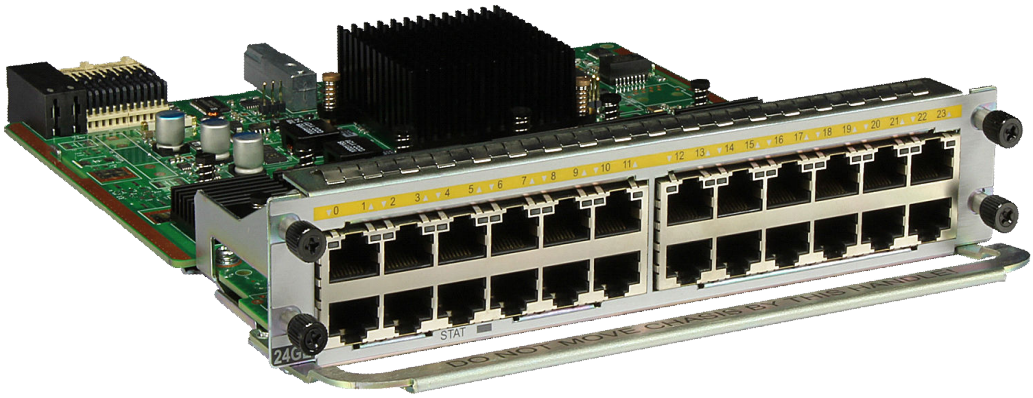
3.3.3 24GE (24-Port 1000M-RJ45-L2/L3 Ethernet Electrical Interface Card)

Card Overview

The 24GE is an XSIC interface card and provides 24 GE electrical interfaces, which extend Ethernet forwarding and Layer 2 and Layer 3 switching capabilities. The 24GE often applies to the enterprise headquarters and can connect to multiple devices by using the 24 GE interfaces.

Figure 3-30 shows the appearance of the 24GE.

Figure 3-30 Appearance of the 24GE



Version Mapping

Table 3-32 describes the mapping between the 24GE and software versions.

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Table 3-32 Mapping between the 24GE and software versions

Card Name	AR2220E AR2220	AR2240 AR2240C	AR3260	AR3670
24GE **NOTE** This card is supported in V200R001C00 and later versions.	Y	Y	Y	Y

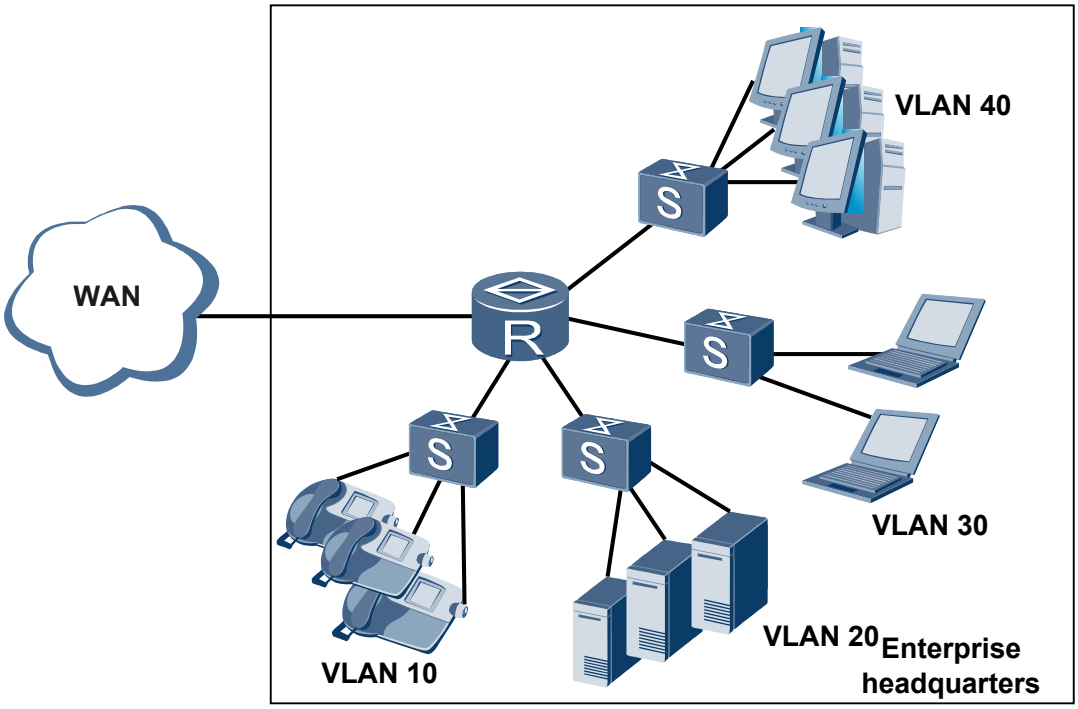
NOTE

Y: supported

Application

As shown in **Figure 3-31**, the 24GE provides 24 GE interfaces that can connect to multiple devices in the enterprise headquarters. The GE electrical interfaces can connect to switches or servers to provide high-density access to data, voice, and video services.

Figure 3-31 24GE application



Functions and Features

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Table 3-33 describes the functions and features of the 24GE.

Table 3-33 Functions and features of the 24GE

Function and Feature	Description
24 GE interfaces	Provides up to 1000 Mbit/s line-speed switching.
Duplex mode	Supports the half duplex mode and full duplex mode. The full duplex mode is most commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links to form a logical interface to increase bandwidth and improve link reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Supports MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Indicators and Interfaces

Indicators on the 24GE Panel

Figure 3-32 shows the indicators on the 24GE panel, and Table 3-34 describes the indicator states and meaning.

Figure 3-32 Indicators on the 24GE panel

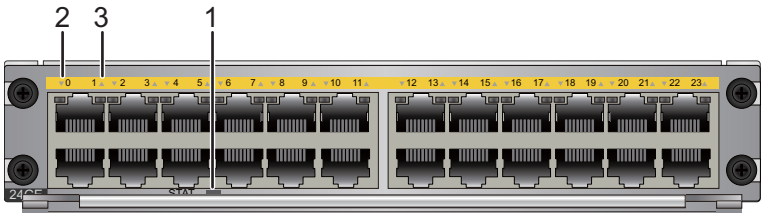

Table 3-34 Indicators on the 24GE panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.

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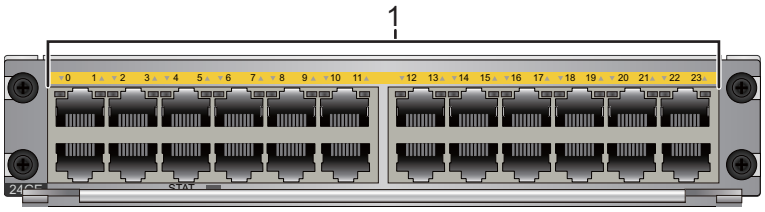
Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2, 3	One single-color indicator for each interface **NOTE** ● Down arrowhead: interfaces in the lower row ● Up arrowhead: interfaces in the upper row	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Description of Interfaces

Figure 3-33 shows the interfaces on the 24GE.

Figure 3-33 Interfaces on the 24GE



1. 24 GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-35** lists attributes of a GE electrical interface.

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Table 3-35 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

JTAG port

Figure 3-34 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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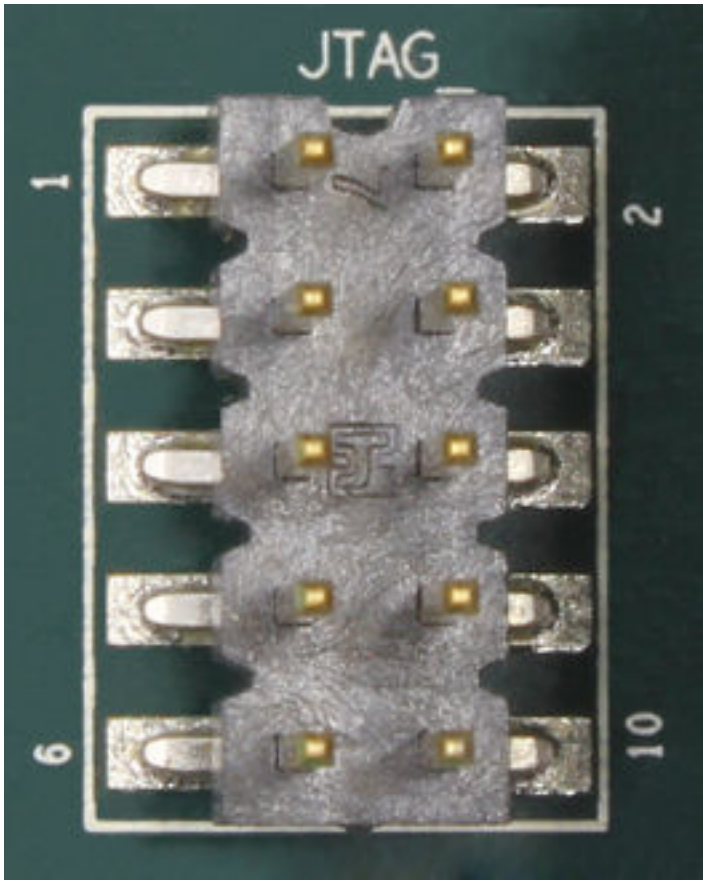
Figure 3-34 JTAG port



Technical Specifications

Table 3-36 describes the technical specifications of the 24GE.

Table 3-36 Technical specifications of the 24GE

Item	Specification
Card type	XSIC
External interfaces	24 GE electrical interfaces
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Transmission rate	10/100/1000 Mbit/s, in auto-sensing mode
Connector type	RJ45
Cable	**4.1.7 Ethernet Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (height x width x depth): 40.14 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 25.7 W ● Weight: 0.85 kg (1.87 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To order the 24GE, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-37 provides the ordering information.

Table 3-37 Ordering information

Part Number	Card Name	Card Description
03020MNS	24GE	24-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Switch Interface Card

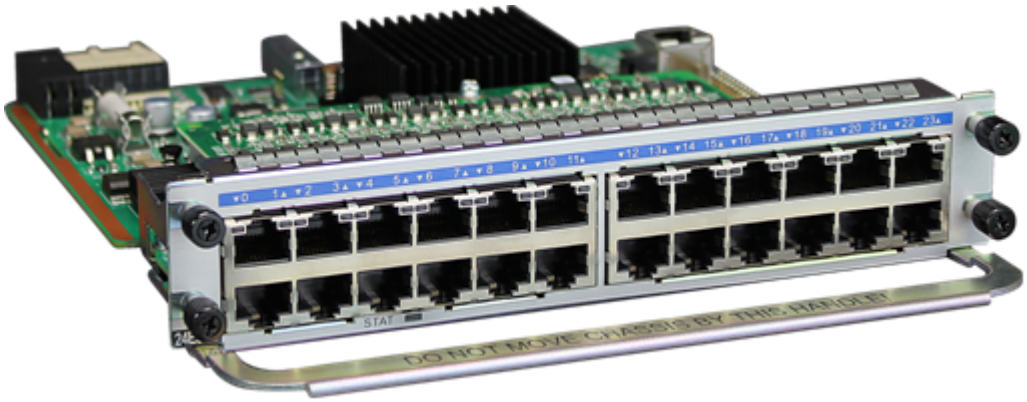
3.3.4 24ES2GP (24-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card)

Card Overview

The 24ES2GP is an XSIC interface card and provides 24 GE electrical interfaces, which extend Ethernet forwarding and Layer 2 switching capabilities. The 24ES2GP often applies to the enterprise headquarters and can implement large-capacity, high-density GE Ethernet access. The GE electrical interfaces also support PoE.

Figure 3-35 shows the appearance of the 24ES2GP.

Figure 3-35 Appearance of the 24ES2GP



Version Mapping

Table 3-38 describes the mapping between the 24ES2GP and software versions.

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Table 3-38 Mapping between the 24ES2GP and software versions

Card Name	AR2240 AR2240C	AR3260	AR3670
24ES2GP **NOTE** This card is supported in V200R007C00 and later versions.	Y	Y	Y

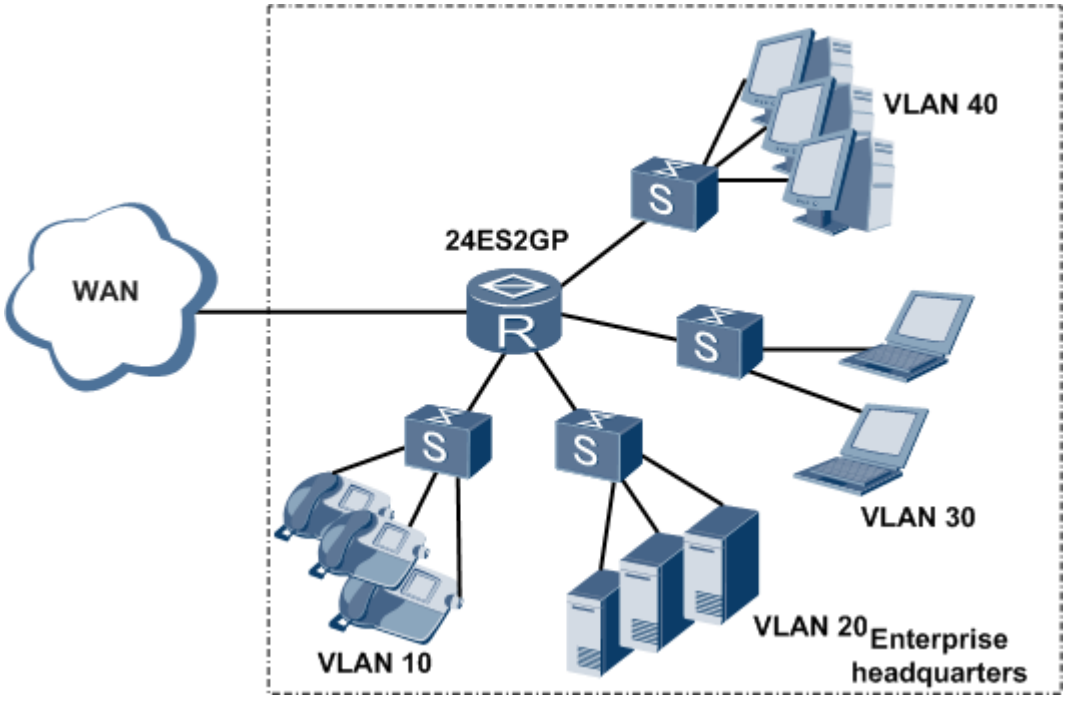
NOTE

Y: supported

Application

As shown in **Figure 3-36**, the 24ES2GP provides high-density GE Ethernet access for the enterprise headquarters. The GE electrical interfaces can connect to switches or servers to provide high-density access to data, voice, and video services.

Figure 3-36 24ES2GP application



Functions and Features

Table 3-39 describes functions and features of the 24ES2GP.

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Table 3-39 Functions and features of the 24ES2GP

Function and Feature	Description
24 GE interfaces	Each interface provides up to 1000 Mbit/s line-speed switching.
PoE power supply	The router can provide power to powered devices (PDs) connected to its GE electrical interfaces.
Duplex mode	The interfaces support the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	4094 VLANs can be created.
Voice VLAN	Voice data traffic is transmitted in the voice VLAN with a high priority to ensure high-quality voice communication.
Link aggregation	It bundles multiple physical links into a logical link to increase link bandwidth and reliability.
VLANIF	VLANIF interfaces are used as Layer 3 interfaces to support Layer 3 services.
Layer 2 features	MAC, Generic VLAN Registration Protocol (GVRP), Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), and Link Layer Discovery Protocol (LLDP).

Indicators and Interfaces

Indicator Description

Figure 3-37 shows indicators on the 24ES2GP, and **Table 3-40** describes the indicator states and meanings.

Figure 3-37 Indicators on the 24ES2GP

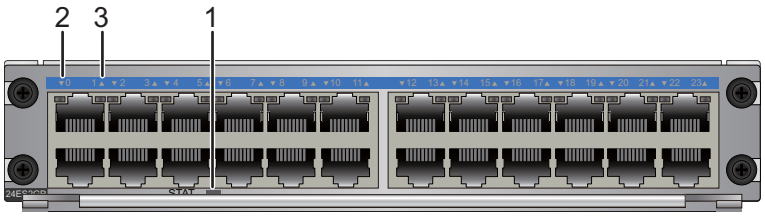

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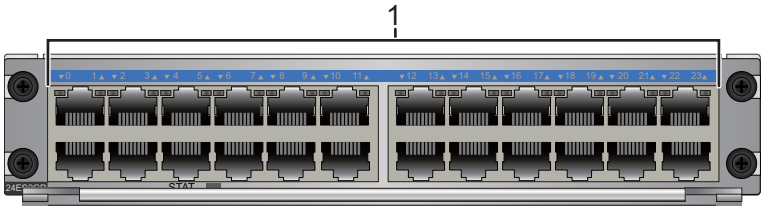
Table 3-40 Indicators on the 24ES2GP

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
2 and 3	One single-color indicator for each interface **NOTE** ● Down arrowhead: indicates an interface at the bottom. ● Up arrowhead: indicates an interface at the top.	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

Figure 3-38 shows interfaces on the 24ES2GP.

Figure 3-38 Interfaces on the 24ES2GP



1. 24 GE electrical interfaces

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GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-41** lists attributes of a GE electrical interface.

Table 3-41 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

Technical Specifications

Table 3-42 lists technical specifications of the 24ES2GP.

Table 3-42 Technical specifications of the 24ES2GP

Item	Specification
Card type	XSIC
External interfaces	24 GE electrical interfaces. The GE electrical interfaces support PoE.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, IEEE802.3at
Interface speed	10/100/1000 Mbit/s auto-sensing
Connector type	RJ45
Cable	**4.1.7 Ethernet Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (height x width x depth): 40.14 mm x 201 mm x 223.5 mm (1.58 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 30 W ● Weight: 0.85 kg
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to 113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: < 5000 m (16404 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-43 provides the ordering information.

Table 3-43 Ordering information

Part Number	Card Name	Card Description
03023CNH	24ES2GP	24-port 1000BASE-RJ45 L2 PoE Ethernet electrical interface card

3.3.5 4GE-2S (4-Port 1000BASE-SFP-L2 Ethernet Interface Card)

Card Overview

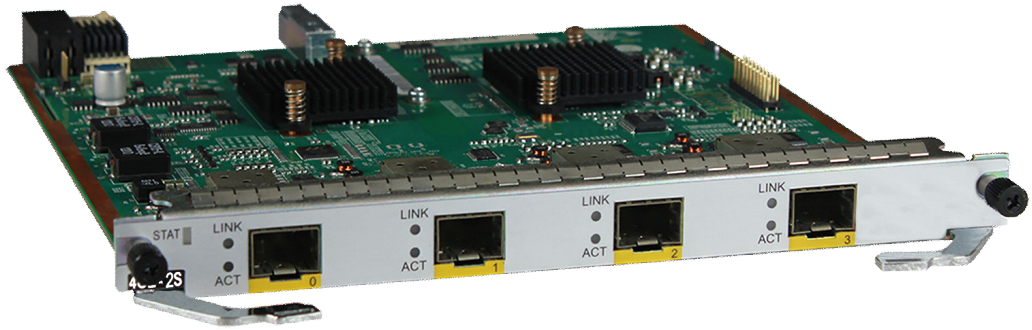
NOTE

- 4: indicates four interfaces.
- GE: indicates 1000M Ethernet.
- 2: indicates L2 switching.
- S: indicates optical interfaces.

The 4GE-2S often applies to medium-sized enterprises and provides large-capacity gigabit Ethernet access. It is an WSIC interface card and provides four GE optical interfaces. It and can connect to optical interface switches.

Figure 3-39 shows the appearance of the 4GE-2S.

Figure 3-39 Appearance of the 4GE-2S



Version Mapping

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Table 3-44 describes the mapping between the 4GE-2S and software versions.

Table 3-44 Mapping between the 4GE-2S and software versions

Card Name	AR1200 Series (Except AR1220E Series, AR1220C)	AR2204 AR2220E AR2220	AR2240 AR2240C	AR3260
4GE-2S **NOTE** V200R003C00 and later versions	Y	Y	Y	Y

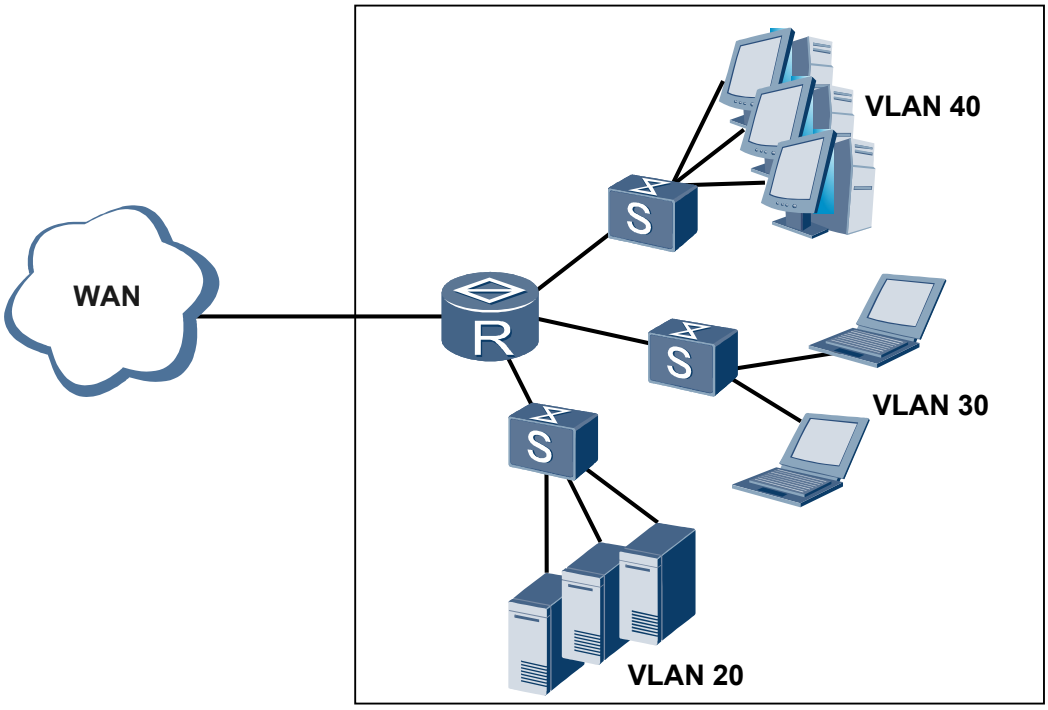
NOTE

Y: supported

Application

As shown in Figure 3-40, the 4GE-2S provides four GE optical interfaces to connect to optical interface switches, meeting requirements for long-distance transmission of enterprises.

Figure 3-40 4GE-2S application



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Functions and Features

Table 3-45 describes the functions and features of the 4GE-2S.

Table 3-45 Functions and features of the 4GE-2S

Function and Feature	Description
Four GE optical interfaces	The GE optical interfaces provide up to 1000 Mbit/s line-speed switching.
Duplex mode	The interfaces support the half duplex mode and full duplex mode. The full duplex mode is most commonly used.
VLAN	Supports a maximum of 128 VLANs.
Voice VLAN	The voice VLAN function allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
	The interfaces do not support the automatic mode.
Link aggregation	Link aggregation bundles multiple physical links to form a logical interface to increase bandwidth and improve link reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
	Inter-card port isolation is not supported. Only intra-card port isolation is supported.
Layer 2 features	MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Indicators and Interfaces

Indicators on the 4GE-2S Panel

Figure 3-41 shows the indicators on the 4GE-2S panel, and Table 3-46 describes the indicator states and meaning.

Figure 3-41 Indicators on the 4GE-2S panel

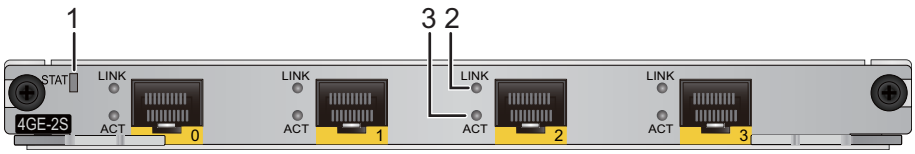

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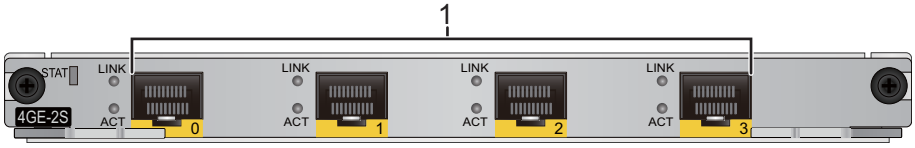
Table 3-46 Indicators on the 4GE-2S panel

Number	Indicator	Color	Description
1	STAT	Green	Stead on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: A link has been established.
			Off: No link is established.
3	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Description of Interfaces

Figure 3-42 shows the interfaces on the 4GE-2S.

Figure 3-42 Interfaces on the 4GE-2S



1. Four GE optical interfaces

GE optical interface (100/1000BASE-TX Ethernet Optical Interface)

A GE optical interface can send and receive services at 100 Mbit/s or 1 Gbit/s. Table 3-47 describes the attributes of a GE optical interface.

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Table 3-47 Attributes of a GE optical interface

Attribute	Description
Connector type	LC/PC
Optical interface attributes	Optical modules supported: ● SFP-FE-SX-MM1310 (SFP) ● eSFP-FE-LX-SM1310 ● eSFP-FE-LH40-SM1310 ● eSFP-FE-LH80-SM1550 ● SFP-FE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-FE-LX-SM1550-BIDI (single-fiber-bidirectional) ● eSFP-GE-SX-MM850 ● SFP-GE-LX-SM1310 ● S-SFP-GE-LH40-SM1310 ● S-SFP-GE-LH40-SM1550 ● S-SFP-GE-LH80-SM1550 ● eSFP-GE-ZX100-SM1550 ● SFP-GE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-GE-LX-SM1490-BIDI (single-fiber-bidirectional) ● LE2MGSC40DE0 (single-fiber-bidirectional) ● LE2MGSC40ED0 (single-fiber-bidirectional) ● 1471, CWDM-SFPGE-1471 ● 1491, CWDM-SFPGE-1491 ● 1511, CWDM-SFPGE-1511 ● 1531, CWDM-SFPGE-1531 ● 1591, CWDM-SFPGE-1591 ● 1557.36, DWDM-SFPGE-1557-36 ● 1558.17, DWDM-SFPGE-1558-17 ● 1558.98, DWDM-SFPGE-1558-98 ● 1559.79, DWDM-SFPGE-1559-79 ● 1560.61, DWDM-SFPGE-1560-61 The optical interface attributes depend on the optical modules used. For details, see **GE Optical Module**, **GE-CWDM Optical Module**, **GE-DWDM Optical Module**, **GE Copper Transceiver Module** and **FE Optical Module**.

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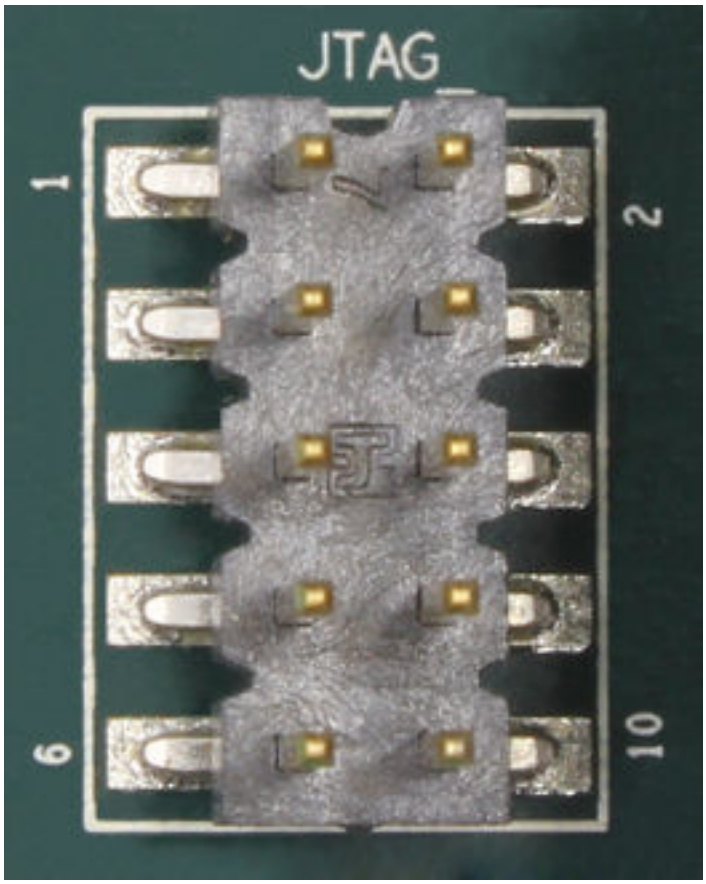
Attribute	Description
Standards compliance	IEEE 802.3z

JTAG port

Figure 3-43 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-43 JTAG port



Technical Specifications

Table 3-48 describes the technical specifications of the 4GE-2S.

Table 3-48 Technical specifications of the 4GE-2S

Item	Specification
Card type	WSIC
External interfaces	Four GE optical interfaces

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Item	Specification
Standards compliance	IEEE 802.3z
Transmission rate	1000 Mbit/s
Connector type	SFP
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 8 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 4GE-2S, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-49 provides the ordering information.

Table 3-49 Ordering information

Part Number	Card Name	Card Description
03021RSM	4GE-2S	4-port 1000BASE-SFP-L2 Ethernet interface card

3.3.6 4ES2G-S (4-Port 1000BASE-RJ45 L2 Ethernet Interface Card)

Card Overview

NOTE

Meaning of characters in the card name:

- 4: four interfaces on the card
- ES: Ethernet switch
- 2: Layer 2
- G: GE electrical interfaces
- -S: SIC

A 4ES2G-S card provides four GE electrical interfaces. This card is installed in a SIC slot and provides line-speed Layer 2 switching and device management functions.

Figure 3-44 shows the appearance of a 4ES2G-S card.

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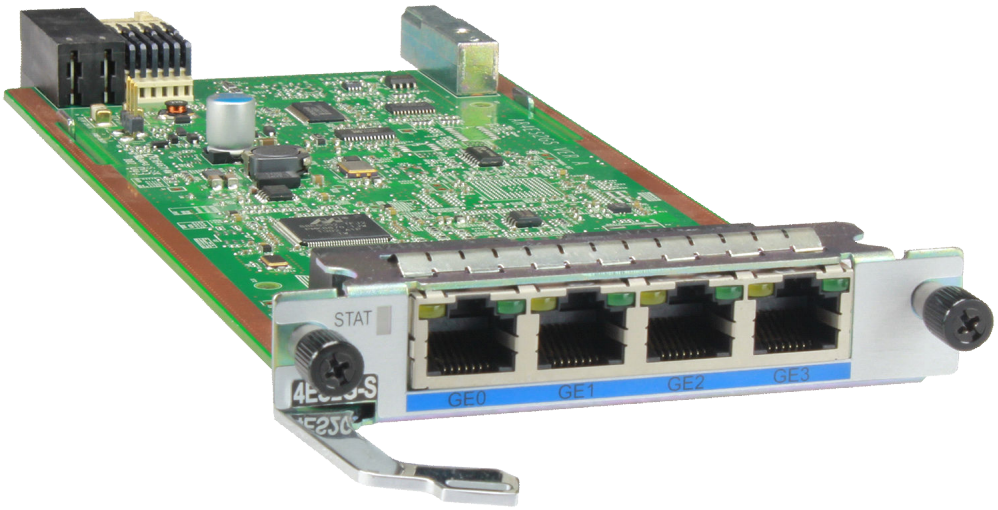
Figure 3-44 4ES2G-S card appearance



Version Mapping

Table 3-50 describes the mapping between the 4ES2G-S card and software versions of different product models.

Table 3-50 Mapping between the 4ES2G-S card and software versions

Card Name	AR1200 Series (Except AR1220E Series)	AR2204 AR2204E	AR2220E AR2220	AR2240 AR2240C	AR3260
4ES2G-S **NOTE** This card is supported in V200R005C00 and later versions.	Y	Y	Y	Y	Y

NOTE

Y: supported

Application

4ES2G-S cards are used for GE access for small and medium enterprises or enterprise branches, as shown in Figure 3-45. GE electrical interfaces on a 4ES2G-S card can connect to switches, servers, printers, and fax machines.

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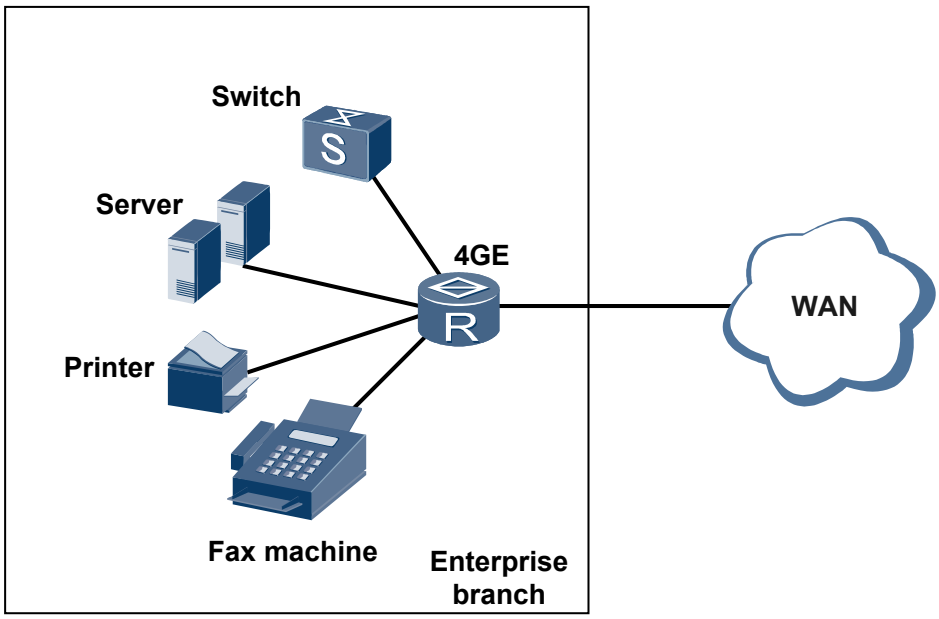
Figure 3-45 4ES2G-S card application



Functions and Features

Table 3-51 describes functions and features of a 4ES2G-S card.

Table 3-51 Functions and features of a 4ES2G-S card

Function and Feature	Description
Four GE electrical interfaces	Each interface provides up to 1000 Mbit/s line-speed switching.
Duplex mode	The interfaces support the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	A maximum of 4094 VLANs can be created to group users flexibly.
Voice VLAN	Voice data traffic is transmitted in the voice VLAN with a high priority to ensure high-quality voice communication.
Link aggregation	Bundles multiple physical links into a logical link to increase link bandwidth and reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	MAC, Generic VLAN Registration Protocol (GVRP), Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), and Link Layer Discovery Protocol (LLDP).

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Indicators and Interfaces

Indicator Description

Figure 3-46 shows indicators on a 4ES2G-S card, and **Table 3-52** describes the indicator states and meaning.

Figure 3-46 Indicators on a 4ES2G-S card

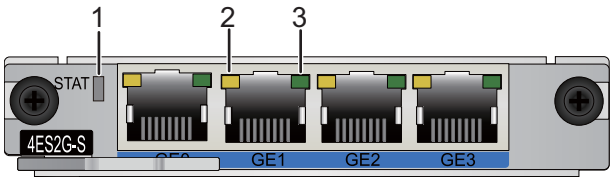


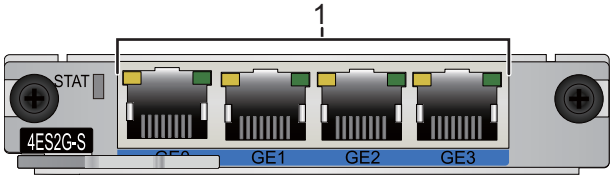
Table 3-52 4ES2G-S card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system software is running normally.
			Off: The card is not powered on.
2	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting or receiving data.
3	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.

Interface Description

Figure 3-47 shows interfaces on a 4ES2G-S card.

Figure 3-47 Interfaces on a 4ES2G-S card



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1. Four GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-53** lists attributes of a GE electrical interface.

Table 3-53 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

JTAG port

Figure 3-48 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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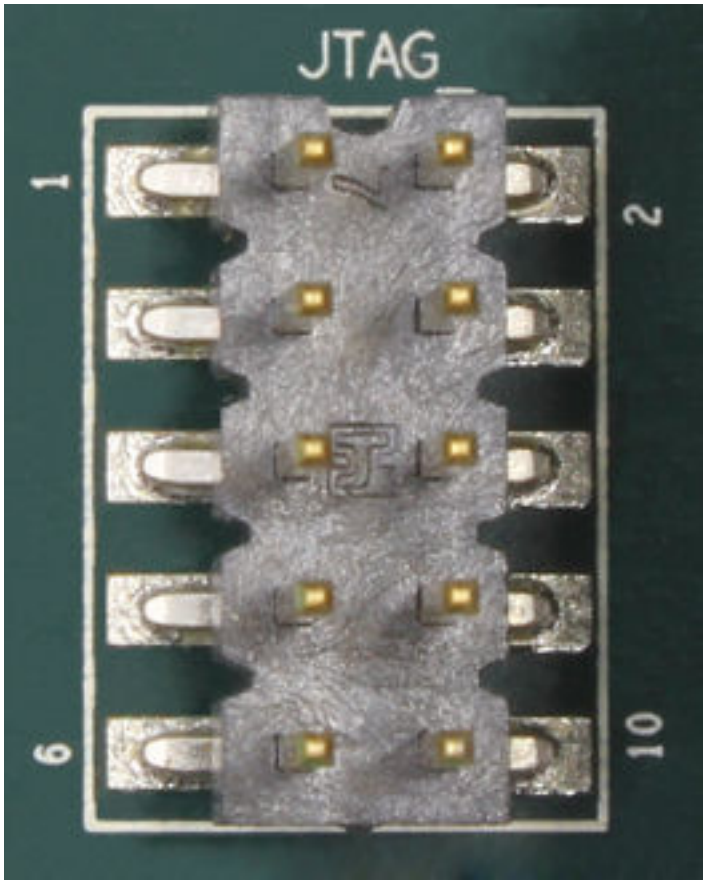
Figure 3-48 JTAG port



Technical Specifications

Table 3-54 lists technical specifications of a 4ES2G-S card.

Table 3-54 4ES2G-S card technical specifications

Item	Specification
Card type	SIC
External interface	Four GE electrical interfaces
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface speed	10/100/1000 Mbit/s auto-sensing
Connector type	RJ45
Cable	**4.1.7 Ethernet Cable**
Hot swap	Supported

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Item	Specification
Physical specifications	● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 9.2 in. x 0.78 in.) ● Maximum power consumption: 6.7 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To place an order, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-55 provides the ordering information.

Table 3-55 4ES2G-S ordering information

Part Number	Card Name	Card Description
03021VCC	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card (SIC)

3.3.7 4ES2GP-S (4-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card)

Card Overview

NOTE

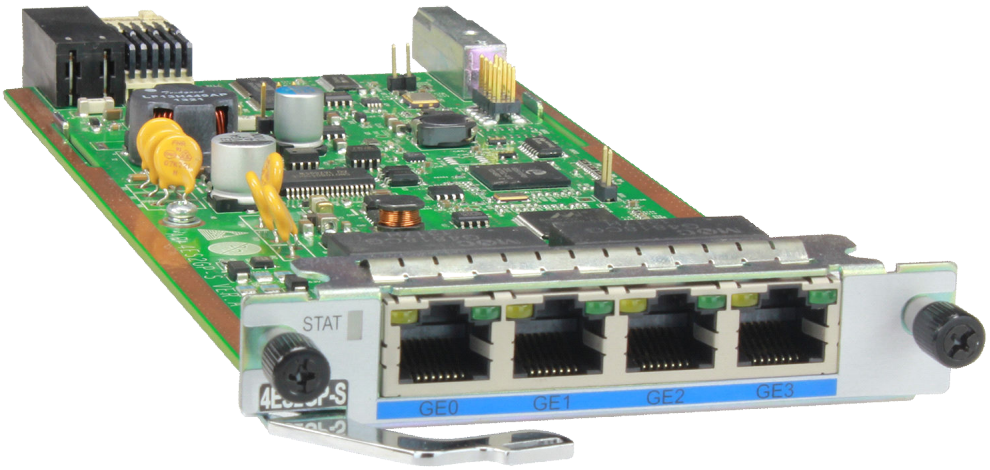
Meaning of characters in the card name:

- 4: four interfaces on the card
- ES: Ethernet switch
- 2: Layer 2
- G: GE electrical interfaces
- P: power over Ethernet (PoE) supported
- -S: SIC

A 4ES2GP-S card provides four GE electrical interfaces. This card is installed in a SIC slot and provides line-speed Layer 2 switching and device management functions. The GE electrical interfaces also support PoE.

Figure 3-49 shows the appearance of a 4ES2GP-S card.

Figure 3-49 4ES2GP-S card appearance



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Version Mapping

Table 3-56 describes the mapping between the 4ES2GP-S card and software versions of different product models.

Table 3-56 Mapping between the 4ES2GP-S card and software versions

Card Name	AR1220V AR1220W AR1220VW	AR1220EV AR1220EVW	AR2200 Series	AR3200 Series	AR3600 Series
4ES2GP-S	Y **NOTE** This card is supported in V200R005C00 and later versions.	N	N	N	N

NOTE

- Y: supported.
- N: not supported.

Application

4ES2GP-S cards are used for GE access for small and medium enterprises or enterprise branches, as shown in Figure 3-50. All the four GE electrical interfaces on a 4ES2GP-S card support the PoE function and can supply powers to powered devices (PDs) that comply with IEEE 802.3af and 802.3at, for example, IP phones, WLAN APs, and cameras.

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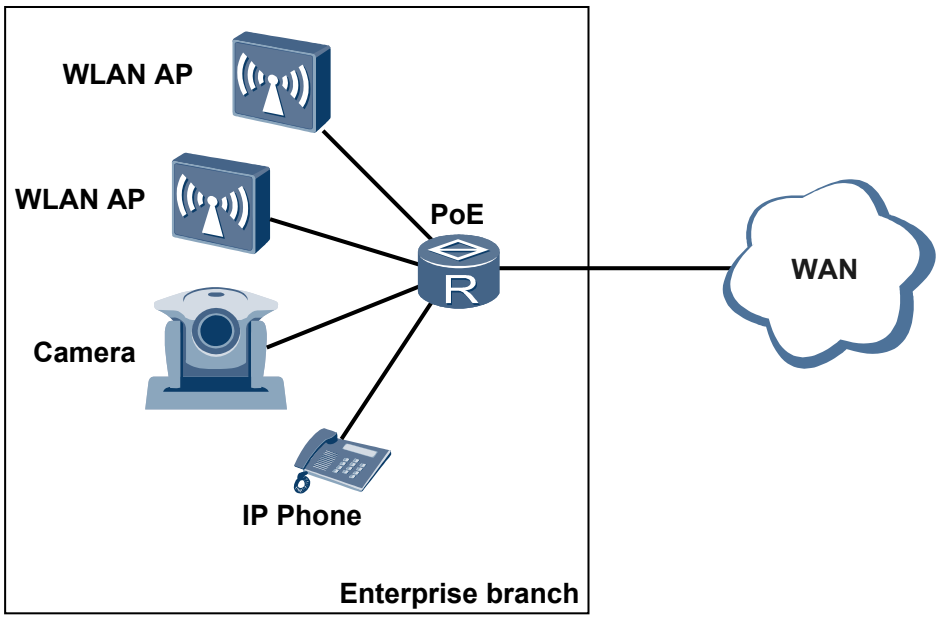
Figure 3-50 4ES2GP-S card application



Functions and Features

Table 3-57 describes functions and features of a 4ES2GP-S card.

Table 3-57 Functions and features of a 4ES2GP-S card

Function and Feature	Specification
Four GE electrical interfaces	Each interface provides up to 1000 Mbit/s line-speed switching.
PoE	Supplies power to four PDs that comply with IEEE 802.3af and 802.3at.
Duplex mode	The interfaces support the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	A maximum of 4094 VLANs can be created to group users flexibly.
Voice VLAN	Voice data traffic is transmitted in the voice VLAN with a high priority to ensure high-quality voice communication.
Link aggregation	Bundles multiple physical links into a logical link to increase link bandwidth and reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.

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Function and Feature	Specification
Layer 2 features	MAC, Generic VLAN Registration Protocol (GVRP), Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), and Link Layer Discovery Protocol (LLDP).

Indicators and Interfaces

Indicator Description

Figure 3-51 shows indicators on a 4ES2GP-S card, and Table 3-58 describes the indicator states and meaning.

Figure 3-51 Indicators on a 4ES2GP-S card

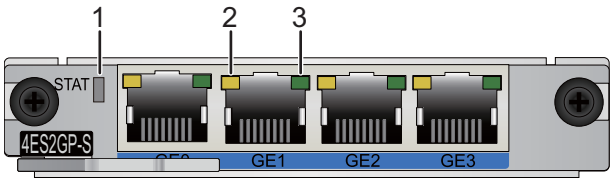

Table 3-58 4ES2GP-S card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting and receiving data.

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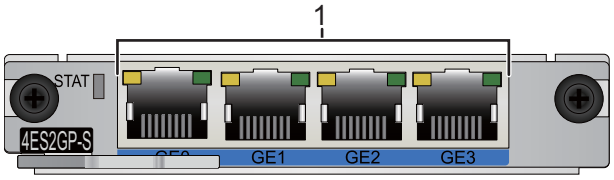
Number	Indicator	Color	Description
3	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.

Interface Description

Figure 3-52 shows interfaces on a 4ES2GP-S card.

Figure 3-52 Interfaces on a 4ES2GP-S card



1. Four GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-59** lists attributes of a GE electrical interface.

Table 3-59 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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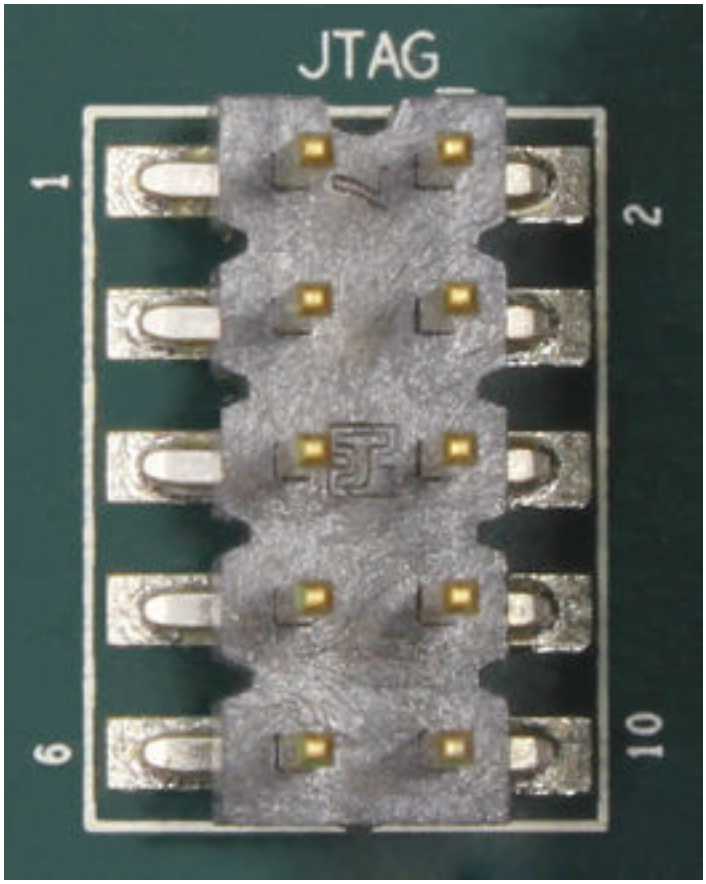
Attribute	Description
Cable type	4.1.7 Ethernet Cable

JTAG port

Figure 3-53 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-53 JTAG port



Technical Specifications

Table 3-60 lists technical specifications of a 4ES2GP-S card.

Table 3-60 4ES2GP-S card technical specifications

Item	Specification
Card type	SIC
External interface	Four GE electrical interfaces, all of which support PoE

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Item	Specification
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, IEEE802.3at
Interface speed	10/100/1000 Mbit/s auto-sensing
Connector type	RJ45
Cable	**4.1.7 Ethernet Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 9.2 in. x 0.78 in.) ● Maximum power consumption: 6.7 W ● Maximum PoE power on each GE electrical interface: 37 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-61 provides the ordering information.

Table 3-61 4ES2GP-S ordering information

Part Number	Card Name	Card Description
03021WXP	4ES2GP-S	4-port 1000BASE-RJ45 L2 PoE Ethernet interface card (SIC)

3.4 WAN Interface Card

3.4.1 1GEC (1-Port-GE Combo WAN Interface Card)

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Card Overview

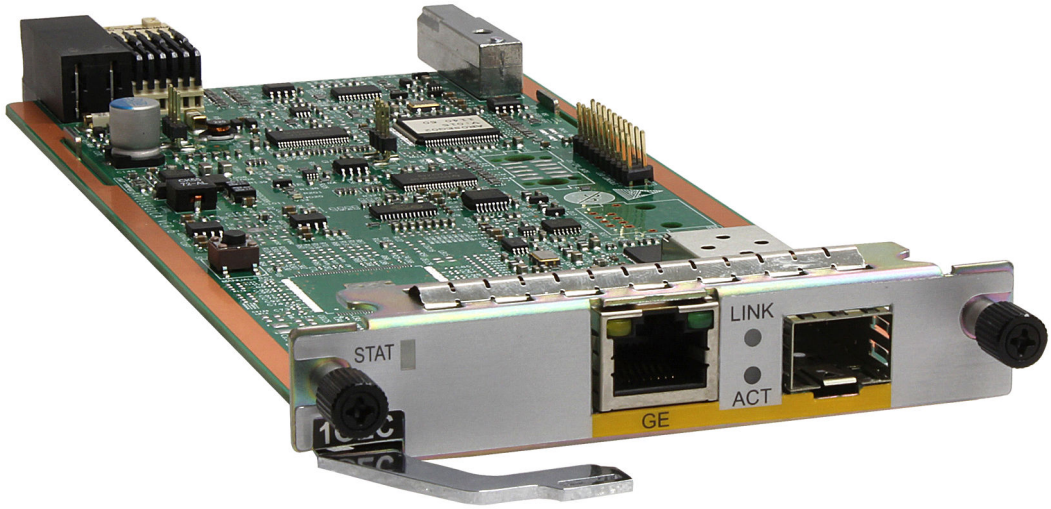
The 1GEC is a 1GEC high-speed WAN access module and a combo interface that can function as the GE electrical or optical interface. You can flexibly select the interface to connect to a WAN.

NOTE

- 1: indicates one interface.
- GE: indicates 1000M Ethernet.
- C: indicates a combo interface.

Figure 3-54 shows the appearance of the 1GEC.

Figure 3-54 Appearance of the 1GEC



Version Mapping

Table 3-62 describes the mapping between the 1GEC and software versions.

Table 3-62 Mapping between the 1GEC and software versions

Card Name	AR1200 Series (Except AR1220E Series)	AR2204 AR2220 AR2220E	AR2204E Series	AR2240 AR2240C	AR3260	AR3670
1GEC **NOTE** V200R001C01 and later versions	Y	Y	Y	Y	Y	Y

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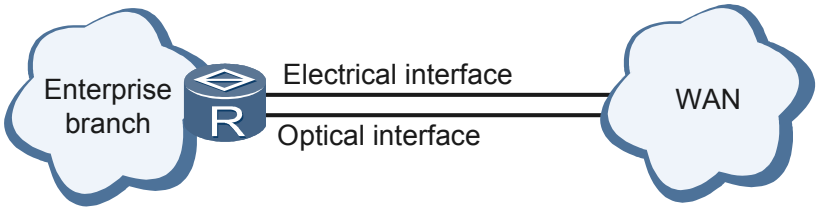
NOTE

Y: supported

Application

As shown in **Figure 3-55**, the enterprise branch uses the GE electrical interface and GE optical interface to connect to a WAN. Either the GE electrical or optical interface can work at one time, and the other interface is used as the backup, improving link reliability.

Figure 3-55 WAN access



Functions and Features

Table 3-63 describes the functions and features of the 1GEC.

Table 3-63 Functions and features of the 1GEC

Function and Feature	Description
Basic functions	You can flexibly use the electrical or optical interface to connect to a network.
	The GE electrical or optical interface can connect to a WAN at the rate of 1000 Mbit/s to provide Layer 3 services.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Indicators and Interfaces

Indicators on the 1GEC Panel

Figure 3-56 shows the indicators on the 1GEC panel, and **Table 3-64** describes the indicator states and meaning.

Figure 3-56 Indicators on the 1GEC panel

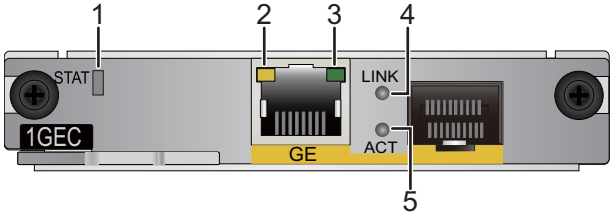


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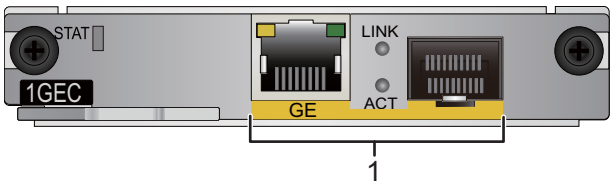
Table 3-64 Indicators on the 1GEC panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	Indicates of GE electrical interfaces: ● 2: ACT indicator ● 3: LINK indicator	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
		Green	Steady on: A link has been established.
			Off: No link is established.
4 and 5	Indicates of GE optical interfaces: ● 5: ACT indicator ● 4: LINK indicator	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
		Green	Steady on: A link has been established.
			Off: No link is established.

Description of Interfaces

Figure 3-57 shows the interfaces on the 1GEC.

Figure 3-57 Interfaces on the 1GEC



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1. One GE combo interface consisting of one GE electrical interface and one GE optical interface

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-65** lists attributes of a GE electrical interface.

Table 3-65 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE optical interface

A GE optical interface can send and receive services at 100 Mbit/s or 1 Gbit/s. **Table 3-66** describes the attributes of a GE optical interface.

Table 3-66 Attributes of a GE optical interface

Attribute	Description
Connector type	LC/PC

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Attribute	Description
Optical interface attributes	Optical modules supported: ● SFP-FE-SX-MM1310 (SFP) ● eSFP-FE-LX-SM1310 ● eSFP-FE-LH40-SM1310 ● eSFP-FE-LH80-SM1550 ● SFP-FE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-FE-LX-SM1550-BIDI (single-fiber-bidirectional) ● eSFP-GE-SX-MM850 ● SFP-GE-LX-SM1310 ● S-SFP-GE-LH40-SM1310 ● S-SFP-GE-LH40-SM1550 ● S-SFP-GE-LH80-SM1550 ● eSFP-GE-ZX100-SM1550 ● SFP-GE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-GE-LX-SM1490-BIDI (single-fiber-bidirectional) ● LE2MGSC40DE0 (single-fiber-bidirectional) ● LE2MGSC40ED0 (single-fiber-bidirectional) ● 1471, CWDM-SFPGE-1471 ● 1491, CWDM-SFPGE-1491 ● 1511, CWDM-SFPGE-1511 ● 1531, CWDM-SFPGE-1531 ● 1591, CWDM-SFPGE-1591 ● 1557.36, DWDM-SFPGE-1557-36 ● 1558.17, DWDM-SFPGE-1558-17 ● 1558.98, DWDM-SFPGE-1558-98 ● 1559.79, DWDM-SFPGE-1559-79 ● 1560.61, DWDM-SFPGE-1560-61 The optical interface attributes depend on the optical modules used. For details, see **GE Optical Module**, **GE-CWDM Optical Module**, **GE-DWDM Optical Module**, **GE Copper Transceiver Module** and **FE Optical Module**.
Standards compliance	IEEE 802.3z

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Technical Specifications

Table 3-67 describes the technical specifications of the 1GEC.

Table 3-67 Technical specifications of the 1GEC

Item	Specification
Card type	SIC
External interfaces	One GE electrical interface and one GE optical interface
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Transmission rate	● GE electrical interface: 10/100/1000 Mbit/s, in auto-sensing mode ● GE optical interface: 100/1000 Mbit/s, in auto-sensing mode
Connector type	● GE electrical interface: RJ45 ● GE optical interface: SFP
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: 3.2 W ● Weight: 0.25 kg (0.55 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1GEC, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-68 provides the ordering information.

Table 3-68 Ordering information

Part Number	Card Name	Card Description
03020XTR	1GEC	1-Port GE Combo WAN Interface Card

3.4.2 4GECS (4-Port GE Combo WAN Interface Card)

Card Overview

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NOTE

- 4: indicates four interfaces.
- GE: indicates 1000M Ethernet.
- C: indicates combo interfaces.
- S: indicates Ethernet clock synchronization.

The 4GECS is a gigabit WAN access module. It provides four combo interfaces, which consist of the four GE electrical interfaces and four GE optical interfaces on the panel. You can choose to connect to the WAN through electrical or optical interfaces flexibly.

Figure 3-58 shows the appearance of the 4GECS.

Figure 3-58 Appearance of the 4GECS

Version Mapping

Table 3-69 describes the mapping between the 4GECS and software versions.

Table 3-69 Mapping between the 4GECS and software versions

Card Name	AR1200 Series (Except AR1220E Series, AR1220C)	AR2204 AR2220E AR2220	AR2240 AR2240C	AR3260	AR3670
4GECS **NOTE** V200R005C10 and later versions	Y	Y	Y	Y	Y

NOTE

Y: supported

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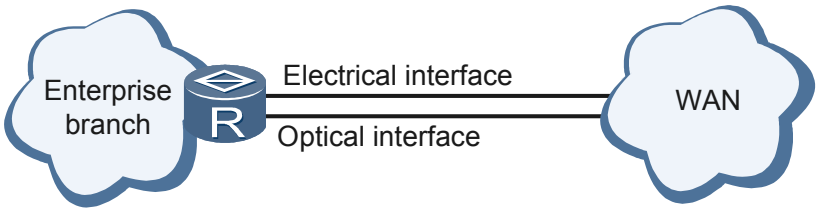
Application

As shown in **Figure 3-59**, the enterprise branch uses the GE electrical interface and GE optical interface to connect to a WAN. Either the GE electrical or optical interface can work at one time, and the other interface is used as the backup, improving link reliability.

Figure 3-59 WAN access



Functions and Features

Table 3-70 describes functions and features of the 4GECS.

Table 3-70 Functions and features of the 4GECS

Function and Feature	Description
Basic functions	The card provides four GE optical interfaces and four GE electrical interfaces for data access and switching.
	You can choose to connect to the WAN through optical or electrical interfaces flexibly.
	The card provides 1000M access to the WAN to implement Layer 3 services.
Layer 3 protocols	IPv4, IPv6, and MPLS.
Clock synchronization	This function ensures data synchronization on the entire network and makes an Ethernet network more stable.

Indicators and Interfaces

Indicators on the 4GECS Panel

Figure 3-60 shows the indicators on the 4GECS panel, and **Table 3-71** describes the indicator states and meaning.

Figure 3-60 Indicators on the 4GECS panel

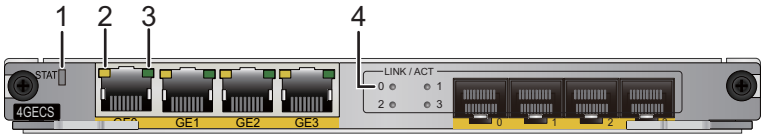


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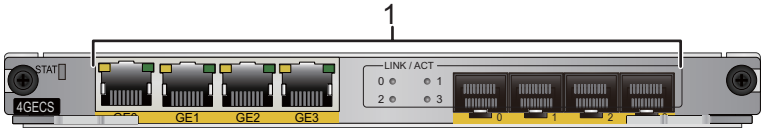
Table 3-71 Indicators on the 4GECS panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	Indicates of GE electrical interfaces: ● 2: ACT indicator ● 3: LINK indicator	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
		Green	Steady on: A link has been established.
			Off: No link is established.
4	One indicator for each GE optical interface **NOTE** One indicator shows the LINK and ACT states.	Green	Steady on: A link has been established. Blinking: Data is being transmitted or received. Off: No link is established or no data is being transmitted or received.

Description of Interfaces

Figure 3-61 shows interfaces on the 4GECS.

Figure 3-61 Interfaces on the 4GECS



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1. Four GE combo interfaces consisting of four GE electrical interfaces and four GE optical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-72** lists attributes of a GE electrical interface.

Table 3-72 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

GE optical interface

A GE optical interface can send and receive services at 100 Mbit/s or 1 Gbit/s. **Table 3-73** describes the attributes of a GE optical interface.

Table 3-73 Attributes of a GE optical interface

Attribute	Description
Connector type	LC/PC

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Attribute	Description
Optical interface attributes	Optical modules supported: ● SFP-FE-SX-MM1310 (SFP) ● eSFP-FE-LX-SM1310 ● eSFP-FE-LH40-SM1310 ● eSFP-FE-LH80-SM1550 ● SFP-FE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-FE-LX-SM1550-BIDI (single-fiber-bidirectional) ● eSFP-GE-SX-MM850 ● SFP-GE-LX-SM1310 ● S-SFP-GE-LH40-SM1310 ● S-SFP-GE-LH40-SM1550 ● S-SFP-GE-LH80-SM1550 ● eSFP-GE-ZX100-SM1550 ● SFP-GE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-GE-LX-SM1490-BIDI (single-fiber-bidirectional) ● LE2MGSC40DE0 (single-fiber-bidirectional) ● LE2MGSC40ED0 (single-fiber-bidirectional) ● 1471, CWDM-SFPGE-1471 ● 1491, CWDM-SFPGE-1491 ● 1511, CWDM-SFPGE-1511 ● 1531, CWDM-SFPGE-1531 ● 1591, CWDM-SFPGE-1591 ● 1557.36, DWDM-SFPGE-1557-36 ● 1558.17, DWDM-SFPGE-1558-17 ● 1558.98, DWDM-SFPGE-1558-98 ● 1559.79, DWDM-SFPGE-1559-79 ● 1560.61, DWDM-SFPGE-1560-61 The optical interface attributes depend on the optical modules used. For details, see **GE Optical Module**, **GE-CWDM Optical Module**, **GE-DWDM Optical Module**, **GE Copper Transceiver Module** and **FE Optical Module**.
Standards compliance	IEEE 802.3z

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Technical Specifications

Table 3-74 describes the technical specifications of the 4GECS.

Table 3-74 Technical specifications of the 4GECS

Item	Specification
Card type	WSIC
External interfaces	Four GE electrical interfaces and four GE optical interfaces
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Transmission rate	● GE electrical interface: 10/100/1000 Mbit/s auto-sensing ● GE optical interface: 100/1000 Mbit/s auto-sensing
Connector type	● GE electrical interface: RJ45 ● GE optical interface: SFP
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 14 W ● Weight: 0.6 kg
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 4GECS, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-75 provides the ordering information.

Table 3-75 Ordering information

Part Number	Card Name	Card Description
03022CPN	4GECS	4-Port GE Combo WAN Interface Card

3.4.3 2FE (2-Port-FE WAN Interface Card)

Card Overview

The 2FE is a high-speed Ethernet WAN access module and provides two FE electrical interfaces. The 2FE can connect to a WAN at the rate of 100 Mbit/s.

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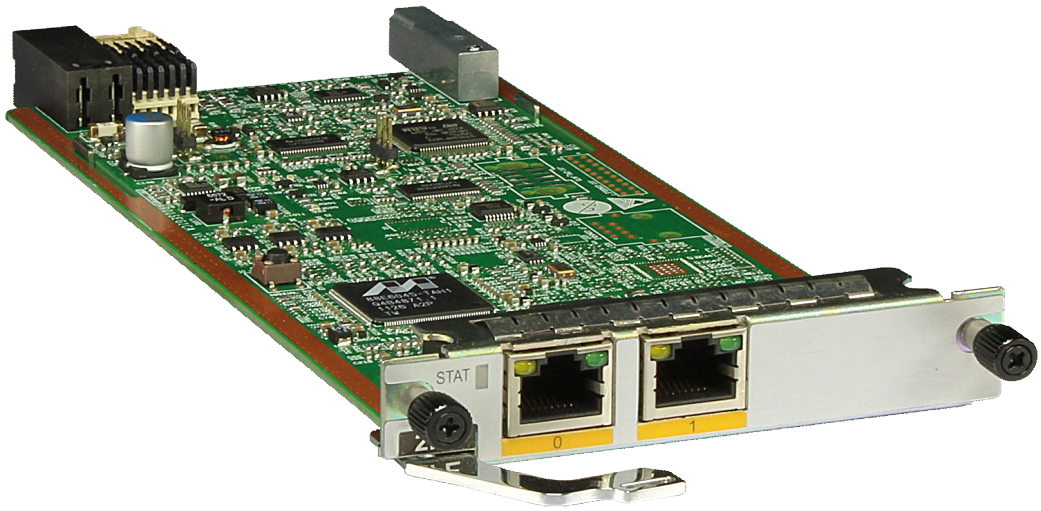
Figure 3-62 shows the appearance of the 2FE.

Figure 3-62 Appearance of the 2FE



Version Mapping

Table 3-76 describes the mapping between the 2FE and software versions.

Table 3-76 Mapping between the 2FE and software versions

Card Name	AR1200 Series (Except AR1220E Series)	AR2204 AR2220 AR2220E	AR2204E Series	AR2240 AR2240C	AR3260	AR3670
2FE **NOTE** V200R001C00 and later versions	Y	Y	Y	Y	Y	Y

NOTE

Y: supported

应用

Functions and Features

Table 3-77 describes the functions and features of the 2FE.

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Table 3-77 Functions and features of the 2FE

Function and Feature	Description
Two FE electrical interfaces	The 2FE can connect to a WAN at the rate of 100 Mbit/s to provide Layer 3 services.
	Two FE electrical interfaces can comprise an uplink interface at the line speed of 200 Mbit/s.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Indicators and Interfaces

Indicators on the 2FE Panel

Figure 3-63 shows the indicators on the 2FE panel, and Table 3-78 describes the indicator states and meaning.

Figure 3-63 Indicators on the 2FE panel

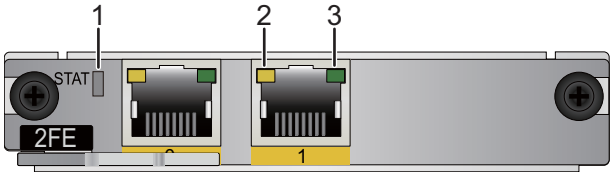

Table 3-78 Indicators on the 2FE panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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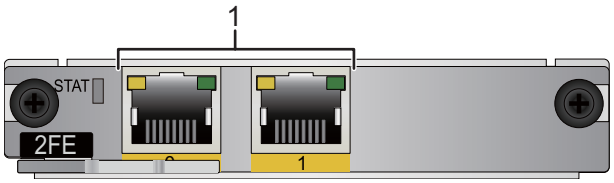
Number	Indicator	Color	Description
3	LINK	Green	Steady on: A link has been established.
			Off: No link is established.

Description of Interfaces

Figure 3-64 shows the interfaces on the 2FE.

Figure 3-64 Interfaces on the 2FE



1. Two FE electrical interfaces

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 3-79** lists attributes of an FE electrical interface.

Table 3-79 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	● PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at ● PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Attribute	Description
Cable type	**4.1.7 Ethernet Cable**

Technical Specifications

Table 3-80 describes the technical specifications of the 2FE.

Table 3-80 Technical specifications of the 2FE

Item	Specification
Card type	SIC
External interfaces	Two FE electrical interfaces
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Transmission rate	10/100 Mbit/s, in auto-sensing mode
Connector type	RJ45
Cable	**4.1.7 Ethernet Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: 3.1 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 2FE, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-81 provides the ordering information.

Table 3-81 Ordering information

Part Number	Card Name	Card Description
03020XTQ	2FE	2-Port FE WAN Interface Card

3.4.4 2X10GL (2-Port 10GE Optical Ports Interface Card)

Card Overview

The 2X10GL is a high-speed WAN access module that provides two 10GE optical interfaces for high-speed uplink connection.

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Figure 3-65 shows the appearance of the 2X10GL card.

Figure 3-65 Appearance of the 2X10GL

Version Mapping

Table 3-82 describes the mapping between the 2X10GL card and software versions of different product models.

Table 3-82 Mapping between the 2X10GL card and software versions

Card Name	AR2240	AR3260	AR3670
2X10GL **NOTE** This card is supported in V200R007C00 and later versions.	Y **NOTE** ● When a router uses the SRU40, SRU60, SRU80, or SRU100 main control unit, this card can be installed in slots 7 and 8. ● When a router uses the SRU200 or SRU400 main control unit, this card can be installed in slots 5 to 8.	Y **NOTE** ● When a router uses the SRU40, SRU60, SRU80, or SRU100 main control unit, this card can be installed in slots 8 and 10. ● When a router uses the SRU200 or SRU400 main control unit, this card can be installed in slots 5 to 10.	Y **NOTE** This card can be installed in slots 4 to 9.

NOTE

Y: supported

Application

As shown in Figure 3-66, an enterprise branch connects to the wide area network (WAN) through the 2X10GL card of an AR router.

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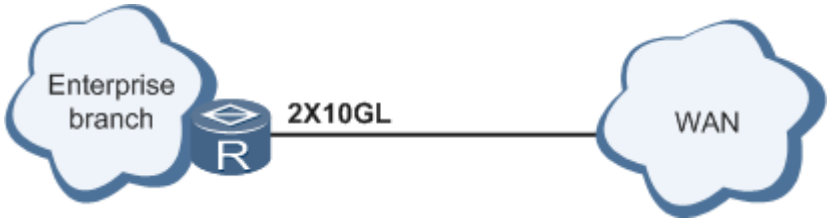
Figure 3-66 Connection to a WAN



Functions and Features

Table 3-83 describes functions and features of the 2X10GL card.

Table 3-83 Functions and features of the 2X10GL card

Function and Feature	Description
Two 10GE optical interfaces	The card provides 10G access to the WAN to implement Layer 3 services.
	The two 10GE optical interfaces provide 10 Gbit/s line-rate transmission to the upstream network.
Layer 3 protocols	IPV4, IPv6, and MPLS

Indicators and Interfaces

Indicator Description

Figure 3-67 shows the indicators on the 2X10GL panel, and Table 3-84 describes the indicator states and meaning.

Figure 3-67 Indicators on the 2X10GL panel

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Table 3-84 Indicators on the 2X10GL panel

Number	Indicator	Color	Description
0	LINK/ACT	Green	Steady on: A link has been established on 10GE/0. Blinking: Data is being transmitted or received on 10GE/0. Off: No link is established on 10GE/0.
1	LINK/ACT	Green	Steady on: A link has been established on 10GE/1. Blinking: Data is being transmitted or received on 10GE/1. Off: No link is established on 10GE/1.

Interface Description

Figure 3-68 shows interfaces on the 2X10GL card.

Figure 3-68 Interfaces on the 2X10GL card

1. Two 10GE optical interfaces

10GE optical interface

A 10GE optical interface supports GE/10GE auto-sensing and can send and receive data at 1 Gbit/s or 10 Gbit/s. Table 3-85 describes the attributes of a 10GE optical interface.

Table 3-85 Attributes of a 10GE optical interface

Attribute	Description
Connector type	LC/PC

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Attribute	Description
Optical interface attributes	Optical modules supported: ● OMXD22000 ● OMXD30001 ● OSX001001 ● OSX040N00 ● SFP-FE-SX-MM1310 (SFP) ● eSFP-FE-LX-SM1310 ● eSFP-FE-LH40-SM1310 ● eSFP-FE-LH80-SM1550 ● SFP-FE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-FE-LX-SM1550-BIDI (single-fiber-bidirectional) ● eSFP-GE-SX-MM850 ● SFP-GE-LX-SM1310 ● S-SFP-GE-LH40-SM1310 ● S-SFP-GE-LH40-SM1550 ● S-SFP-GE-LH80-SM1550 ● eSFP-GE-ZX100-SM1550 ● SFP-GE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-GE-LX-SM1490-BIDI (single-fiber-bidirectional) ● LE2MGSC40DE0 (single-fiber-bidirectional) ● LE2MGSC40ED0 (single-fiber-bidirectional) The optical interface attributes depend on the optical modules used. For details, see **10GE Optical Module** and **GE Optical Module**.
Standards compliance	IEEE802.3ae
Working mode	10GE/GE auto-sensing Full-duplex

Technical Specifications

Table 3-86 lists technical specifications of a 2X10GL card.

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Table 3-86 Technical specifications of a 2X10GL card

Item	Specification
Card type	WSIC
External interfaces	Two 10GE optical interfaces
Standards compliance	IEEE802.3ae
Interface rate	1 Gbit/s and 10 Gbit/s auto-sensing
Connector type	SFP+
Applicable cable	Optical fiber + optical module
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 22.1 W ● Weight: 0.5 kg (1.3 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-87 provides the ordering information.

Table 3-87 Ordering information

Part Number	Card Name	Card Description
03022STN	2X10GL	2-Port 10GE Optical Ports Interface Card

3.4.5 1/2/4/8 Port-Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card

Card Overview

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NOTE

- 1/2/4/8: indicates one, two, four, or eight interfaces.
- E1: indicates E1 interfaces.
- T1: indicates T1 interfaces.
- M: indicates multiflex trunks.
- PRI: indicate ISDN primary rate interfaces.
- VE1: indicates voice E1 interfaces.

The 4E1/T1-M/8E1/T1-M supports only CE1 functions and can provide T1/PRI in the future.

The channelized E1/T1/PRI multifunctional interface card processes data and voice flows and provides 1-8 CE1/PRI interfaces. It implements high-density WAN interconnection, WAN aggregation, analog voice, digital voice, and dialup.

Channelized E1/T1/PRI Multifunctional Interface Card have five types. **Table 3-88** lists the differences between the five types.

Table 3-88 Slots of channelized E1/T1/PRI multifunctional interface cards

Card Name	Interface Quantity	Connector Type	Slot
1E1/T1-M	1	DB9	SIC slot
2E1/T1-M	2	DB9	SIC slot
2E1/T1-M-W	2	DB9	WSIC slot or XSIC slot **NOTE** In an XSIC slot, the WSIC card is installed in the lower part of the slot. The WSIC card uses the XSIC slot ID as its own slot ID.
4E1/T1-M	4	RJ45	
8E1/T1-M	8	RJ45	

Figure 3-69 shows the appearance of the 1E1/T1-M.

Figure 3-69 Appearance of the 1E1/T1-M

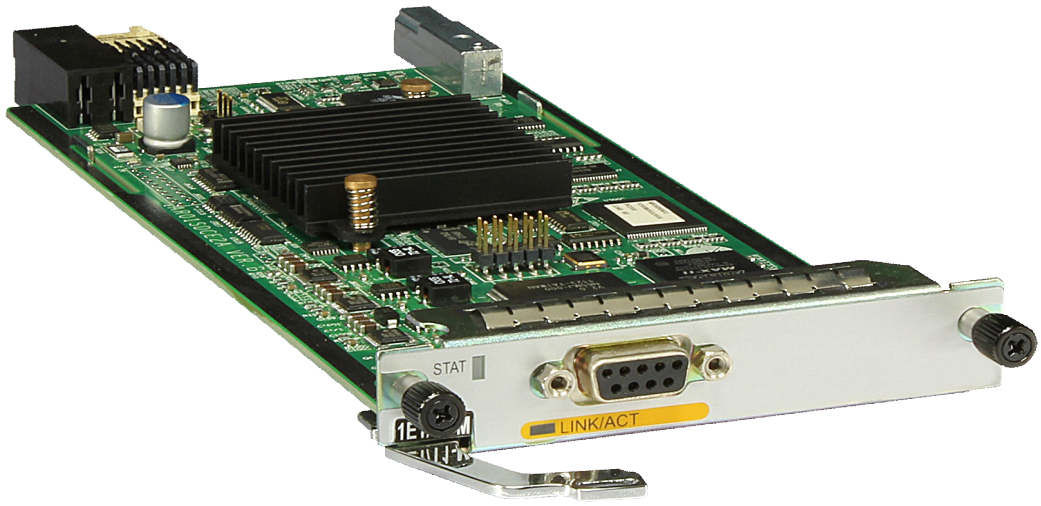

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Figure 3-70 shows the appearance of the 2E1/T1-M.

Figure 3-70 Appearance of the 2E1/T1-M

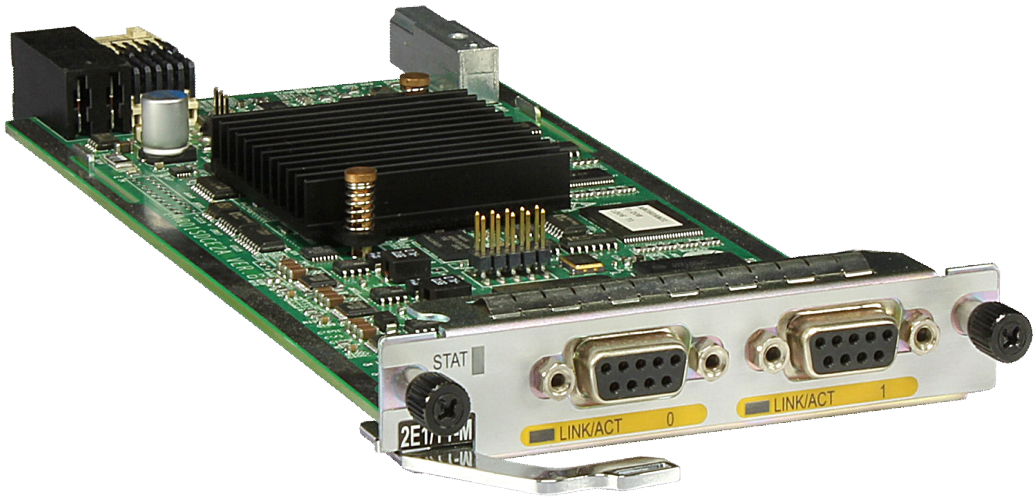

Figure 3-71 shows the appearance of the 2E1/T1-M-W.

Figure 3-71 Appearance of the 2E1/T1-M-W

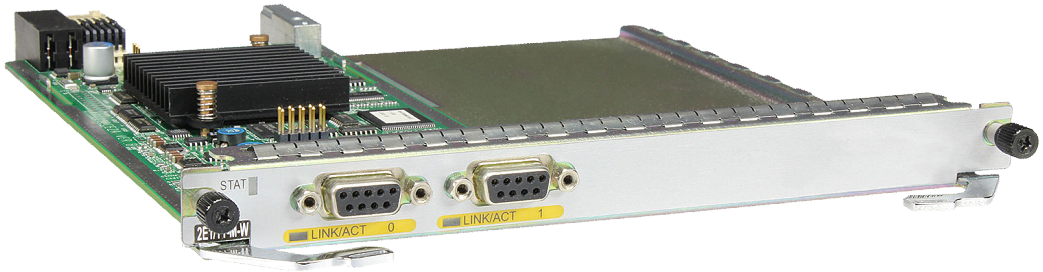

Figure 3-72 shows the appearance of the 4E1/T1-M.

Figure 3-72 Appearance of the 4E1/T1-M

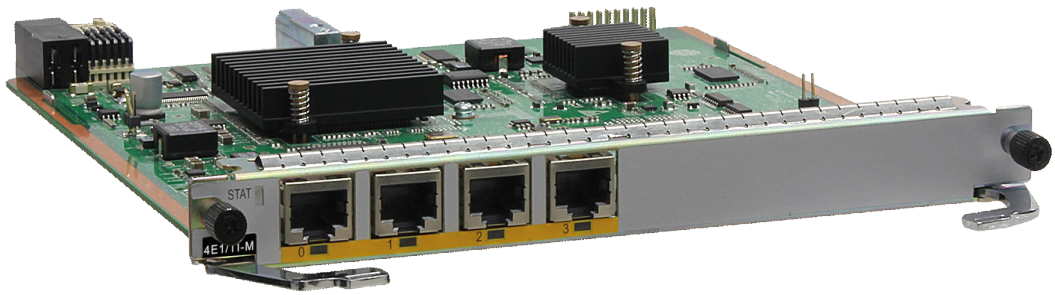

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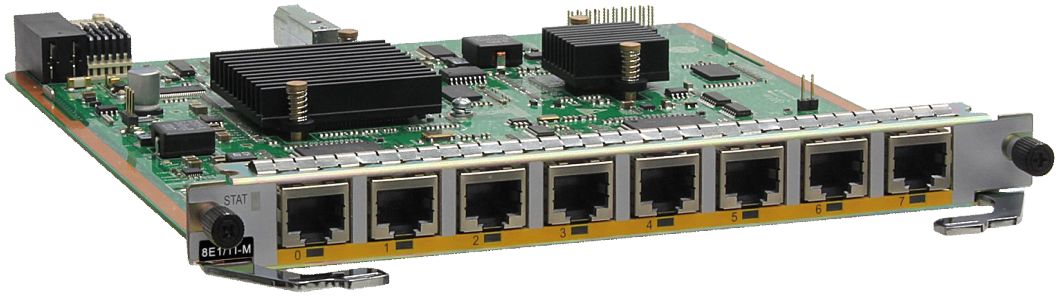
Figure 3-73 shows the appearance of the 8E1/T1-M.

Figure 3-73 Appearance of the 8E1/T1-M



Version Mapping

Table 3-89 and Table 3-90 describes the mapping between the channelized E1/T1/PRI multifunctional interface card and software versions.

Table 3-89 Mapping between the channelized E1/T1/PRI multifunctional interface card and software versions

Card Name	AR1200 Series	AR2204 AR2220 AR2220E	AR2204E Series	AR2240 AR2240C	AR3260	AR3670
1E1/T1-M 2E1/T1-M **NOTE** V200R001C00 and later versions.	Y	Y	Y	Y	Y	Y
2E1/T1-M-W **NOTE** Huawei will stop service on this card after December 31, 2013. V200R002C00 and later versions.	Y	Y	N	Y	Y	Y

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Table 3-90 Mapping between the channelized E1/T1/PRI multifunctional interface card and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204 AR2220 AR2220E	AR2204E AR2240 AR2240C	AR3260	AR3670
4E1/T1-M 8E1/T1-M **NOTE** V200R003C00 and later versions.	Y	Y	Y	Y	Y

NOTE

- Y: supported.
- N: not supported

Application

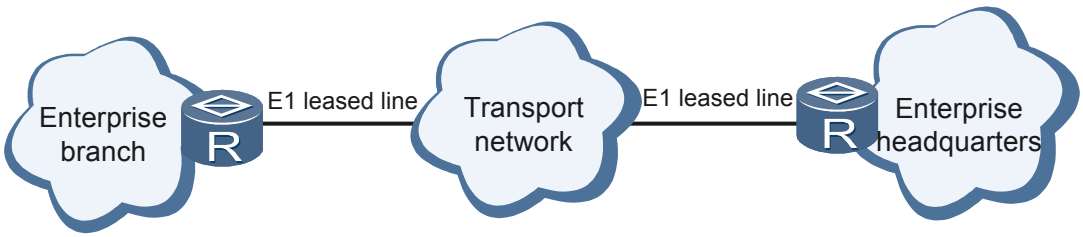
The channelized E1/T1/PRI multifunctional interface card often applies to the following scenarios:

- **WAN Interconnection**
- **WAN Aggregation in CE1 Mode**
- **Dialup Connection in PRI Mode**
- **Voice Connection in VE1 Mode**

WAN Interconnection

As shown in **Figure 3-74**, the enterprise headquarters and branch are connected through E1 lines. When the channelized E1/T1/PRI multifunctional interface card works in E1 mode, the enterprise can connect to the transport network through E1 lines to transmit data services with a total bandwidth of 2 Mbit/s.

Figure 3-74 Connecting the enterprise headquarters and branch through E1 lines



As shown in **Figure 3-75**, timeslots of the E1 channel in channelized mode can be bundled to form multiple low-speed links to synchronously transmit various services. When the

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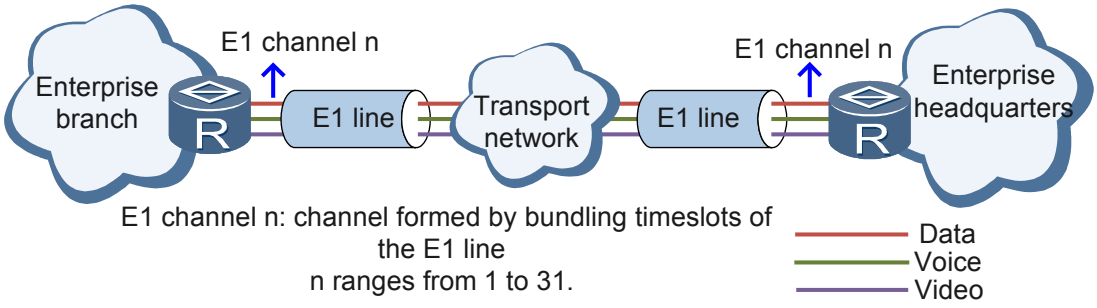
channelized E1/T1/PRI multifunctional interface card works in CE1 mode, CE1 flexibly bundles timeslots of the E1 line to form multiple low-speed E1 channels such as 128 or 256 kbit/s. Each E1 channel can transmit one service. CE1 allows multiple services to be transmitted through the E1 channels and independent of each other.

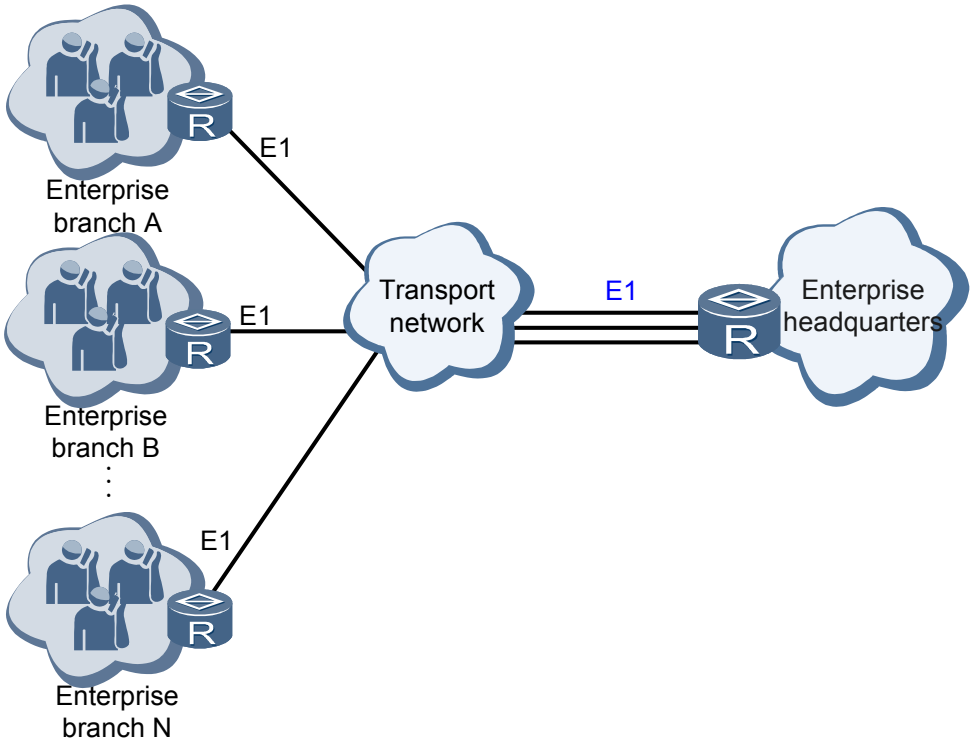
Figure 3-75 Connecting the enterprise headquarters and branch through CE1



WAN Aggregation in CE1 Mode

As shown in **Figure 3-76**, the channelized E1/T1/PRI multifunctional interface card works in CE1 mode, the enterprise headquarters uses multiple E1 lines to connect to the transport network , and the enterprise branches connect to the transport network through E1 lines.

Figure 3-76 Connecting the enterprise headquarters and branches through multiple E1 lines



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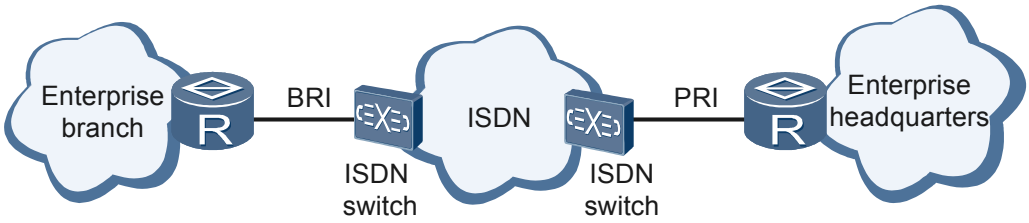
Dialup Connection in PRI Mode

As shown in **Figure 3-77**, the enterprise headquarters and branch are connected through the ISDN. When the channelized E1/T1/PRI multifunctional interface card works in PRI mode, the enterprise headquarters and branch connect to the ISDN through a PRI interface and a BRI interface respectively. In PRI mode, two ore mote timeslots can be bundled to form a TDM channel to transmit data and voice services exchanged between the enterprise headquarters and branch.

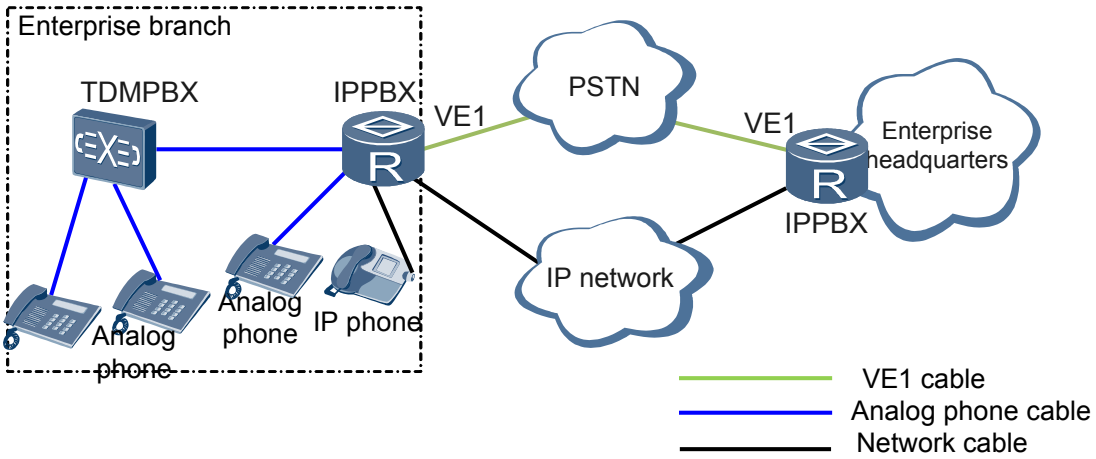
Figure 3-77 Connecting the enterprise headquarters and branch through PRI



Voice Connection in VE1 Mode

As shown in **Figure 3-78**, the enterprise headquarters and branch are connected to the PTSN through VE1 interfaces and exchange voice services through the PSTN. When the channelized E1/T1/PRI multifunctional interface card works in VE1 mode, a VE1 line supports a maximum of 30-channel voice calls. The enterprise headquarters can use multiple VE1 lines to connect to the PSTN and existing TDM PBXs of the enterprise branch.

Figure 3-78 Using VE1 to transmit voice services



Functions and Features

Table 3-91 describes the functions and features of the channelized E1/T1/PRI multifunctional interface card.

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Table 3-91 Functions and features of the channelized E1/T1/PRI multifunctional interface card

Function and Feature	Description
Data transmission	Uses E1 or CE1 interfaces to connect to a WAN for data transmission.
	E1 leased lines supports a maximum of 32 channel groups, providing a maximum of 2 Mbit/s bandwidth.
	The 31 timeslots can be randomly bundled into multiple channels at a rate of *n* multiplied by 64 kbit/s. *n* is an integer that ranges from 1 to 31.
Multi-service transmission	Separately transmits data, voice, and video services.
WAN aggregation	Uses multiple E1 lines to connect the enterprise headquarters and branch.
ISDN access	Supports various services, including voice, high-speed fax, video conference, intelligent telegraph, and teletext services and provides a maximum of 2 Mbit/s transmission rate.
Flexible and easy deployment	An interface can be flexibly configured as a WAN interface, data interface, or voice interface, which simplifies networking.
Voice gateway	Functions as a gateway to connect to the PSTN or TDM PBX network, and supports a maximum of 30-channel voice calls.
Investment protection	In VE1 mode, the card can connect to existing TDM PBXs, protecting investments and facilitating expansion.
PWE3 (supported only by the 8E1/T1-M interface card)	Pseudo Wire Emulation Edge to Edge (PWE3) allows users to smoothly connect to an IP network from their networks, without changing the original access methods.
	PWE3 technology connects networks using different access methods to an IP network.

Indicators and Interfaces

Indicators on the E1/T1-M Panel

NOTE

The 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W have the same indicators except for having different CE1/PRI interfaces. 2E1/T1-M-W is used as an example to describe the indicators.

The 4E1/T1-M and 8E1/T1-M have the same indicators except for having different CE1 interfaces. 8E1/T1-M is used as an example to describe the indicators.

Figure 3-79 shows the indicators on the 2E1/T1-M-W panel, and **Table 3-92** describes the indicator states and meaning.

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Figure 3-79 Indicators on the 2E1/T1-M-W panel

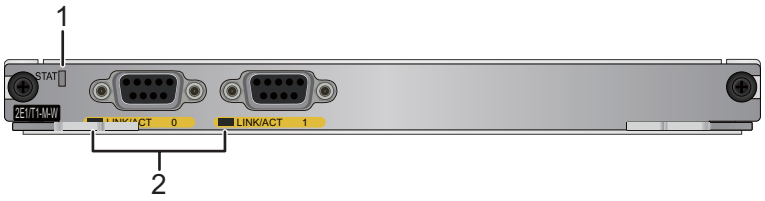

Table 3-92 Indicators on the 1E1/T1-M/2E1/T1-M/2E1/T1-M-W panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK/ACT	Green	Steady on: A link has been established. Off: No link is established.
		Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Off	Off: There is no connection.

Figure 3-80 shows the indicators on the 8E1/T1-M panel, and **Table 3-93** describes the indicator states and meaning.

Figure 3-80 Indicators on the 8E1/T1-M panel

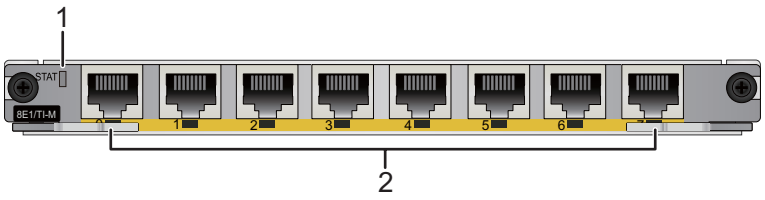

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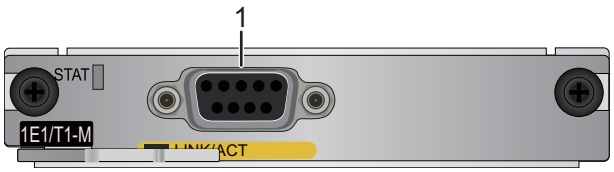
Table 3-93 Indicators on the 4E1/T1-M/8E1/T1-M panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	One double-color indicator for each CE1 interface	Green	Steady on: A link has been established. Off: No link is established.
		Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Off	Off: There is no connection.

Description of Interfaces

Figure 3-81 shows the interfaces on the 1E1/T1-M.

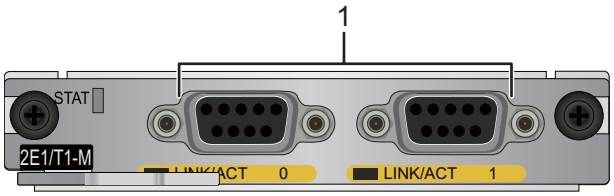
Figure 3-81 Interfaces on the 1E1/T1-M



1. One CE1/CT1/PRI interface

Figure 3-82 shows interfaces on the 2E1/T1-M.

Figure 3-82 Interfaces on the 2E1/T1-M



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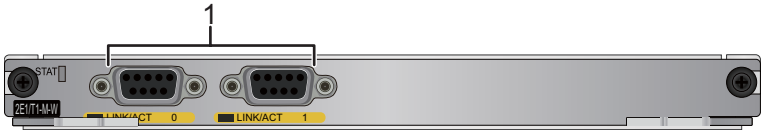
1. Two CE1/CT1/PRI interfaces

Figure 3-83 shows interfaces on the 2E1/T1-M-W.

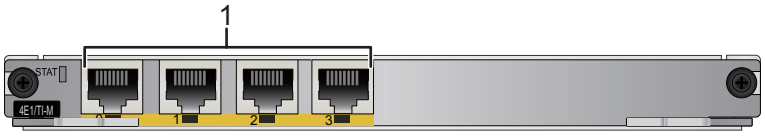
Figure 3-83 Interfaces on the 2E1/T1-M-W



1. Two CE1/CT1/PRI interfaces

Figure 3-84 shows the interfaces on the 4E1/T1-M.

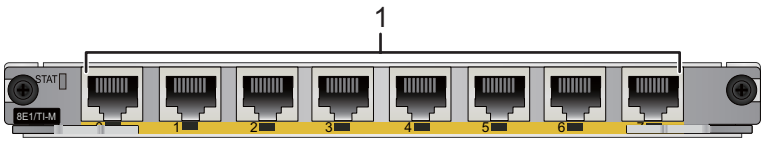
Figure 3-84 Interfaces on the 4E1/T1-M



1. Four CE1 interfaces

Figure 3-85 shows the interfaces on the 8E1/T1-M.

Figure 3-85 Interfaces on the 8E1/T1-M



1. Eight CE1 interfaces

Channelized E1 interface

An E1 interface is used to transmit voice, data, and video service packets. **Table 3-94** describes the attributes of the E1 interface.

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Table 3-94 Attributes of the channelized E1 interface

Attribute	Description
Connector type	● 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W: DB9 ● 4E1/T1-M and 8E1/T1-M: RJ45
Standards compliance	● 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W: G.703 and G.704 ● 4E1/T1-M and 8E1/T1-M: G.703
Interface rate	2.048 Mbit/s
Working mode	● 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W: E1, CE1, ISDN PRI, and VE1 ● 4E1/T1-M and 8E1/T1-M: E1 and CE1
Function	● 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W – Backup – Terminal access – ISDN PRI ● 4E1/T1-M and 8E1/T1-M – Backup – Terminal access
Cable type	**4.1.9 E1/T1 Cable**

Channelized T1 interface

A T1 interface is used to transmit voice, data, and video service packets. **Table 3-95** describes the attributes of the fractional channelized T1 interface.

Table 3-95 Attributes of the channelized T1 interface

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Transmission rate	1.544 Mbit/s
Working mode	CT1, ISDN PRI, VT1
Function	● Backup ● Terminal access ● ISDN PRI
Cable type	**100-Ohm DB9-to-RJ45 Cable**

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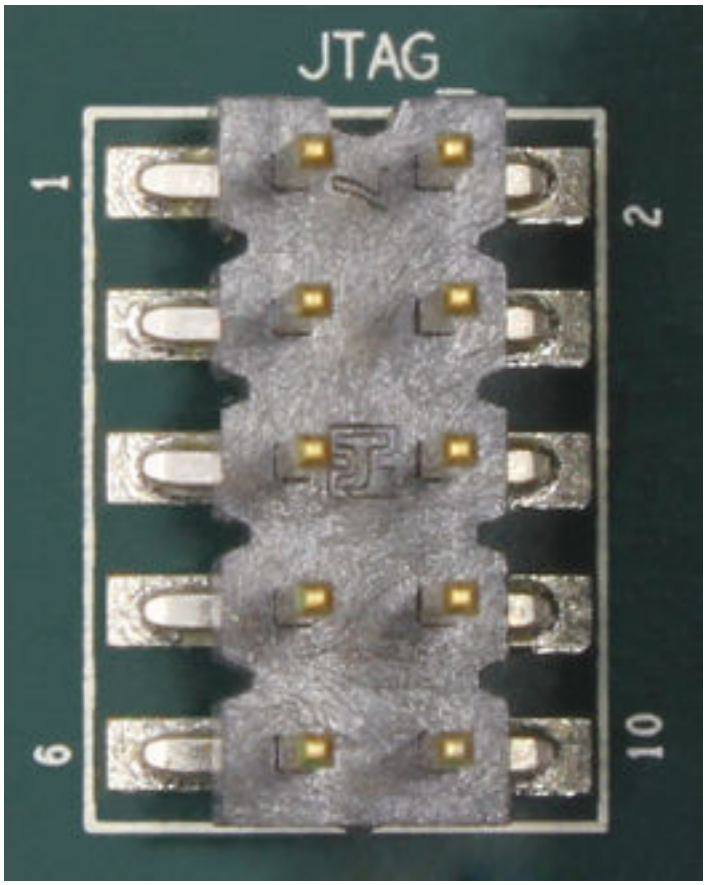
JTAG port

Figure 3-86 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-86 JTAG port



Technical Specifications

Table 3-96 describes the technical specifications of the channelized E1/T1/PRI multifunctional interface card.

Table 3-96 Technical specifications of the channelized E1/T1/PRI multifunctional interface card

Item	Specification
Card type	● 1E1/T1-M: SIC ● 2E1/T1-M: SIC ● 2E1/T1-M-W: WSIC ● 4E1/T1-M: WSIC ● 8E1/T1-M: WSIC

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Item	Specification
External interfaces	● 1E1/T1-M: One CE1/CT1 interface ● 2E1/T1-M: Two CE1/CT1 interfaces ● 2E1/T1-M-W: Two CE1/CT1 interfaces ● 4E1/T1-M: Four CE1 interfaces ● 8E1/T1-M: Eight CE1 interfaces
Standards compliance	● 1E1/T1-M/2E1/T1-M/2E1/T1-M-W: – E1/T1 line codec and electrical attributes: ITUT G.703 – E1 line codec: HDB3 – T1: AMI, B8ZS – E1/T1 line frame format: ITUT G.704 – E1: CRC Multiframe, DoubleFrame – T1: F12 Frame (Super Frame), F24 Frame (Extended Super Frame) – Channelized E1/T1, unchannelized E1/T1, PRI, and VE1 ● 4E1/T1-M/8E1/T1-M: – E1 line codec and electrical attributes: ITUT G.703 – E1 line codec: HDB3 – E1 line frame format: ITUT G.704 – E1: CRC Multiframe, DoubleFrame
Transmission rate	● 1E1/T1-M/2E1/T1-M/2E1/T1-M-W: – E1: 2.048 Mbit/s – T1: 1.544 Mbit/s ● 4E1/T1-M/8E1/T1-M: – E1: 2.048 Mbit/s
Connector type	● 1E1/T1-M/2E1/T1-M/2E1/T1-M-W: DB9 ● 4E1/T1-M/8E1/T1-M: RJ45
Cable	**4.1.9 E1/T1 Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (height x width x depth): – 1E1/T1-M: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 2E1/T1-M: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 2E1/T1-M-W: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) – 4E1/T1-M: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) – 8E1/T1-M: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: – 1E1/T1-M: 4.7 W (10.36 lb) – 2E1/T1-M: 4.8 W (10.58 lb) – 2E1/T1-M-W: 4.8 W (10.58 lb) – 4E1/T1-M: 11 W (24.25 lb) – 8E1/T1-M: 12 W (26.45 lb) ● Weight: – 1E1/T1-M: 0.3 kg (0.66 lb) – 2E1/T1-M: 0.3 kg (0.66 lb) – 2E1/T1-M-W: 0.3 kg (0.66 lb) – 4E1/T1-M: 0.6 kg (1.32 lb) – 8E1/T1-M: 0.6 kg (1.32 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1E1T1-M/2E1T1-M/2E1T1-M-W/4E1T1-M/8E1T1-M, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-97 provides the ordering information.

Table 3-97 Ordering information

Part Number	Card Name	Card Description
03020YNU	1E1/T1-M	1-Port Channelized E1/T1/PRI/VE1 multifunctional Interface Card
03020YNR	2E1/T1-M	2-Port Channelized E1/T1/PRI/VE1 multifunctional Interface Card (SIC)

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Part Number	Card Name	Card Description
03021MSX	2E1/T1-M-W	2-Port Channelized E1/T1/PRI/VE1 multifunctional Interface Card (WSIC)
03021RCR	4E1/T1-M	4-Port Channelized E1/PRI multifunctional Interface Card
03021FXE	8E1/T1-M	8-Port Channelized E1/PRI multifunctional Interface Card

3.4.6 1/2/4/8-Fractional Channelized E1/T1 WAN Interface Card

Card Overview

NOTE

- 1/2/4/8: indicates one, two, four, or eight interfaces.
- E1: indicates E1 interfaces.
- T1: indicates T1 interfaces.
- F: indicates fractional channelized E1.

The 4E1/T1-F/8E1/T1-F supports only E1 functions and can provide T1 in the future.

The fractional channelized E1/T1 interface card transmits voice, data, and video service packets, and provides 1-8 E1-F interfaces to connect to a WAN.

Fractional channelized E1/T1 interface cards have four types. **Table 3-98** lists the number and type of interfaces on the fractional channelized E1/T1 interface card.

Table 3-98 Number and type of interfaces on the fractional channelized E1/T1 interface card

Card Name	Interface Quantity	Interface Type
1E1/T1-F	1	DB9
2E1/T1-F	2	DB9
4E1/T1-F	4	RJ45
8E1/T1-F	8	RJ45

Table 3-99 describes the differences between the fractional channelized E1/T1 interface card and the channelized E1/T1 interface card.

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Table 3-99 Differences between the fractional channelized E1/T1 interface card and the channelized E1/T1 interface card

Card Name	Fractional E1 Mode	Whether to Support the PRI Mode
Fractional channelized interface card	Timeslots of an E1/T1 interface can only be bundled into a channel at a rate of *n* x 64 kbit/s. *n* specifies the number of bundled timeslots and ranges from 1 to 31.	No
Channelized interface card	Timeslots of an E1/T1 interface can be bundled into multiple channels.	Yes

Figure 3-87 shows the appearance of the 1E1/T1-F.

Figure 3-87 Appearance of the 1E1/T1-F

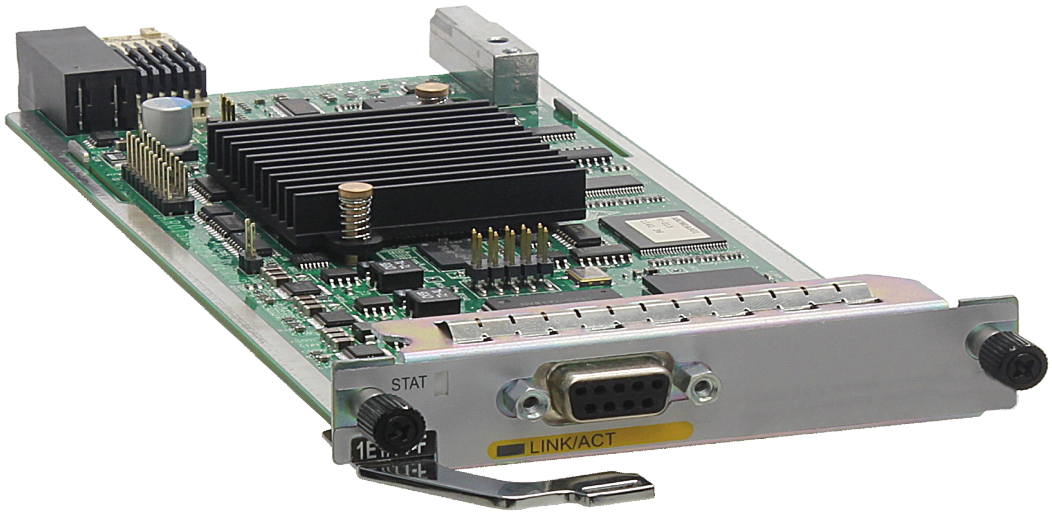

Figure 3-88 shows the appearance of the 2E1/T1-F.

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Figure 3-88 Appearance of the 2E1/T1-F

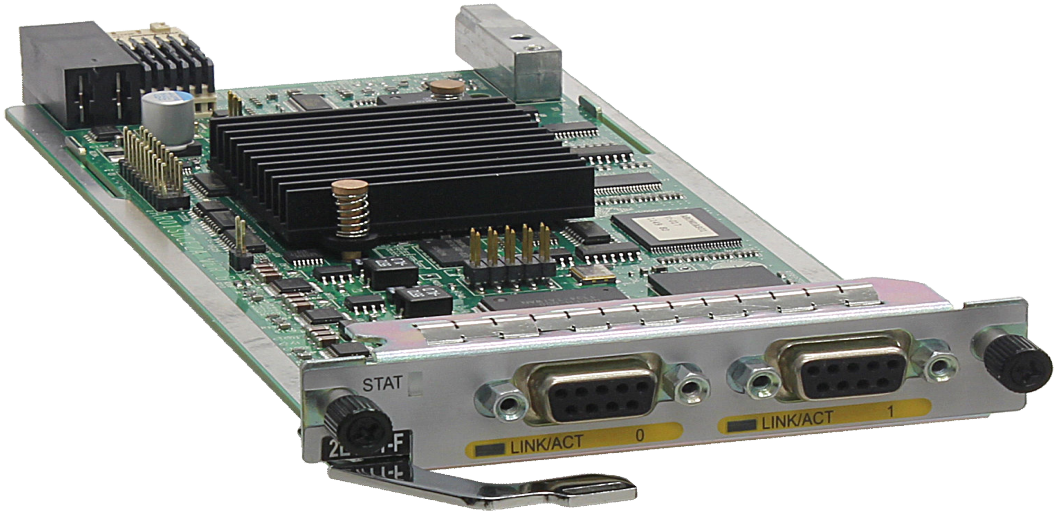


Figure 3-89 shows the appearance of the 4E1/T1-F.

Figure 3-89 Appearance of the 4E1/T1-F

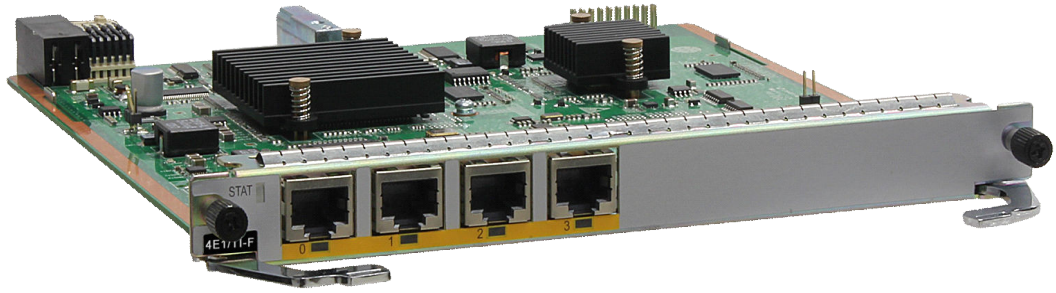
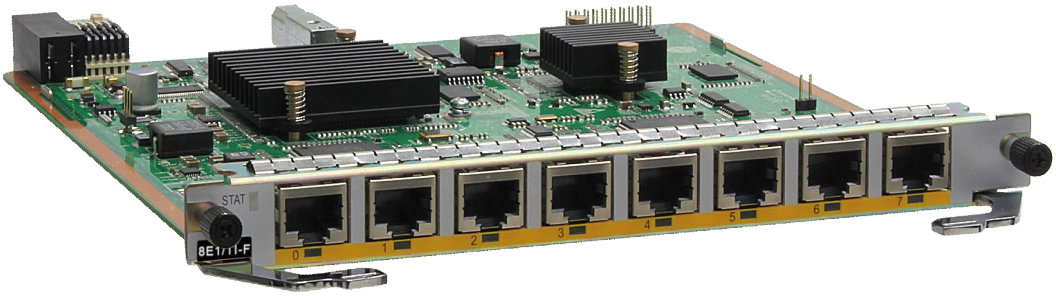


Figure 3-90 shows the appearance of the 8E1/T1-F.

Figure 3-90 Appearance of the 8E1/T1-F



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Version Mapping

Table 3-100 and Table 3-101 describes the mapping between the fractional channelized E1/T1 interface card and software versions.

Table 3-100 Mapping between the fractional channelized E1/T1 interface card and software versions

Card Name	AR1200 Series	AR2204 AR2220 AR2220E	AR2204E Series	AR2240 AR2240C	AR3260	AR3670
1E1/T1-F 2E1/T1-F **NOTE** V200R001C01 and later versions	Y	Y	Y	Y	Y	Y

Table 3-101 Mapping between the fractional channelized E1/T1 interface card and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204 AR2220 AR2220E	AR2204E AR2240 AR2240C	AR3260	AR3670
4E1/T1-F 8E1/T1-F **NOTE** V200R003C00 and later versions	Y	Y	Y	Y	Y

NOTE

Y: supported.

Application

WAN Interconnection

As shown in Figure 3-91, the enterprise uses an E1 leased line with a bandwidth of 2 Mbit/s to connect to the transport network to transmit data, voice, and video services exchanged between the enterprise headquarters and branch.

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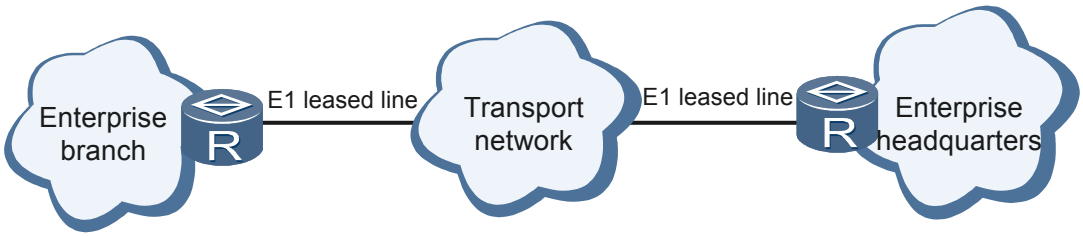
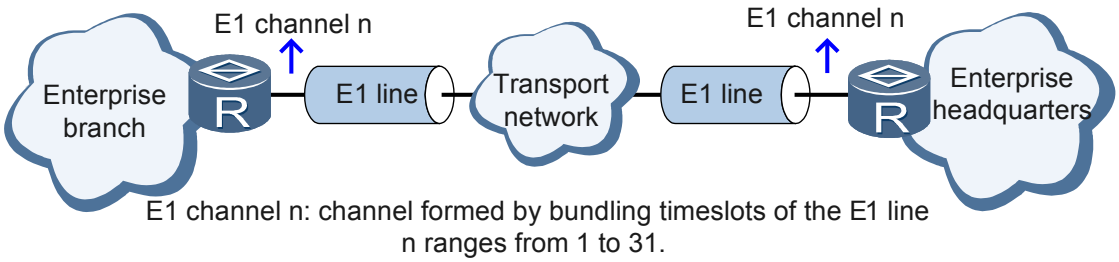
Figure 3-91 Connecting the enterprise headquarters and branch through the E1 leased line



As shown in **Figure 3-92**, the headquarters and branch of an enterprise are connected through the transmission network. A low-rate (512 kbit/s for example) E1 channel is required to transmit services of the enterprise. In this scenario, timeslots in the E1 line need to be bundled into a channel. For example, eight timeslots are bundled to transmit the data service.

Figure 3-92 Connecting the enterprise headquarters and branch through fractional channelized E1



Functions and Features

Table 3-102 describes the functions and features of the fractional channelized E1/T1 interface card.

Table 3-102 Functions and features of the fractional channelized E1/T1 interface card

Function and Feature	Description
Data transmission	Uses E1-F interfaces to connect to a WAN for data transmission.
	Timeslots of an E1 interface can be randomly bundled into a channel at a rate of *n* x 64 kbit/s at only one time. *n* specifies the number of bundled timeslots and ranges from 1 to 31.
Interconnection	● In unframed mode, an E1-F interface works at a rate of 2 Mbit/s without timeslot division. ● In framed mode, the line is divided into 32 timeslots that can be bundled into a low-speed E1 channel.

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Function and Feature	Description
Low-cost access	Compared with channelized E1/T1 interface cards, fractional channelized E1/T1 interface cards have low costs.
PWE3 (supported only by the 8E1/T1-F interface card)	Pseudo Wire Emulation Edge to Edge (PWE3) allows users to smoothly connect to an IP network from their networks, without changing the original access methods.
	PWE3 technology connects networks using different access methods to an IP network.

Indicators and Interfaces

Indicators on the E1T1-F Panel

NOTE

The 1E1/T1-F and 2E1/T1-F have the same indicators except for having different E1/T1-F interfaces. 2E1/T1-F is used as an example to describe the indicators.

The 4E1/T1-F and 8E1/T1-F have the same indicators except for having different E1-F interfaces. 8E1/T1-F is used as an example to describe the indicators.

Figure 3-93 shows the indicators on the 2E1/T1-F panel, and **Table 3-103** describes the indicator states and meaning.

Figure 3-93 Indicators on the 2E1/T1-F panel

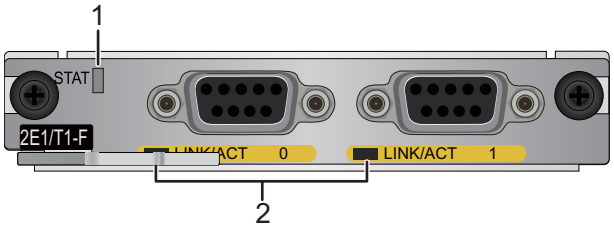

Table 3-103 Indicators on the 1E1/T1-F/2E1/T1-F panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

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Number	Indicator	Color	Description
		Off	The software is not running or is being reset.
2	LINK/ACT	Green	Steady on: A link has been established. Off: No link is established.
		Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Off	There is no connection.

Figure 3-94 shows the indicators on the 8E1/T1-F panel, and **Table 3-104** describes the indicator states and meaning.

Figure 3-94 Indicators on the 8E1/T1-F panel

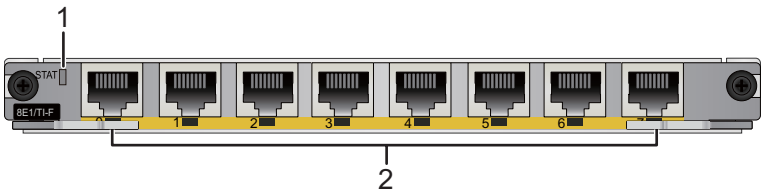

Table 3-104 Indicators on the 4E1/T1-F/8E1/T1-F panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	One double-color indicator for each E1-F interface	Green	Steady on: A link has been established. Off: No link is established.

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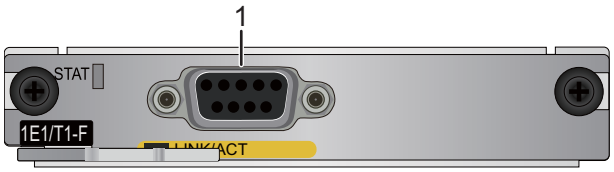
Number	Indicator	Color	Description
		Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Off	Off: There is no connection.

Description of Interfaces

Figure 3-95 shows the interfaces on the 1E1/T1-F.

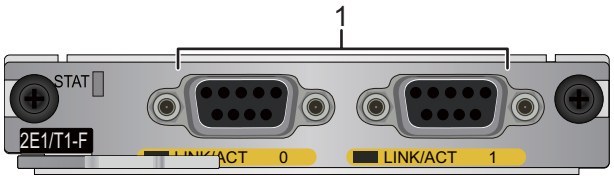
Figure 3-95 Interfaces on the 1E1/T1-F



1. One E1/T1-F interface

Figure 3-96 shows interfaces on the 2E1/T1-F.

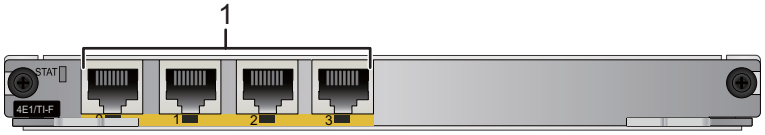
Figure 3-96 Interfaces on the 2E1/T1-F



1. Two E1/T1-F interfaces

Figure 3-97 shows the interfaces on the 4E1/T1-F.

Figure 3-97 Interfaces on the 4E1/T1-F



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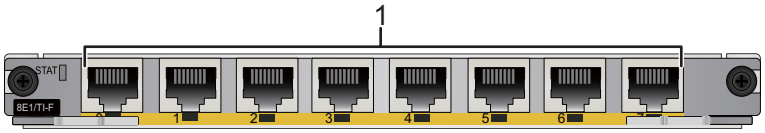
1. Four E1-F interfaces

Figure 3-98 shows the interfaces on the 8E1/T1-F.

Figure 3-98 Interfaces on the 8E1/T1-F



1. Eight E1-F interfaces

Fractional channelized E1 interface

An E1-F interface is used to transmit data and video service packets. **Table 3-105** describes the attributes of the E1-F interface.

Table 3-105 Attributes of the fractional channelized E1 interface

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Transmission rate	2.048 Mbit/s
Working mode	Fractional channelized E1
Function	● Backup ● Terminal access
Cable type	**4.1.9 E1/T1 Cable**

Fractional channelized T1 interface

A T1-F interface is used to transmit data and video service packets. **Table 3-106** describes the attributes of the T1-F interface.

Table 3-106 Attributes of the fractional channelized T1 interface

Attribute	Description
Connector type	DB9

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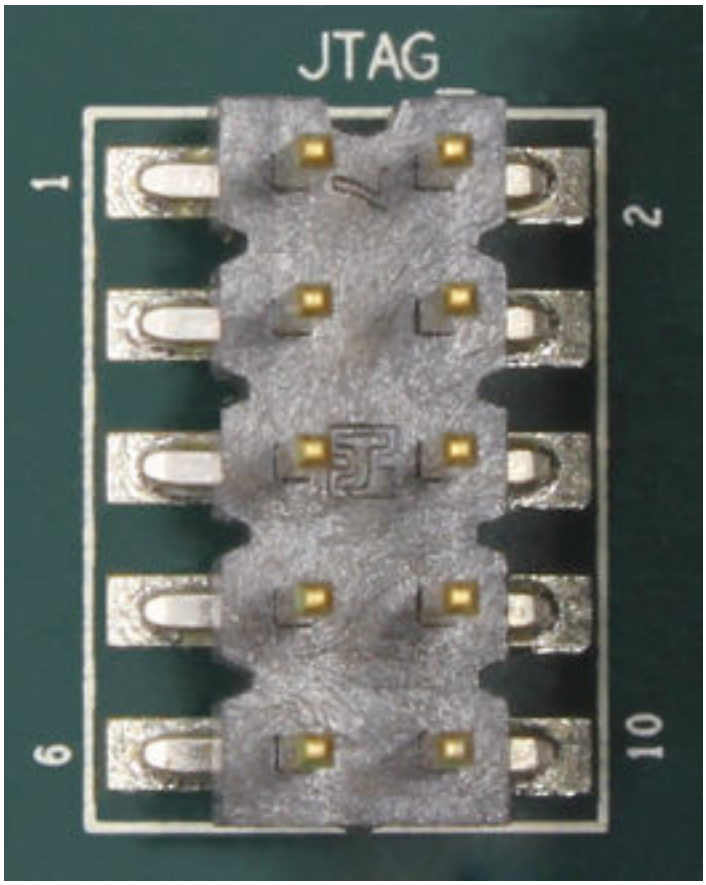
Attribute	Description
Standards compliance	G.703, G.704
Transmission rate	1.544 Mbit/s
Working mode	Fractional channelized T1
Function	● Backup ● Terminal access
Cable type	**100-Ohm DB9-to-RJ45 Cable**

JTAG port

Figure 3-99 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-99 JTAG port



Technical Specifications

Table 3-107 describes the technical specifications of the fractional channelized interface card.

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Table 3-107 Technical specifications of the fractional channelized interface card

Item	Specification
Card type	● 1E1/T1-F: SIC ● 2E1/T1-F: SIC ● 4E1/T1-F: WSIC ● 8E1/T1-F: WSIC
External interfaces	● 1E1/T1-F: One E1/T1-F interface ● 2E1/T1-F: Two E1/T1-F interfaces ● 4E1/T1-F: Four E1-F interfaces ● 8E1/T1-F: Eight E1-F interfaces
Standards compliance	1E1/T1-F/1E1/T1-F: ● E1/T1 line codec and electrical attributes: ITUT G.703 ● E1 line codec: HDB3 ● T1: AMI, B8ZS ● E1/T1 line frame format: ITUT G.704 ● E1: CRC Multiframe, DoubleFrame ● T1: F12 Frame (Super Frame), F24 Frame (Extended Super Frame) 4E1/T1-F/8E1/T1-F: ● E1 line codec and electrical attributes: ITUT G.703 ● E1 line codec: HDB3 ● E1 line frame format: ITUT G.704 ● E1: CRC Multiframe, DoubleFrame
Transmission rate	● E1: 2.048 Mbit/s ● T1: 1.544 Mbit/s
Connector type	● 1E1/T1-F/2E1/T1-F: DB9 ● 4E1/T1-F/8E1/T1-F: RJ45
Cable	**4.1.9 E1/T1 Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (height x width x depth): – 1E1/T1-F: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 2E1/T1-F: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 4E1/T1-F: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) – 8E1/T1-F: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: – 1E1/T1-F: 4.7 W (10.36 lb) – 2E1/T1-F: 4.8 W (10.58 lb) – 4E1/T1-F: 11 W (24.25 lb) – 8E1/T1-F: 12 W (26.45 lb) ● Weight: – 1E1/T1-F: 0.3 kg (0.66 lb) – 2E1/T1-F: 0.3 kg (0.66 lb) – 4E1/T1-F: 0.6 kg (1.32 lb) – 8E1/T1-F: 0.6 kg (1.32 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1E1T1-F/2E1T1-F/4E1T1-F/8E1T1-F, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-108 provides the ordering information.

Table 3-108 Ordering information

Part Number	Card Name	Card Description
03020YNT	1E1/T1-F	1-Port Fractional Channelized E1/T1 WAN Interface Card
03020UDU	2E1/T1-F	2-Port Fractional Channelized E1/T1 WAN Interface Card
03021RCS	4E1/T1-F	4-Port Fractional E1 WAN Interface Card

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Part Number	Card Name	Card Description
03021RCQ	8E1/T1-F	8-Port Fractional E1 WAN Interface Card

3.4.7 1E3/CE3/T3/CT3 (1-Port Channelized/Unchannelized E3/T3 WAN Interface Card)

Card Overview

NOTE

Meaning of characters in the card name:

- 1: one interface on the card
- E3: unchannelized E3 interface
- CE3: channelized E3 interface
- T3: unchannelized T3 interface
- CT3: channelized T3 interface

Currently, the 1E3/CE3/T3/CT3 card provides only an unchannelized E3 interface. The CE3/T3/CT3 interface will be supported in later software releases. The card can provide CE3/T3/CT3 interface after the software is upgraded.

A 1E3/CE3/T3/CT3 card is a high-speed WAN access module. This card provides an unchannelized E3 interface, with a transmitter and a receiver. It is installed in a WSIC slot to provide high-speed data transmission.

Figure 3-100 shows the appearance of a 1E3/CE3/T3/CT3 card.

Figure 3-100 1E3/CE3/T3/CT3 card appearance

Version Mapping

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Table 3-109 describes the mapping between the 1E3/CE3/T3/CT3 card and software versions of different product models.

Table 3-109 Mapping between the 1E3/CE3/T3/CT3 card and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204 AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
1E3/CE3/T3/CT3 **NOTE** V200R005C00 and later versions.	Y	Y	Y	Y	Y

NOTE

Y: supported.

应用

Functions and Features

Table 3-110 describes functions and features of a 1E3/CE3/T3/CT3 card.

Table 3-110 Functions and features of a 1E3/CE3/T3/CT3 card

Function and Feature	Specification
Data transmission	The E3 interface connects to a WAN to complete data transmission.
	The E3 interface provides a maximum of 34.368 Mbps.
Protocol	Supports Frame Relay (FR), Point-to-Point Protocol (PPP), and High-level Data Link Control (HDLC).
	Supports G.751 frame format.

Indicators and Interfaces

Indicator Description

Figure 3-101 shows indicators on a 1E3/CE3/T3/CT3 card, and Table 3-111 describes the indicator states and meaning.

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Figure 3-101 Indicators on a 1E3/CE3/T3/CT3 card

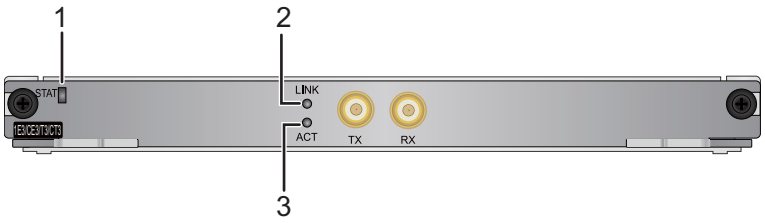


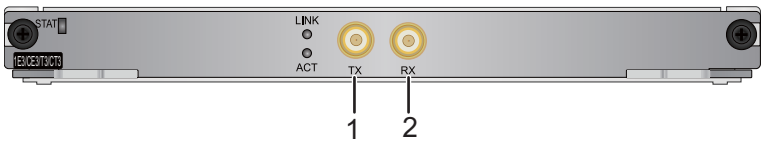
Table 3-111 1E3/CE3/T3/CT3 card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
3	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting or receiving data.

Interface Description

Figure 3-102 shows the interface on a 1E3/CE3/T3/CT3 card.

Figure 3-102 Interface on a 1E3/CE3/T3/CT3 card



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1. Signal transmitter	2. Signal receiver

E3/T3 interface

An E3/T3 interface transmits data and image signals. **Table 3-112** describes the E3/T3 interface attributes.

Table 3-112 E3/T3 interface attributes

Attribute	Specification
Connector type	SMB
Standards compliance	G.703, G.704, G.751, G.823
Interface speed	34.368 Mbit/s
Working mode	E3
Services provided	E3 leased line
Cable type	**4.1.10 E3/T3 Cable**

Technical Specifications

Table 3-113 lists technical specifications of a 1E3/CE3/T3/CT3 card.

Table 3-113 1E3/CE3/T3/CT3 card technical specifications

Item	Specification
Card type	WSIC
External interface	One E3 interface, with a receiver (RX) and a transmitter (TX)
Standards compliance	G.703, G.704, G.751, G.823
Interface speed	E3: 34.368 Mbit/s
Connector type	SMB
Cable	**4.1.10 E3/T3 Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 9.2 in. x 0.78 in.) ● Maximum power consumption: 11.2 W ● Weight: 0.6 kg (1.32 lb)

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Item	Specification
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-114 provides the ordering information.

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Table 3-114 1E3/T3 ordering information

Part Number	Card Name	Card Description
03021QFT	1E3/CE3/T3/CT3	1-Port Channelized/ Unchannelized E3/T3 WAN Interface Card

3.4.8 1SA/2SA (1/2-Port-Synchronous/Asynchronous WAN Interface Card)

Card Overview

NOTE

- 1/2: indicates one or two interfaces.
- S: indicates synchronous serial interfaces.
- A: indicates asynchronous serial interfaces.

The 1SA/2SA is an enhanced high-speed synchronous/asynchronous serial interface module and an SIC interface card. It works in synchronous or asynchronous mode, and often uses the synchronous mode to implement WAN access.

Table 3-115 lists the number of interfaces on the 1SA and 2SA.

Table 3-115 Number of interfaces on the 1SA and 2SA

Card Name	Interface Quantity
1SA	1
2SA	2

Figure 3-103 shows the appearance of the 1SA.

Figure 3-103 Appearance of the 1SA

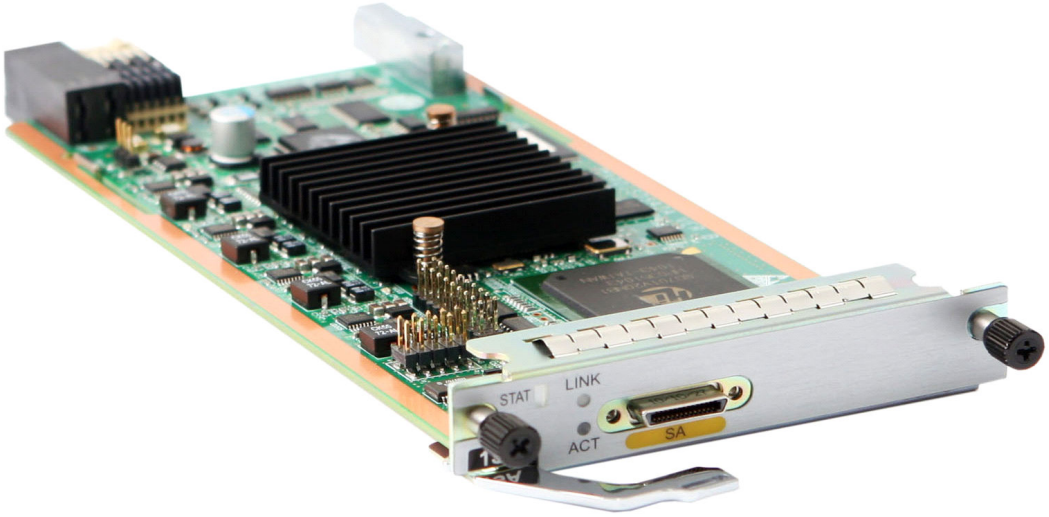

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Figure 3-104 shows the appearance of the 2SA.

Figure 3-104 Appearance of the 2SA

Version Mapping

Table 3-116 describes the mapping between the 1SA/2SA and software versions.

Table 3-116 Mapping between the 1SA/2SA and software versions

Card Name	AR1200 Series	AR2204E Series	AR2204 AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
1SA **NOTE** V200R001C00 and later versions	Y	Y	Y	Y	Y	Y
2SA **NOTE** V200R001C01 and later versions	Y	Y	Y	Y	Y	Y

NOTE

Y: supported.

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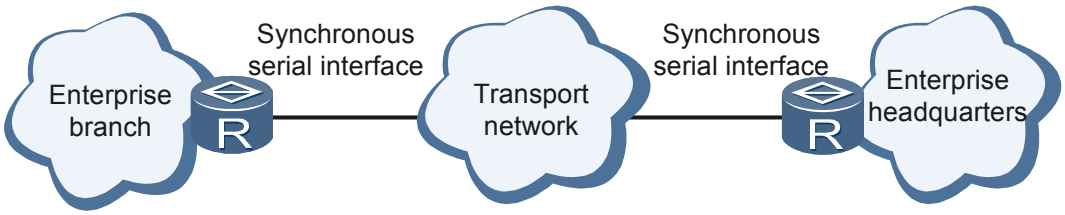
Application

As shown in **Figure 3-105**, the SA works in synchronous mode. The enterprise can connect to the transport network through synchronous serial interfaces to transmit data services exchanged between the enterprise headquarters and branch with a total bandwidth of 2 Mbit/s.

Figure 3-105 Connecting the enterprise headquarters and branch through synchronous serial interfaces



Functions and Features

Table 3-117 describes the functions and features of the 1SA/2SA.

Table 3-117 Functions and features of the 1SA/2SA

Function and Feature	Description
Synchronous mode	Uses a synchronous serial interface to connect to a WAN.
	A synchronous serial interface can function as a DCE or DTE. It supports multiple physical layer protocols, such as V.24, V.35, and X.21, but does not support X.21 DCE.
	The maximum rate of V.24 is 64 kbit/s and V.35 is 2.048 Mbit/s.
	Link layer protocols include the Point-to-Point Protocol (PPP), Frame Relay (FR), and High-Level Data Link Control (HDLC).
	Use IP as the network layer protocol.
Asynchronous mode	Supports the RS232 protocol and provides a maximum transmission rate of 115.2 kbit/s.
	Uses the protocol or flow mode.
	In protocol mode, the interfaces support PPP and IP.
	In flow mode, the interfaces do not support link layer protocols or IP.

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Indicators and Interfaces

Indicators on the 1SA/2SA Panel

NOTE

The 1SA and 2SA have the same indicators except for having different quantities of interfaces. 2SA is used as an example to describe the indicators.

Figure 3-106 shows the indicators on the 2SA panel, and Table 3-118 describes the indicator states and meaning.

Figure 3-106 Indicators on the 2SA panel

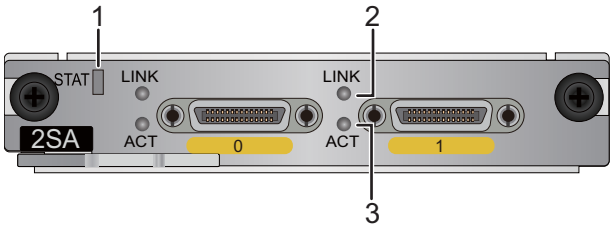

Table 3-118 Indicators on the 1SA/2SA panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	SA interface indicators: ● 2: LINK indicator, which is in green. ● 3: ACT indicator, which is in yellow.	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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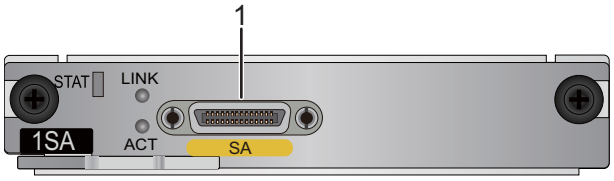
Description of Interfaces

Figure 3-107 shows the interfaces on the 1SA panel.

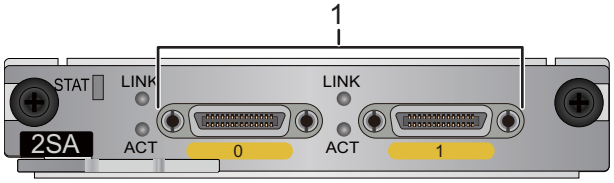
Figure 3-107 Interfaces on the 1SA panel



1. One SA interface

Figure 3-108 shows interfaces on the 2SA panel.

Figure 3-108 Interfaces on the 2SA panel



1. Two SA interfaces

Synchronous/Asynchronous serial (SA) interface

The SA interface in synchronous mode is used to implement interworking between enterprise branches and the headquarters over PPP links. The SA interface in asynchronous mode is used to redirect to another device. **Table 3-119** describes the attributes of synchronous/asynchronous serial interfaces.

Table 3-119 Attributes of synchronous/asynchronous serial interfaces

Attribute	Description	
	Synchronous Serial Interface	Asynchronous Serial Interface
Connector type	DB28	

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Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Standards compliance and working mode	● V.24 DTE ● V.24 DCE	● V.35 DTE ● V.35 DCE ● X.21 DTE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Function	DDN leased line		● Modem dial-up ● Backup
	Terminal access		● Asynchronous leased line ● Terminal access
Cable type	**4.1.11 SA Cable**		

JTAG port

Figure 3-109 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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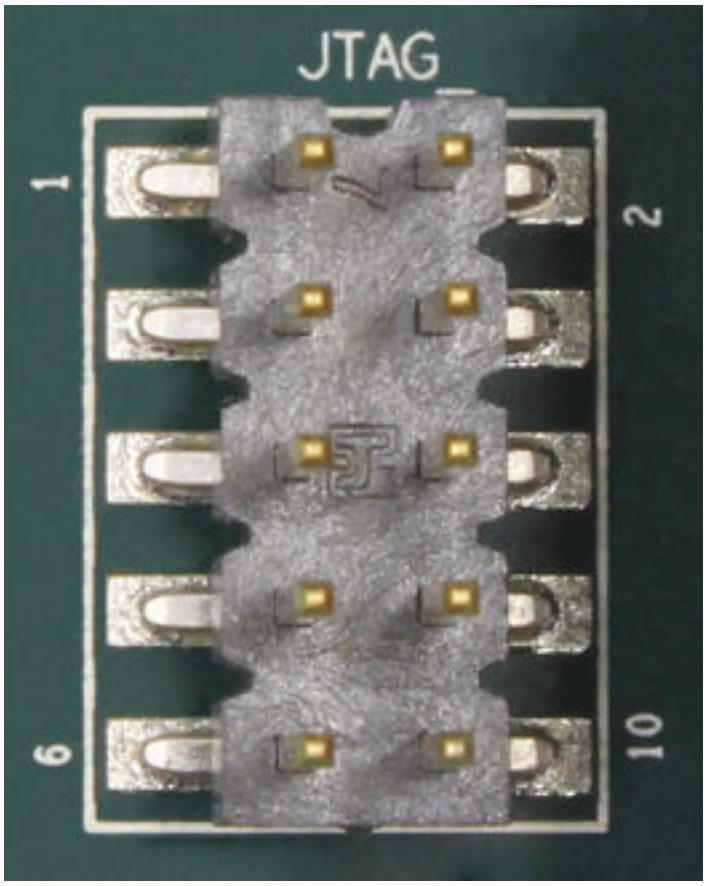
Figure 3-109 JTAG port



Technical Specifications

Table 3-120 describes the technical specifications of the 1SA/2SA.

Table 3-120 Technical specifications of the 1SA/2SA

Item	Specification
Card type	● 1SA: SIC ● 2SA: SIC
External interfaces	● 1SA: One SA interface ● 2SA: Two SA interfaces
Standards compliance	● Synchronous serial interface: V.35 DCE/DTE, X.21 DTE, V.24 DCE/DTE, RS449 DCE/DTE, RS530 DCE/DTE ● Asynchronous serial interface: RS232 DCE/DTE
Transmission rate	● V.24: 1200 bit/s to 64 kbit/s ● V.35/X.21/RS449/RS530: 1200 bit/s to 2.048 Mbit/s ● RS232: 600 to 115200 bit/s
Connector type	DB28

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Item	Specification
Cable	**4.1.11 SA Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): – 1SA: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 2SA: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: – 1SA: 5.5 W – 2SA: 6.2 W ● Weight: – 1SA: 0.3 kg (0.66 lb) – 2SA: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1SA/2SA, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-121 provides the ordering information.

Table 3-121 Ordering information

Part Number	Card Name	Card Description
03020YNB	1SA	1-Port Sync/Async Serial Port Interface Card
03020SAY	2SA	2-Port Sync/Async Serial Port Interface Card

3.4.9 8SA (8-Port Synchronous/Asynchronous WAN Interface Card)

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Card Overview

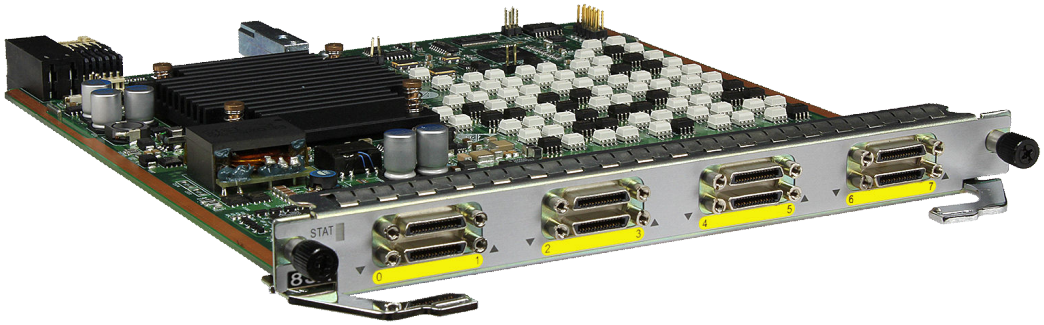
NOTE

- 8: indicates eight interfaces.
- S: indicates synchronous serial interfaces.
- A: indicates asynchronous serial interfaces.

The 8SA card is an enhanced high-speed synchronous/asynchronous serial interface module. It can work in synchronous or asynchronous mode, and often uses the synchronous mode to connect to a WAN.

Figure 3-110 shows the appearance of an 8SA card.

Figure 3-110 Appearance of an 8SA card



Version Mapping

Table 3-122 describes the mapping between the 8SA card and software versions of different product models.

Table 3-122 Mapping between the 8SA card and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204 AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
8SA **NOTE** V200R005C10 and later versions.	Y	Y	Y	Y	Y

NOTE

Y: supported.

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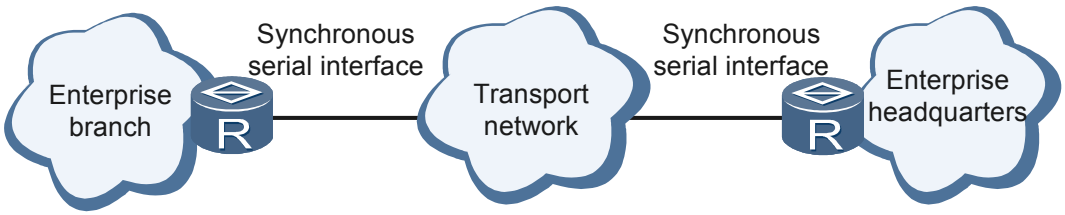
Application

As shown in **Figure 3-111**, the 8SA card works in synchronous mode. The enterprise can connect to the transport network through synchronous serial interfaces. Each interface provides a total of 8.192 Mbit/s bandwidth to transmit data between the enterprise headquarters and branch.

Figure 3-111 Connecting the enterprise headquarters and branch through synchronous serial interfaces



Functions and Features

Table 3-123 describes functions and features of an 8SA card.

Table 3-123 Functions and features of an 8SA card

Function and Feature	Description
Synchronous mode	Use a synchronous serial interface to connect to a WAN.
	A synchronous serial interface can function as a data circuit-terminating equipment (DCE) or data terminal equipment (DTE). It supports multiple physical layer protocols, such as V.24, V.35, X.21, RS449, and RS530.
	Identify the rate of received signals.
	The maximum rate of V.24 is 64 kbit/s and the maximum rate of V.35/X.21/RS449/RS530 is 8.192 Mbit/s.
	Supported link layer protocols include the Point-to-Point Protocol (PPP), Frame Relay (FR), and High-Level Data Link Control (HDLC).
	Use IP as the network layer protocol.
	Support pseudo wire emulation edge-to-edge (PWE3).
Asynchronous mode	Support the RS232 protocol and provide a maximum transmission rate of 230.4 kbit/s.
	Work in protocol or flow mode.
	In protocol mode, the interfaces support PPP and IP.

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Function and Feature	Description
	In flow mode, the interfaces do not support link layer protocols or IP.
	Support PWE3.

Indicators and Interfaces

Indicators on an 8SA Card

Figure 3-112 shows indicators on an 8SA card, and **Table 3-124** describes the indicator states and meaning.

Figure 3-112 Indicators on an 8SA card

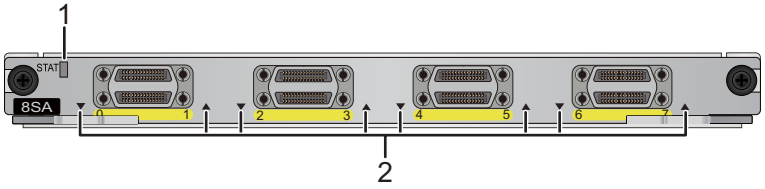

Table 3-124 Indicators on an 8SA card

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	One double-color indicator for each SA interface	Green	Steady on: A link has been established. Off: No link is established.
		Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.

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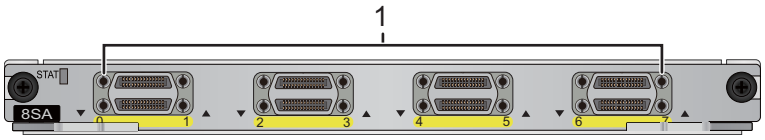
Number	Indicator	Color	Description
	NOTE ● Down arrowhead: interfaces in the lower row ● Up arrowhead: interfaces in the upper row	Off	Off: There is no connection.

Interface Description

Figure 3-113 shows the interfaces on an 8SA card.

Figure 3-113 Interfaces on an 8SA card



1. Eight SA interfaces

Synchronous/Asynchronous serial (SA) interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. **Table 3-125** describes the SA interface attributes.

Table 3-125 Attributes of SA serial interfaces

Attribute	Description	
	Synchronous Serial Interface	Asynchronous Serial Interface
Connector type	DB28	

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Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Standards compliance and working mode	● V.24 DTE ● V.24 DCE	● V.35 DTE ● V.35 DCE ● X.21 DTE ● X.21 DCE ● RS449 DTE ● RS449 DCE ● RS530 DTE ● RS530 DCE	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	8192000	230400
Services provided	DDN leased line		● Modem dial-up ● Backup
	Terminal access		● Asynchronous leased line ● Terminal access
Cable type	4.1.11 SA Cable		

Technical Specifications

Table 3-126 lists technical specifications of an 8SA card.

Table 3-126 Technical specifications of an 8SA card

Item	Specification
Card type	WSIC
External interface	Eight SA interfaces
Standards compliance	● Synchronous serial interface: V.35 DCE/DTE, X.21 DTE/DCE, V.24 DCE/DTE, RS449 DCE/DTE, and RS530 DCE/DTE ● Asynchronous serial interface: RS232 DCE/DTE
Transmission rate	● V.24: 1200 bit/s to 64 kbit/s ● V.35/X.21/RS449/RS530: 1200 bit/s to 8.192 Mbit/s ● RS232: 600 bit/s to 230400 bit/s

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Item	Specification
Connector type	DB28
Cable	**4.1.11 SA Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm ● Maximum power consumption: 25 W ● Weight: 0.6 kg
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-127 provides the ordering information.

Table 3-127 8SA card ordering information

Part Number	Card Name	Card Description
03022CPM	8SA	8-port synchronous/ asynchronous WAN interface card

3.4.10 6E&M (6-Port E&M (RJ45) Trunk Interface Card)

Introduction

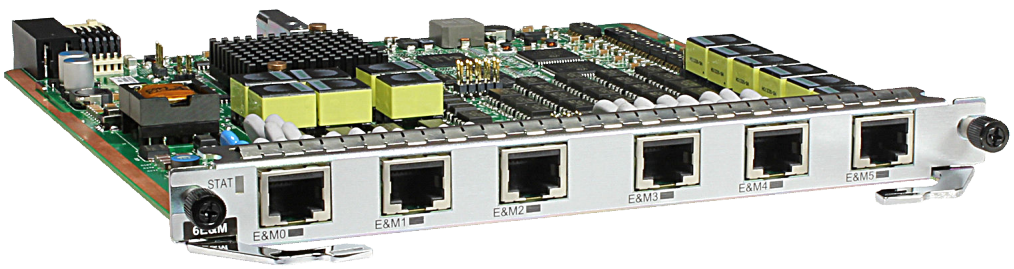
NOTE

- 6: indicates six interfaces.
- E: stands for receive.
- M: stands for transmit.

A 6E&M card provides six E&M interfaces and can be installed in a WSIC slot of a router. This card is mainly used for analog trunk access in small and medium enterprises or enterprise branches, providing low-speed data switching and voice transmission.

Figure 3-114 shows the appearance of a 6E&M card.

Figure 3-114 6E&M card appearance



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Version Mapping

Table 3-128 describes the mapping between the 6E&M card and software versions.

Table 3-128 Mapping between the 6E&M card and software versions

Card Name	AR1200 Series (Except AR1220E Series, AR1220C)	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260
6E&M **NOTE** This card is supported in V200R005C20 and later versions.	Y	Y	Y	Y	Y

NOTE

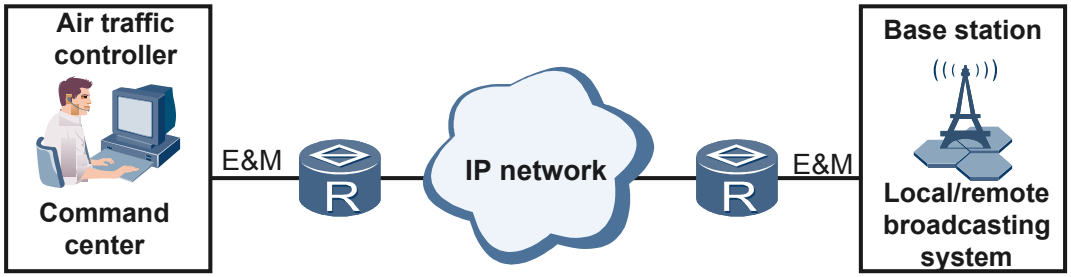
Y: supported.

Application

As shown in Figure 3-115, the router uses a 6E&M card to connect to the internal calling system and broadcasting system of the command center. E&M signals are transparently transmitted over the IP network to enable air traffic controllers can communicate with pilots on aircraft.

When an air traffic controller needs to communicate with pilots on an aircraft, E&M voice data signals are transmitted from the 6E&M card to the broadcasting system through the IP network. The broadcasting system has established a connection with the aircraft beforehand. When the broadcasting system receives the voice data signals, it forwards the signals to the aircraft so that the pilots can talk with the air traffic controller.

Figure 3-115 6E&M card for air traffic control



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Functions and Features

Table 3-129 describes functions and features of a 6E&M card.

Table 3-129 Functions and features of a 6E&M card

Function and Feature	Description
Basic functions	Provides the E&M trunk function.
	Has six interfaces to receive and process 64 kbit/s signals.
	Supports E&M signaling of Bell1, Bell2, Bell3, Bell4, and Bell5.
Alarm and performance	Provides abundant alarms and performance logs for system maintenance and fault location.

Indicators and Interfaces

Indicator Description

Figure 3-116 shows the indicators on the 6E&M panel, and Table 3-130 describes the indicator states and meanings.

Figure 3-116 Indicators on a 6E&M card

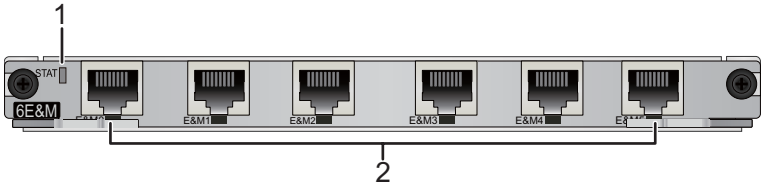

Table 3-130 6E&M card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

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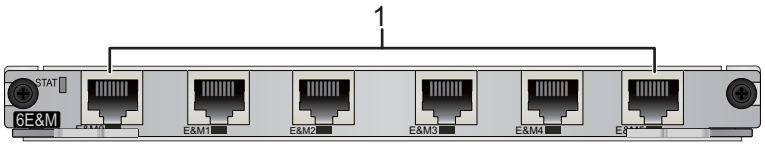
Number	Indicator	Color	Description
		Off	The software is not running or the card is resetting.
2	E&M interface indicator	Green	Steady on: The line on the interface is occupied. Blinking: The line is being established on the interface. Off: The line on the interface is idle.

Interface Description

Figure 3-117 shows interfaces on a 6E&M card.

Figure 3-117 Interfaces on a 6E&M card



1. Six E&M interfaces

E&M interface

An E&M interface sends and receives E&M signals. It can be connected to a PBX to provide voice functions. Table 3-131 describes the attributes of an E&M interface.

Table 3-131 Attributes of an E&M interface

Attribute	Description
Connector type	RJ45
Standards compliance	G.712
Transmission rate	64 kbit/s
Protocols	● Routing mode: Bell 1, Bell 2, Bell 3, Bell 4, and Bell 5 ● PBX mode: Bell 5
Cable type	**4.1.16 E&M Trunk Cable**

JTAG port

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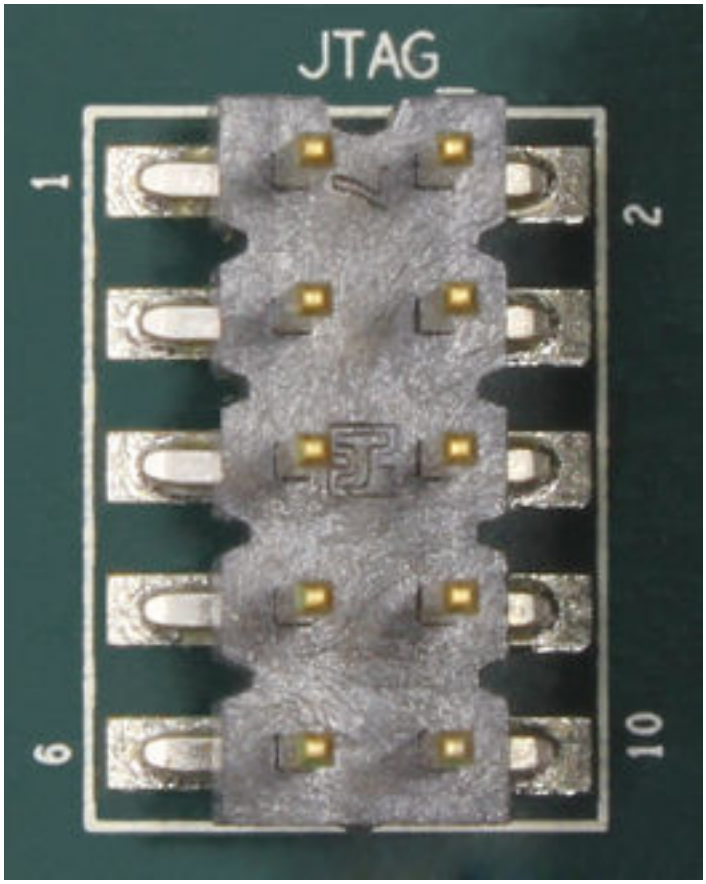
Figure 3-118 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-118 JTAG port



DIP Switch Usage Instructions

Interfaces on a 6E&M card can work normally only after you turn the corresponding dual in-line package switches (DIP switches) to 2-wire or 4-wire mode. Figure 3-119 shows the DIP switches on a 6E&M card.

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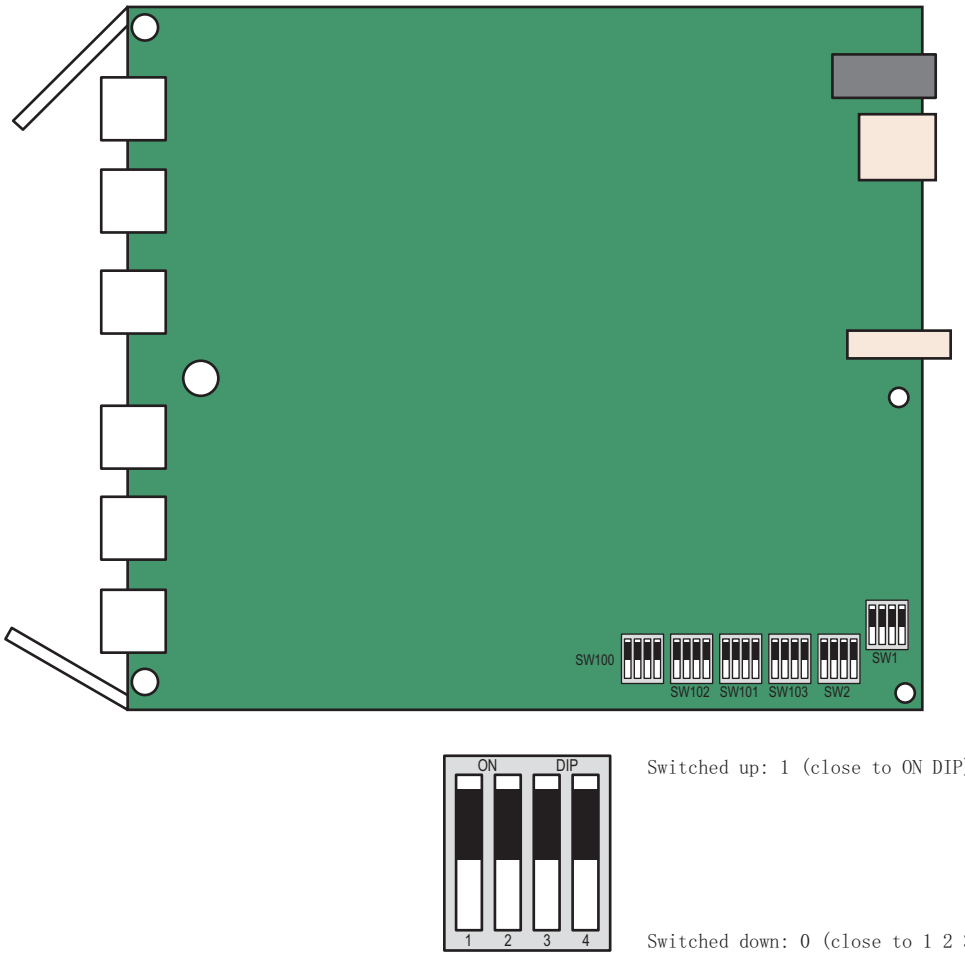
Figure 3-119 DIP switches



NOTE

- Use tweezers to operate the DIP switches.
- On a DIP switch, the position close to **ON DIP** (top) represents **1**, and the position close to **1 2 3 4** (bottom) represents **0**.

After you turn the DIP switch of an E&M interface to 2-wire or 4-wire mode, the E&M interface can work normally. **Table 3-132** describes the DIP switches on a 6E&M card.

Table 3-132 Description of DIP switches

Interface Number	DIP Switch	Lines	Description	Factory Setting
E&M0	SW101	● 1001: 2-wire mode ● 0110: 4-wire mode	● 2-wire mode: bars 1 and 4 are in the ON position; bars 2 and 3 are in the	4-wire mode
E&M1	SW100			
E&M2	SW102			
E&M3	SW103			
E&M4	SW1			

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Interface Number	DIP Switch	Lines	Description	Factory Setting
E&M5	SW2		OFF position. ● 4-wire mode: bars 1 and 4 are in the OFF position; bars 2 and 3 are in the ON position.	

Technical Specifications

Table 3-133 lists technical specifications of a 6E&M card.

Table 3-133 6E&M card technical specifications

Parameter	Description
Card type	WSIC
External interfaces	Six E&M analog trunk interfaces
Cable	**4.1.16 E&M Trunk Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in) ● Maximum power consumption: 21 W ● Weight: 0.6 kg
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

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Parameter	Description
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the Huawei local office. To download the software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-134 provides the ordering information.

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Table 3-134 Ordering information

Part Number	Card Name	Card Description
03022CPR	6E&M	6-port E&M-RJ45 trunk interface card

3.4.11 8AS (8-Port-Asynchronous WAN Interface Card)

Card Overview

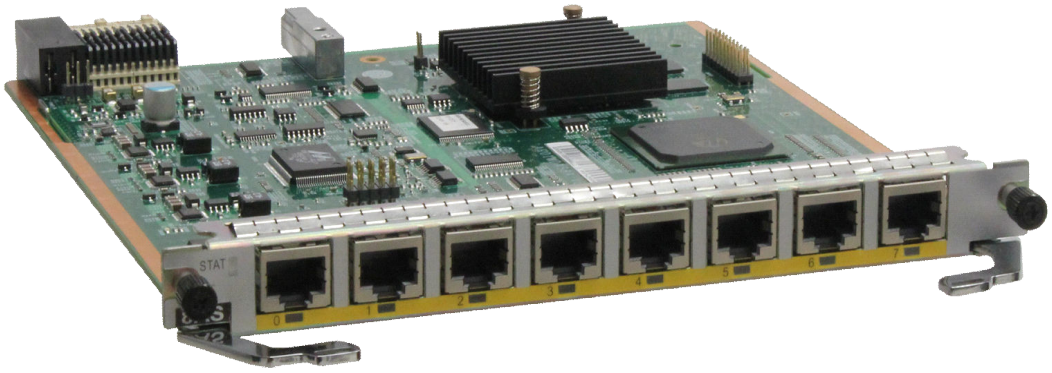
NOTE

- 8: indicates eight interfaces.
- AS: indicates asynchronous serial interfaces.

The 8AS is a high-speed asynchronous serial interface module and a WSIC interface card working in protocol or flow mode. The 8AS can connect to the PSTN through a modem or function as a serial port server to implement remote management for terminals.

Figure 3-120 shows the appearance of the 8AS.

Figure 3-120 Appearance of the 8AS



Version Mapping

Table 3-135 describes the mapping between the 8AS and software versions.

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Table 3-135 Mapping between the 8AS and software versions

Card Name	AR1200 Series	AR2204E Series	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
8AS **NOTE** V200R001C01 and later versions	Y	Y	Y	Y	Y	Y	Y

NOTE

Y: supported.

Application

The 8AS applies to the following scenarios:

- **WAN Connection: Connecting to the PSTN Through Modems**
- **Serial Port Server**

WAN Connection: Connecting to the PSTN Through Modems

As shown in **Figure 3-121**, enterprise A and enterprise B connect to the PSTN through modems. Enterprise A and enterprise B can send connection requests to each other and establish the connection only when they require communication, which saves enterprise communication expenses.

Figure 3-121 Connecting enterprises through modems

Serial Port Server

In telecommunication and financial fields, some terminals provide only access through the serial port or cannot access the Internet using Telnet. The 8AS can be configured as a serial port server to provide the redirection function. As shown in **Figure 3-122**, you can use a remote PC to configure and manage terminals connected to RouterA.

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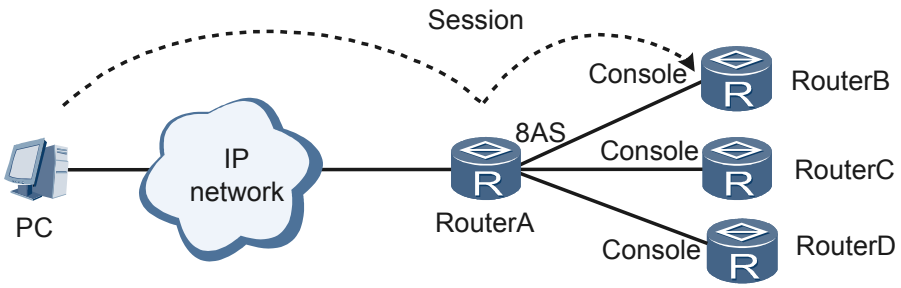
Figure 3-122 Using the redirection function to manage terminals



Functions and Features

Table 3-136 describes the functions and features of the 8AS.

Table 3-136 Functions and features of the 8AS

Function and Feature	Description
Asynchronous serial interface	Connects to the PSTN through a modem or functions as a serial port server to implement remote management for terminals.
Basic functions	Functions as a dialup access server for small- and medium-sized ISPs when asynchronous serial interfaces are used for dialup.
	Supports redirection to other devices when the asynchronous serial interface functions as a serial port server.
Interface rate	Supports a maximum of 115.2 kbit/s transmission rate for each asynchronous serial interface.
Protocols supported	● In protocol mode, the asynchronous serial interfaces support PPP and IP. ● In flow mode, the asynchronous serial interfaces do not support link layer protocols or IP.

Indicators and Interfaces

Indicators on the 8AS Panel

Figure 3-123 shows the indicators on the 8AS panel, and Table 3-137 describes the indicator states and meaning.

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Figure 3-123 Indicators on the 8AS panel

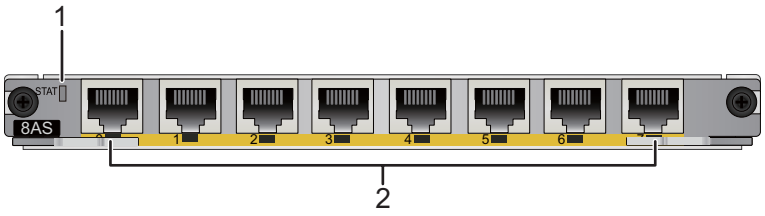


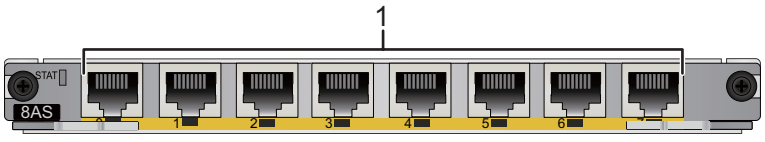
Table 3-137 Indicators on the 8AS panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK (interface status indicator)	Green	Steady on: A link has been established.
			Off: No link is established.

Description of Interfaces

Figure 3-124 shows the interfaces on the 8AS.

Figure 3-124 Interfaces on the 8AS



1. Eight asynchronous serial interfaces (RJ45)

Asynchronous serial interface

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An asynchronous serial interface is one of the most commonly used WAN interface. It can be used to establish an asynchronous leased line or is used for modem dial-up, data backup, or terminal access. **Table 3-138** describes the attributes of the asynchronous serial interface.

Table 3-138 Attributes of the asynchronous serial interface

Attribute	Description
Connector type	RJ45
Standards compliance and working mode	RS232
Minimum baud rate	600 bit/s
Maximum baud rate	115.2 kbit/s
Cable type	Customized RJ45 cable
Function	● Modem dial-up ● Backup ● Asynchronous leased line ● Terminal access
Cable type	**4.1.12 8AS Cable**

JTAG port

Figure 3-125 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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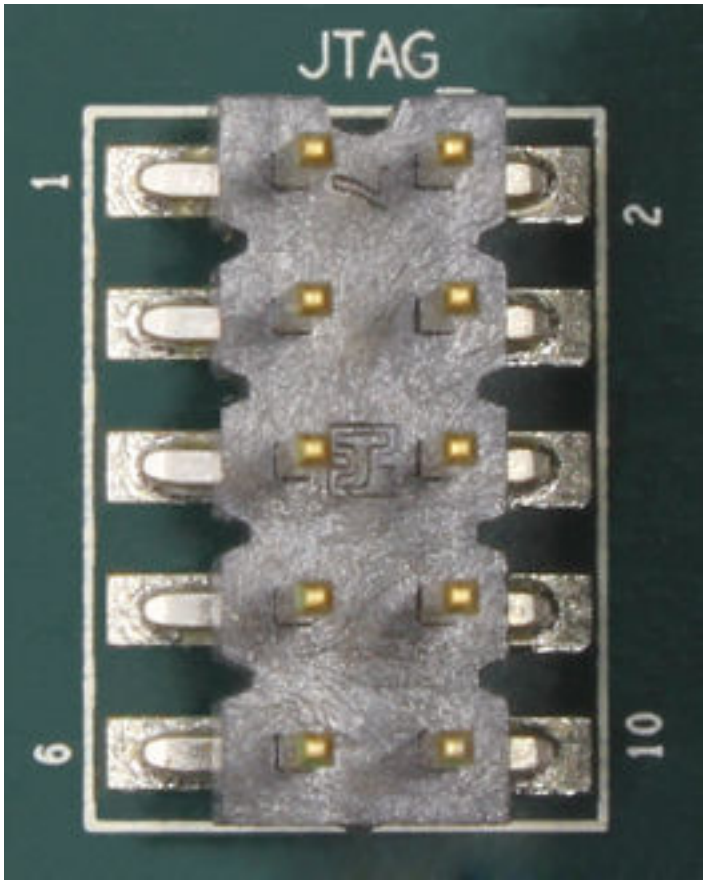
Figure 3-125 JTAG port



Technical Specifications

Table 3-139 describes the technical specifications of the 8AS.

Table 3-139 Technical specifications of the 8AS

Item	Specification
Card type	WSIC
External interfaces	Eight asynchronous serial interfaces
Standards compliance	RS232
Transmission rate	600 bit/s to 115200 bit/s
Connector type	RJ45
Cable	**4.1.12 8AS Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 4.7 W ● Weight: 0.6 kg (1.33 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To order the 8AS, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-140 provides the ordering information.

Table 3-140 Ordering information

Part Number	Card Name	Card Description
03020XBH	8AS	8-Port Async Serial Port Interface Card

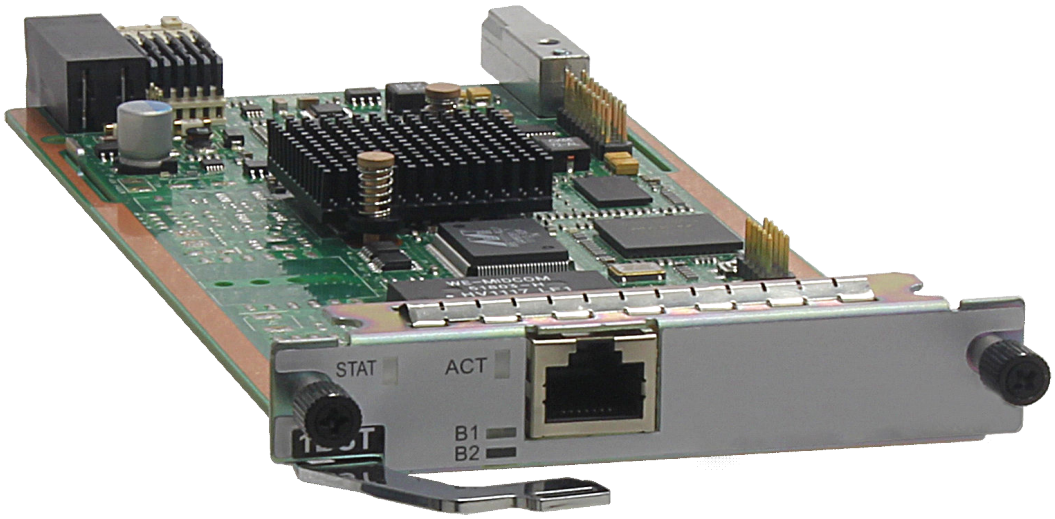
3.4.12 1BST (1-Port-ISDN S/T WAN Interface Card)

Card Overview

The 1BST is an ISDN SIC interface card that connects the enterprise headquarters and branches over the ISDN.

Figure 3-126 shows the appearance of the 1BST.

Figure 3-126 Appearance of the 1BST



Version Mapping

Table 3-141 describes the mapping between the 1BST and software versions.

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Table 3-141 Mapping between the 1BST and software versions

Card Name	AR1200 Series	AR2204 E Series	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
1BST **NOTE** V200R001C01 and later versions	Y	Y	Y	Y	Y	Y	Y

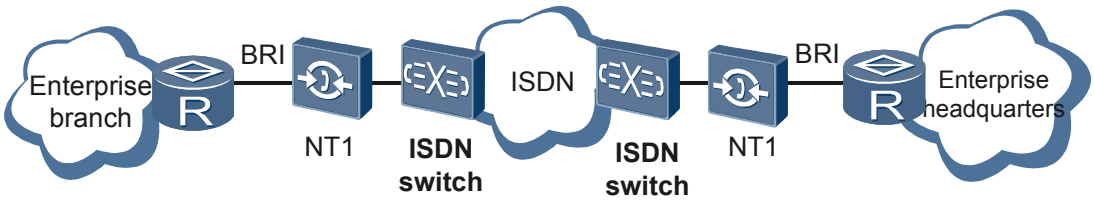
NOTE

Y: supported.

Application

As shown in **Figure 3-127**, an enterprise can use two modes to connect to the ISDN: BRI leased line and BRI interface dialup. The BRI leased line mode applies to the scenario where a large amount of data services need to be transmitted between the enterprise headquarters and branches. The BRI interface dialup mode applies to the scenario where a small number of data services or traffic bursts need to be transmitted between the enterprise headquarters and branches. You can select the two modes based on actual requirements.

Figure 3-127 1BST application



NOTE

NT1 implements the ISDN physical layer functions, including subscriber line transmission, loop detection, and D channel preemption.

Functions and Features

Table 3-142 describes the functions and features of the 1BST.

Table 3-142 Functions and features of the 1BST

Function and Feature	Description
One ISDN BRI interface	Connects to the ISDN through a Network Termination 1 (NT1) device.

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Function and Feature	Description
	Provides 64 kbit/s or 128 kbit/s connections.
Basic functions	Provides the TE mode to transmit data services.
	Allows you to connect to the ISDN through the BRI leased line or dialup, protecting investments.
Protocols supported	Supports PPP, FR, and IP.

Indicators and Interfaces

Indicators on the 1BST Panel

Figure 3-128 shows the indicators on the 1BST panel, and **Table 3-143** describes the indicator states and meaning.

Figure 3-128 Indicators on the 1BST panel

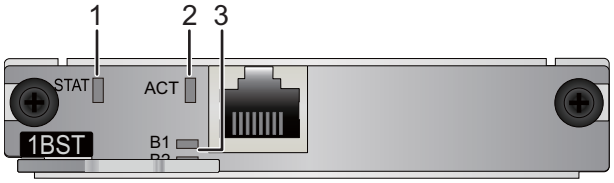

Table 3-143 Indicators on the 1BST panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT (interface status indicator)	Green	Stead on: The ISDN channel has been activated.
			Off: The ISDN channel in inactive.

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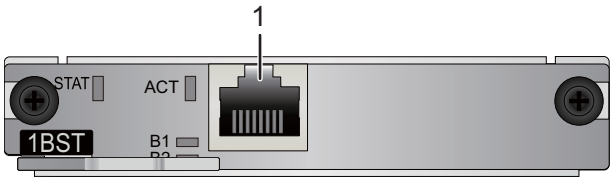
Number	Indicator	Color	Description
3	B1/B2	Green	Blinking: The B1/B2 channel is used.
			Off: The B1/B2 channel is idle.

Description of Interfaces

Figure 3-129 shows the interfaces on the 1BST.

Figure 3-129 Interfaces on the 1BST



1. One ISDN S/T interface

ISDN S/T interface

The ISDN S/T interface connects to the ISDN to transmit data services. **Table 3-144** describes the attributes of the ISDN S/T interface.

Table 3-144 Attributes of the ISDN S/T interface

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T I.430, Q.921, Q.931
Transmission rate	192 kbit/s
Bandwidth	0 to 100 MHz
Cable type	**Standard ISDN S/T Cable**

JTAG port

Figure 3-130 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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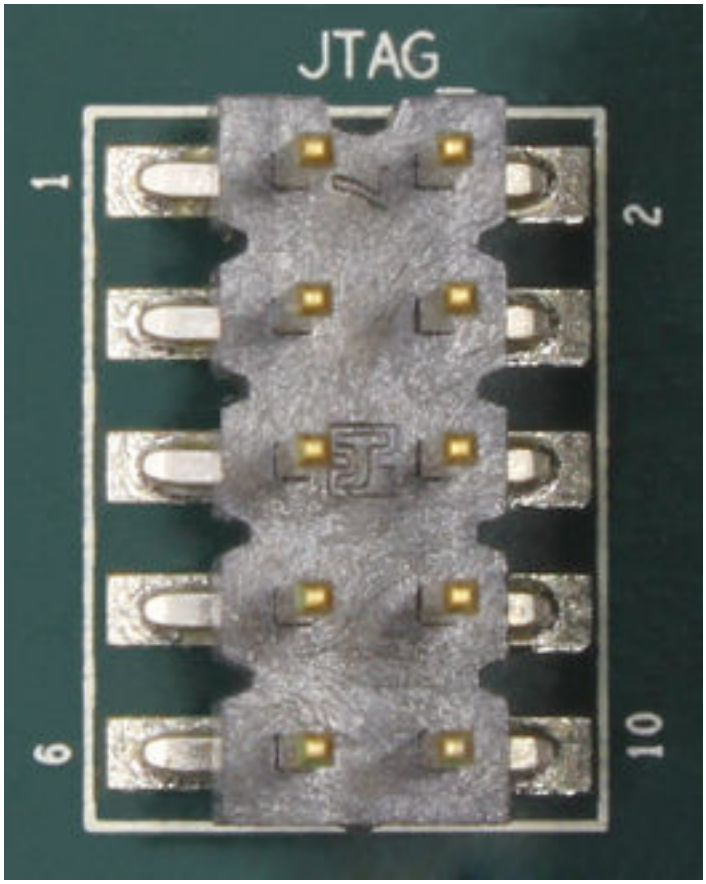
Figure 3-130 JTAG port



Technical Specifications

Table 3-145 describes the technical specifications of the 1BST.

Table 3-145 Technical specifications of the 1BST

Item	Specification
Card type	SIC
External interfaces	One ISDN S/T interface
Standards compliance	ITU-T I.430, Q.921, Q.931
Transmission rate	192 kbit/s
Connector type	RJ45
Cable	**Standard ISDN S/T Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: 7.4 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To order the 1BST, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-146 provides the ordering information.

Table 3-146 Ordering information

Part Number	Card Name	Card Description
03020YKE	1BST	1-Port ISDN S/T WAN Interface Card

3.4.13 1CPOS-155M (1-Port 155M Channelized POS Optical Interface Card)

Card Overview

NOTE

- 1: indicates one interface.
- C: indicates channelized interface.
- POS: is short for Packet Over SDH/SONET.
- 155M: indicates a rate of 155 Mbit/s.
- -W: WSIC

The 1CPOS is a WAN aggregation card and has two types: SIC and WSIC. An enterprise branch connects to the SDH through an E1 line, and the enterprise headquarters connects to the E1 line through the 1CPOS. By doing this, the enterprise headquarters and branch are connected through a WAN.

Table 3-147 describes the differences between two types of the 1CPOS.

Table 3-147 List of 1CPOS cards

Card Name	Slot
1CPOS-155M	SIC slot
1CPOS-155M-W	WSIC slot or XSIC slot **NOTE** In an XSIC slot, the WSIC card is installed in the lower part of the slot. The WSIC card uses the XSIC slot ID as its own slot ID.

Figure 3-131 shows the appearance of the 1CPOS-155M.

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Figure 3-131 Appearance of the 1CPOS-155M

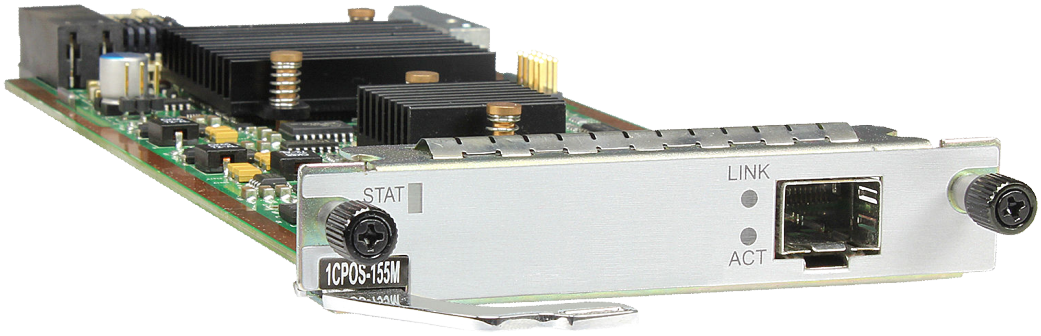

Figure 3-132 shows the appearance of the 1CPOS-155M-W.

Figure 3-132 Appearance of the 1CPOS-155M-W

Version Mapping

Table 3-148 describes the mapping between the 1CPOS-155M and software versions.

Table 3-148 Mapping between the 1CPOS-155M and software versions

Card Name	AR2204	AR2204E Series	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
1CPOS-155M **NOTE** Huawei will stop service on this card after June 30, 2014. V200R001C01 and later versions.	Y	Y	Y	Y	Y	Y

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Card Name	AR2204	AR2204E Series	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
1CPOS-155M-W **NOTE** This card is supported in V200R003C00 and later versions.	Y	N	Y	Y	Y	Y

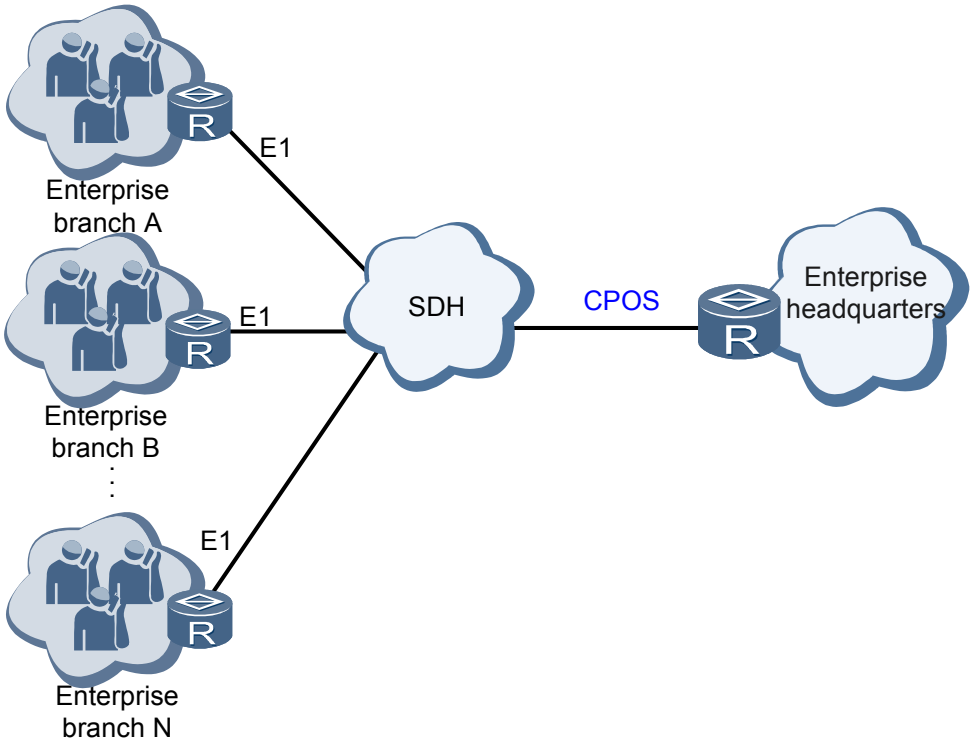
NOTE

Y: supported.

Application

As shown in **Figure 3-133**, enterprise branches connect to the SDH through E1 lines, and the enterprise headquarters uses the 1CPOS-155M to connect to the SDH. The 1CPOS-155M supports 63 E1 lines and its bandwidth ranges from 2 Mbit/s to 126 Mbit/s (63x2 Mbit/s). Its maximum bandwidth can reach 155 Mbit/s.

Figure 3-133 1CPOS-155M application



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Functions and Features

Table 3-149 describes the functions and features of the 1CPOS-155M.

Table 3-149 Functions and features of the 1CPOS-155M

Function and Feature	Description
One channelized POS interface	Supports 63 E1 channels or 84 T1 channels.
	Provides a maximum of 155 Mbit/s bandwidth.
Basic functions	Connects to the SDH to transmit services on multiple E1/T1 lines of branches.
	Flexibly selects bandwidth by bundling E1 channels and reduces enterprise operation costs.
Working mode	Works in channelized or non-channelized E1/T1 mode.
Protocols supported	Supports HDLC, PPP, and FR and a maximum of 1024 HDLC channels.

Indicators and Interfaces

Indicators on the 1CPOS-155M Panel

NOTE

The 1CPOS-155M and 1CPOS-155M-W have the same indicators except for having different card types. 1CPOS-155M-W is used as an example to describe the indicators.

Figure 3-134 shows the indicators on the 1CPOS-155M-W panel, and Table 3-150 describes the indicator states and meaning.

Figure 3-134 Indicators on the 1CPOS-155M-W panel

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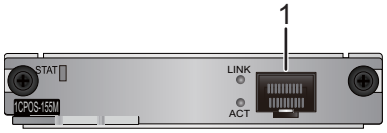
Table 3-150 Indicators on the 1CPOS-155M-W panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: A link has been established.
			Off: No link is established.
3	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Description of Interfaces

Figure 3-135 shows the interfaces on the 1CPOS-155M.

Figure 3-135 Interfaces on the 1CPOS-155M



1. One Channelized POS interface

Figure 3-136 shows the interfaces on the 1CPOS-155M-W.

Figure 3-136 Interfaces on the 1CPOS-155M-W

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1. One Channelized POS interface

Channelized POS interface

A Channelized POS interface transmits optical signals at a rate higher than 155 Mbit/s, **Table 3-151** describes the attributes of the Channelized POS interface.

Table 3-151 Attributes of the Channelized POS interface

Attribute	Specification
Connector type	LC/PC
Optical interface attribute	Optical modules supported: ● eSFP-SM1310-155M-2.5G-15km ● eSFP-1310nm-L-16.1 ● eSFP-1550nm-L-16.2 The optical interface attributes depend on the optical modules used. For details, see **POS Optical Module**.
Standards compliance	● ITUT G.707 SONET OC-3 ● ITUT G.707 SDH STM-1
Frame format	SDH/SONET
Network protocol	IP

JTAG port

Figure 3-137 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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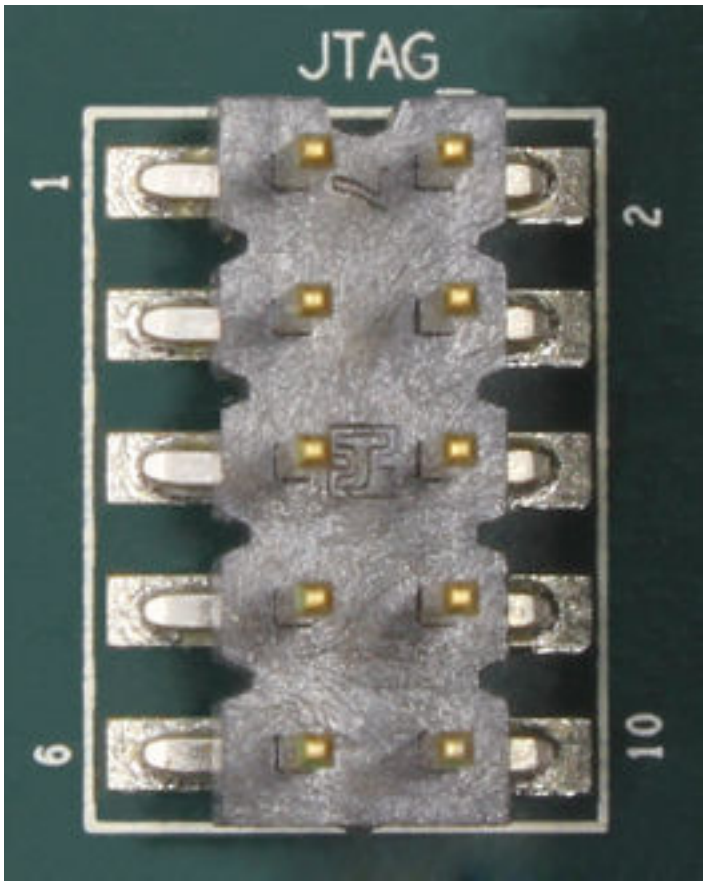
Figure 3-137 JTAG port



Technical Specifications

Table 3-152 describes the technical specifications of the 1CPOS-155M.

Table 3-152 Technical specifications of the 1CPOS-155M

Item	Specification
Card type	● 1CPOS-155M: SIC ● 1CPOS-155M-W: WSIC
External interfaces	One POS optical interface
Standards compliance	● ITUT G.707 SONET OC-3 ● ITUT G.707 SDH STM-1 ● Channelized E1: 63 channels ● Channelized T1: 84 channels ● AUG-1 supporting AU-3 and AU-4 (default) multiplexing ● 512 logical channels
Transmission rate	155 Mbit/s

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Item	Specification
Connector type	SFP
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth) – 1CPOS-155M: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 1CPOS-155M-W: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption – 1CPOS-155M: 11.9 W – 1CPOS-155M-W: 11.9 W ● Weight – 1CPOS-155M: 0.3 kg (0.66 lb) – 1CPOS-155M-W: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1CPOS-155M/1CPOS-155M-W, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-153 provides the ordering information.

Table 3-153 Ordering information

Part Number	Card Name	Card Description
03021AQU	1CPOS-155M	1-Port 155M Channelized POS Optical Interface Card
03021WWY	1CPOS-155M-W	1-Port 155M Channelized POS Optical Interface Card (WSIC)

3.4.14 3G-HSPA+7 (3G WCDMA HSPA+7 Interface Card)

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Card Overview

The 3G-HSPA+7 is a 3G access SIC card. It can function as the primary or backup link of an enterprise to connect to the Internet and transmit voice, video, and data services.

Figure 3-138 shows the appearance of the 3G-HSPA+7.

Figure 3-138 Appearance of the 3G-HSPA+7

Version Mapping

Table 3-154 describes the mapping between the 3G-HSPA+7 and software versions.

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Table 3-154 Mapping between the 3G-HSPA+7 and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204E Series	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
3G-HSPA+7 **NOTE** V200R002C01 and later versions	Y	Y	Y	Y	Y	Y	Y

NOTE

Y: supported.

应用

Functions and Features

Table 3-155 describes the functions and features of the 3G-HSPA+7.

Table 3-155 Functions and features of the 3G-HSPA+7

Function and Feature	Description
Basic functions	Functions as the primary or backup link of an enterprise to connect to the Internet and transmit enterprise communication services.
	Is often used as a backup link of a WAN, which improves reliability of the connection between the enterprise headquarters and branches.
Good 3G experience	Implements on-demand dialup and provides wireless QoS.
	Provides automatic search at different 3G frequency bands.
	Transmits voice services in PS/CS domains.
	Uses advanced wireless technologies and provides super high-speed 3G wireless experience.
Flexible wireless standards	Flexibly switches between 2G and 3G.
	Supports GSM, GPRS, EDGE, WCDMA, HSPA and HSPA+.
	Provides wireless solutions on LTE migration for carriers and enterprises.

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Indicators and Interfaces

Indicators on the 3G-HSPA+7 Panel

Figure 3-139 shows the indicators on the 3G-HSPA+7 panel, and Table 3-156 describes the indicator states and meaning.

Figure 3-139 Indicators on the 3G-HSPA+7 panel

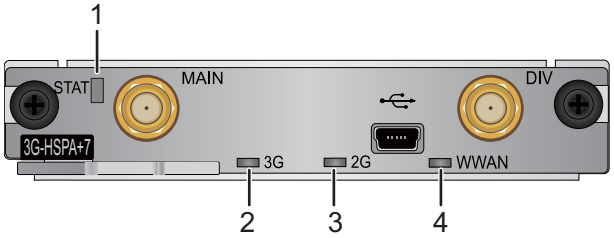

Table 3-156 Indicators on the 3G-HSPA+7 panel

Number	Indicator	Color	Description
1	STAT	Green	Stead on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	3G	Green	Stead on: The 3G signal strength is high. Slow blinking: The 3G signals strength is low. Fast blinking: The 3G signals strength is medium. Off: No 3G signal is available.

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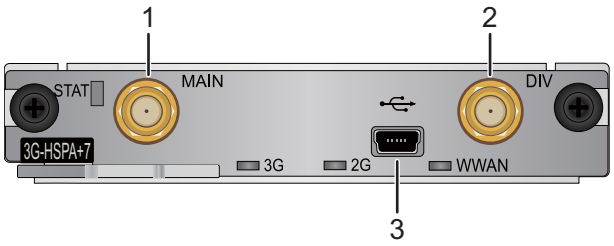
Number	Indicator	Color	Description
3	2G	Green	Stead on: The 2G signal strength is high. Slow blinking: The 2G signals strength is low. Fast blinking: The 2G signals strength is medium. Off: No 2G signal is available.
4	WWAN	Green	Stead on: The 3G/2G connection is being established or is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.

Description of Interfaces

Figure 3-140 shows the interfaces on the 3G-HSPA+7.

Figure 3-140 Indicators on the 3G-HSPA+7



1. One primary 3G antenna interface	2. One secondary 3G antenna interface	3. One Mini USB interface

3G-HSPA+7 antenna interface

The 3G-HSPA+7 antenna interface has a primary 3G antenna interface and a secondary 3G antenna interface. The two antenna interfaces on a device work together. The primary 3G antenna interface transmit and receive 3G service data, and the secondary 3G antenna interface assists the primary 3G antenna interface in receiving 3G service data. **Table 3-157** describes the attributes of the 3G-HSPA+7 antenna interface.

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Table 3-157 Attributes of the 3G-HSPA+7 antenna interface

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) HSPA+/HSUPA/HSDPA/WCDMA: 850/900/1900/2100 (MHz)
Rate	GSM CS: ● Upstream (Tx): 9.6 kbit/s ● Downstream (Rx): 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: ● Upstream (Tx): 64 kbit/s ● Downstream (Rx): 64 kbit/s WCDMA PS: ● Upstream (Tx): 384 kbit/s ● Downstream (Rx): 384 kbit/s HSPA: ● Upstream (Tx): 5.76 Mbit/s ● Downstream (Rx): 14.4 Mbit/s HSPA+: ● Upstream (Tx): 5.76 Mbit/s ● Downstream (Rx): 21 Mbit/s
Network protocol	GSM/GPRS/EDGE/WCDMA/HSPA/HSPA+
Cable type	**3G Antenna**

SIM card slot

Before installing a 3G-HSPA+7 card to a router, insert a WCDMA SIM card on the card. The SIM card should be installed in the SIM card slot on the rear side of the 3G-HSPA+7 card. For the installation method, see Replacing a SIM Card (on a Card).

Mini USB interface

The Mini USB interface is used to debug a 3G card. **Table 3-158** describes the attributes of the Mini USB interface.

Table 3-158 Attributes of the Mini USB interface

Attribute	Description
Connector type	MiniUSB-B-angle

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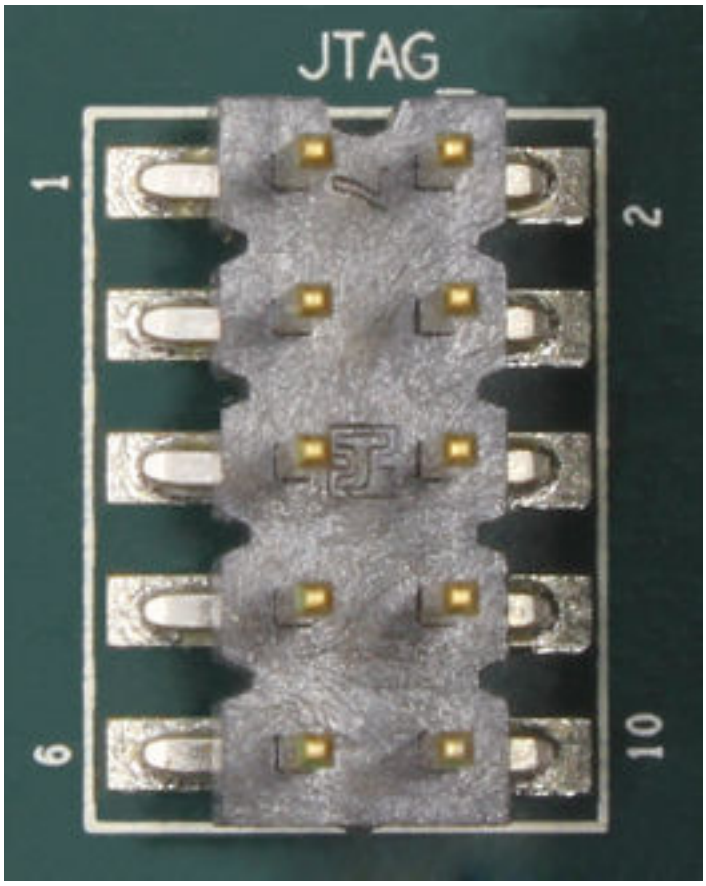
Attribute	Description
Standards compliance	USB2.0
Working mode	Device

JTAG port

Figure 3-141 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-141 JTAG port



Technical Specifications

Table 3-159 describes the technical specifications of the 3G-HSPA+7.

Table 3-159 Technical specifications of the 3G-HSPA+7

Item	Specification
Card type	SIC

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Item	Specification
External interfaces	Two 3G antenna interfaces and one Mini USB interface
Standards compliance	● GSM/GPRS/EDGE ● HSPA+/HSUPA/HSDPA/WCDMA
Transmission rate	GSM CS: ● Upstream (Tx): 9.6 kbit/s ● Downstream (Rx): 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: ● Upstream (Tx): 64 kbit/s ● Downstream (Rx): 64 kbit/s WCDMA PS: ● Upstream (Tx): 384 kbit/s ● Downstream (Rx): 384 kbit/s HSPA: ● Upstream (Tx): 5.76 Mbit/s ● Downstream (Rx): 14.4 Mbit/s HSPA+: ● Upstream (Tx): 5.76 Mbit/s ● Downstream (Rx): 21 Mbit/s
Connector type	SMA RF
Cable	**3G Antenna**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: 7 W ● Weight: 0.2 kg (0.44 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

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Item	Specification
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 3G-HSPA+7, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-160 provides the ordering information.

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Table 3-160 Ordering information

Part Number	Card Name	Card Description
02310JVX	3G-HSPA+7	3G WAN interface card

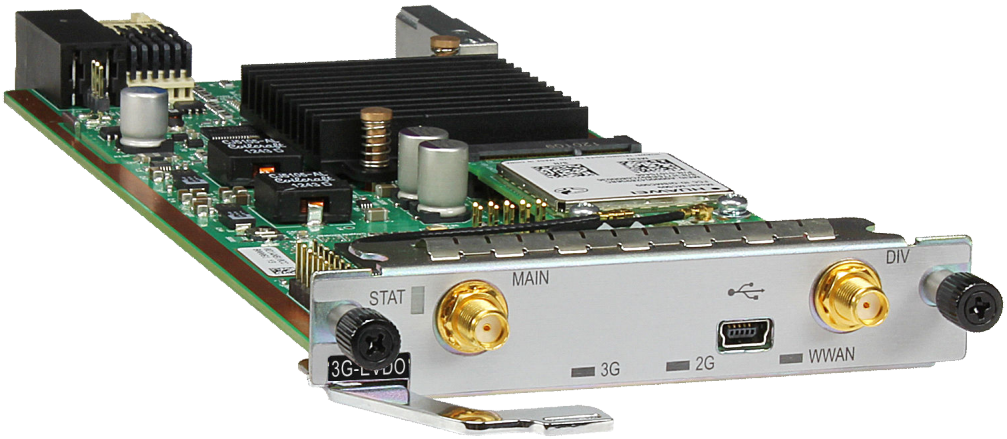
3.4.15 3G-EVDO (3G CDMA2000 EVDO Interface Card)

Card Overview

The 3G-EVDO is a CDMA2000 network access module, It is installed in a SIC slot to provide high-speed wireless data transmission, enabling enterprise users to connect to CDMA2000 networks.

Figure 3-142 shows the appearance of a 3G-EVDO card.

Figure 3-142 3G-EVDO card appearance



Version Mapping

Table 3-161 describes the mapping between the 3G-EVDO card and software versions of different product models.

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Table 3-161 Mapping between the 3G-EVDO card and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204E Series	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
3G-EVDO **NOTE** This card is supported in V200R005C00 and later versions.	Y	Y	Y	Y	Y	Y	Y

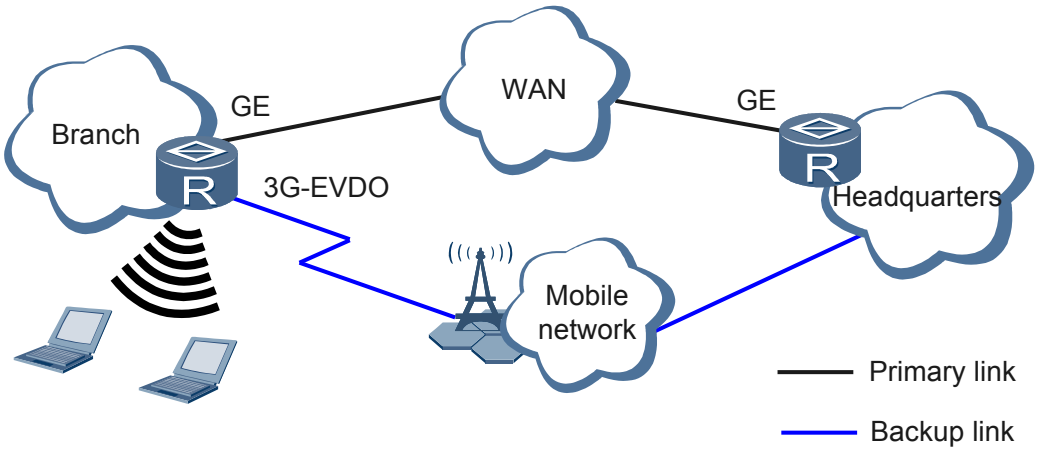
NOTE

Y: supported.

Application

As shown in **Figure 3-143**, an enterprise's headquarters and branch networks connect to the WAN through GE interfaces and connect to a 3G network through 3G-EVDO interfaces. The WAN link is the primary link, and the 3G link is the backup link. When the primary link fails, service data is transmitted over the 3G backup link. The use of 3G-EVDO cards improves communication reliability between the enterprise headquarters and branch.

Figure 3-143 3G-EVDO card application



Functions and Features

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Table 3-162 describes functions and features of a 3G-EVDO card.

Table 3-162 Functions and features of a 3G-EVDO card

Function and Feature	Description
Basic functions	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
	Provides a primary link for Internet access.
Excellent 3G experience	Provides wireless QoS guarantee through the dial-on-demand function.
	Automatically scans different 3G frequency bands.
	Delivers fast 3G access service using industry-leading wireless technologies.
Flexible wireless format	Flexibly switches between 2G and 3G formats.
	Complies with CDMA2000 1X, CDMA2000 EV-DO Rev 0, and CDMA2000 EV-DO Rev A.
	Provides CDMA2000 wireless access solution for carriers and enterprises.

Indicators and Interfaces

Indicator Description

Figure 3-144 shows indicators on a 3G-EVDO card, Table 3-163 describes the indicator states and meaning.

Figure 3-144 Indicators on a 3G-EVDO card

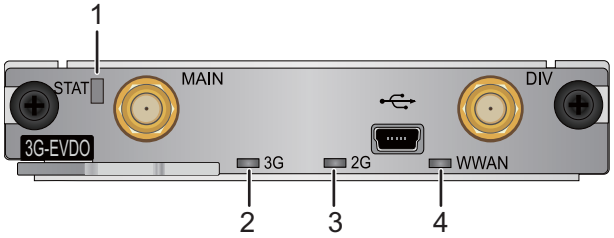

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Table 3-163 3G-EVDO card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	3G	Green	Steady on: The 3G signal strength is high. Slow blinking: The 3G signal strength is low. Fast blinking: The 3G signal strength is medium. Off: No 3G signal is available.
3	2G	Green	Steady on: The 2G signal strength is high. Slow blinking: The 2G signal strength is low. Fast blinking: The 2G signal strength is medium. Off: No 2G signal is available.
4	WWAN	Green	Steady on: The 3G/2G connection has been set up and is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.

Interface Description

Figure 3-145 shows interfaces on a 3G-EVDO card.

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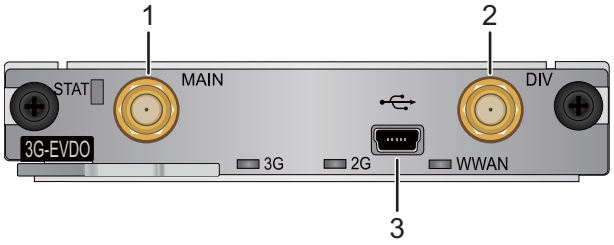
Figure 3-145 Interfaces on a 3G-EVDO card



1. One 3G primary antenna interface	2. One 3G secondary antenna interface	3. One Mini USB interface

3G-EVDO antenna interfaces

The 3G-EVDO antenna interfaces have a primary 3G antenna interface and a secondary 3G antenna interface. The primary 3G antenna transmits and receives 3G service data, and the secondary 3G antenna interface assists the primary 3G antenna interface in receiving 3G service data. **Table 3-164** describes the 3G-EVDO antenna interface attributes.

Table 3-164 3G-EVDO antenna interface attributes

Attribute	Description
Connector type	SMA RF
Standards compliance and frequency bands supported	CDMA2000 1x, CDMA2000 1x/EVDO Rev.0, CDMA2000 1x/EVDO Rev A: 800/1900 (MHz)
Rate	CDMA2000 1X: ● Uplink: 153.6 kbit/s ● Downlink: 153.6 kbit/s CDMA2000 1X/EVDO Rev.0: ● Uplink: 153.6 kbit/s ● Downlink: 2.4 Mbit/s CDMA2000 1X/EVDO Rev A: ● Uplink: 1.8 Mbit/s ● Downlink: 3.1 Mbit/s
Network protocol	CDMA2000
Cable type	**3G Antenna**

SIM card slot

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Before installing a 3G-EVDO card to a router, insert a CDMA2000 SIM card on the card. The SIM card should be installed in the SIM card slot on the rear side of the 3G-EVDO card. For the installation method, see Replacing a SIM Card (on a Card).

Mini USB interface

The Mini USB interface is used to debug a 3G card. **Table 3-165** describes the attributes of the Mini USB interface.

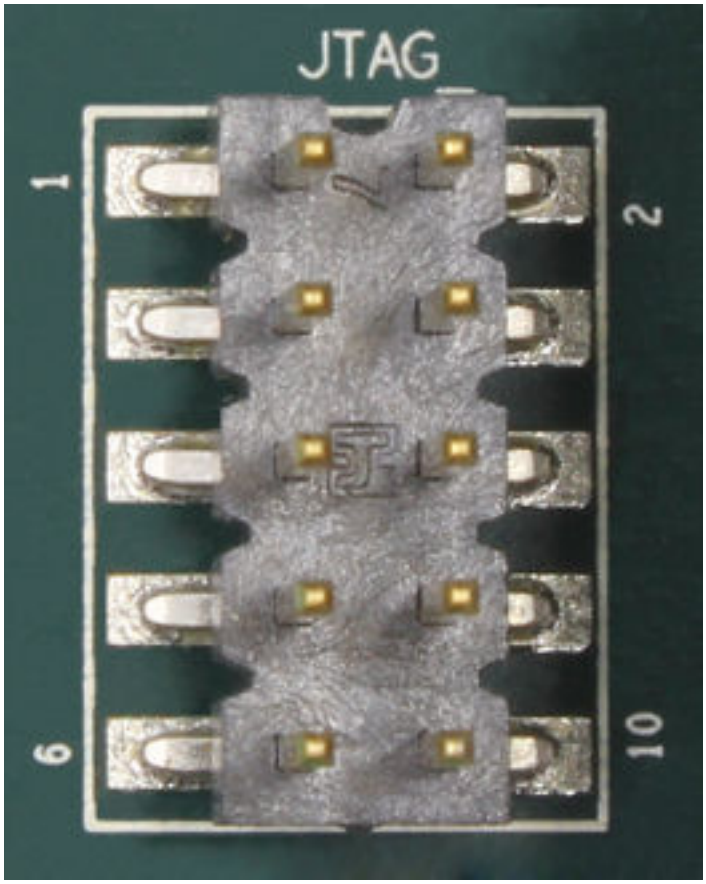
Table 3-165 Attributes of the Mini USB interface

Attribute	Description
Connector type	MiniUSB-B-angle
Standards compliance	USB2.0
Working mode	Device

JTAG port

Figure 3-146 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-146 JTAG port



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Technical Specifications

Table 3-166 lists technical specifications of a 3G-EVDO card.

Table 3-166 3G-EVDO card technical specifications

Item	Specification
Card type	SIC
External interface	Two 3G RF antenna interfaces and one Mini USB interfaces
Standards compliance	● 3G RF antenna interface standards: CDMA2000 1X, CDMA2000 1X/EVDO Rev.0, and CDMA2000 1X/EVDO Rev A ● Mini USB interface standards: USB2.0
Interface speed	CDMA2000 1X: ● Uplink: 153.6 kbit/s ● Downlink: 153.6 kbit/s CDMA2000 1X/EVDO Rev.0: ● Uplink: 153.6 kbit/s ● Downlink: 2.4 Mbit/s CDMA2000 1X/EVDO Rev A: ● Uplink: 1.8 Mbit/s ● Downlink: 3.1 Mbit/s
Connector type	SMA RF
Cable	**3G Antenna**
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 9.2 in. x 0.78 in.) ● Maximum power consumption: 7 W ● Weight: 0.2 kg (0.44 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

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Item	Specification
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-167 provides the ordering information.

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Table 3-167 3G-EVDO ordering information

Part Number	Card Name	Card Description
03021WXB	3G-EVDO	3G EVDO interface card

3.4.16 1LTE-H/1LTE-L/1LTE-LV (WCDMA LTE Data Card)

Card Overview

The 1LTE-H, 1LTE-L, and 1LTE-LV is a wireless high-speed WAN access module. It is installed in a SIC slot to provide high-speed wireless data transmission, enabling enterprise users to connect to Long Term Evolution (LTE) networks.

NOTE

The 1LTE-H and 1LTE-L cards have the same appearance but different silkscreens. The following figure shows a 1LTE-L card as an example.

Figure 3-147 shows the appearance of a 1LTE-L card.

Figure 3-147 1LTE-L appearance

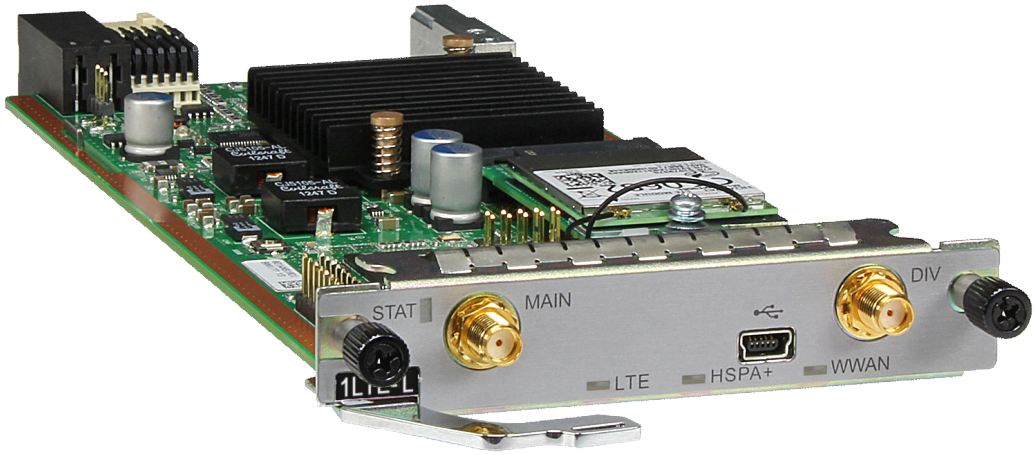

Figure 3-148 shows the appearance of the 1LTE-LV card.

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Figure 3-148 1LTE-LV appearance

Version Mapping

Table 3-168 describes the mapping between the 1LTE-H, 1LTE-L, 1LTE-LV card and software versions of different product models.

Table 3-168 Mapping between the 1LTE-H, 1LTE-L, 1LTE-LV card and software versions

Card Name	AR1200 Series (Except AR1220E Series, AR1220C)	AR1220E Series AR2204E Series	AR2204	AR2220E AR2240C	AR2220 AR2240	AR3260	AR3670
1LTE-H **NOTE** This card is supported only in V200R005C00.	Y	N	Y	N	Y	Y	N
1LTE-L **NOTE** This card is supported in V200R005C00 and later versions	Y	Y	Y	Y	Y	Y	Y

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Card Name	AR1200 Series (Except AR1220E Series, AR1220C)	AR1220E Series AR2204E Series	AR2204	AR2220E AR2240C	AR2220 AR2240	AR3260	AR3670
1LTE-LV **NOTE** This card is supported in V200R007C00 and later versions	Y	Y	Y	Y	Y	Y	Y

NOTE

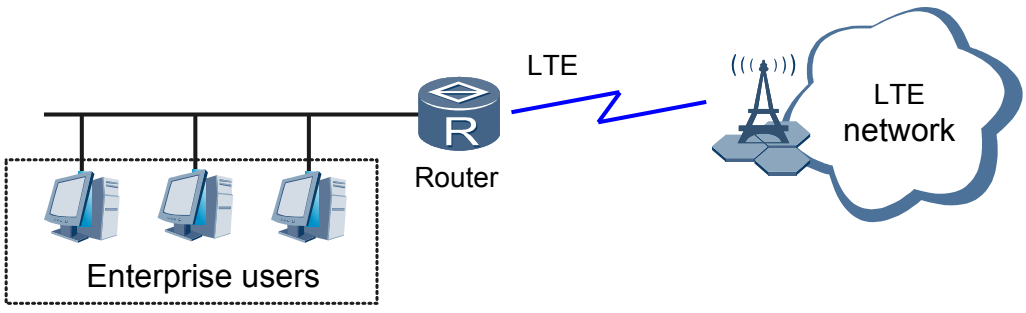
- Y: supported
- N: not supported

Application

Connecting to an LTE Network

As shown in **Figure 3-149**, enterprise users can connect to an LTE network through an LTE card. The LTE card provides fast, secure, reliable wireless access service for enterprise users.

Figure 3-149 LTE network access



Providing a Backup Link for Interconnection

As shown in **Figure 3-150**, an enterprise's headquarters and branch networks connect to the WAN through GE interface cards and connect to an LTE network through LTE cards. The WAN link is the primary link, and the LTE link is the backup link. When the primary link

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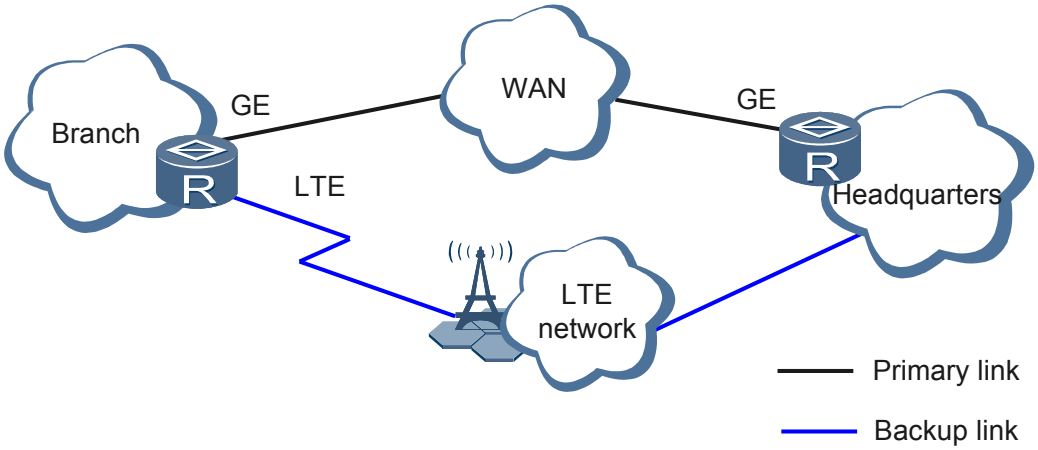
fails, service data is transmitted over the backup link. The use of LTE cards improves communication reliability between the enterprise headquarters and branch.

Figure 3-150 LTE link as a backup link



Functions and Features

Table 3-169 describes functions and features of the LTE card.

Table 3-169 Functions and features of the LTE card

Function and Feature	Description
Basic functions	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	Supports LTE frequency division duplex (FDD) and provides up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate.
Excellent 4G experience	Provides wireless QoS guarantee through the dial-on-demand function.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless format	Backward compatible with 3G services.
	Supports LTE FDD, DC-HSPA+, HSPA+, HSPA, WCDMA.
	Provides 4G wireless access solution for carriers and enterprises.

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Function and Feature	Description
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Indicators and Interfaces

NOTE

1LTE-L and 1LTE-H cards have the same indicators and interfaces. A 1LTE-L card is used as an example here.

Indicator Description

Figure 3-151 shows indicators on a 1LTE-L card, and Table 3-170 describes the indicator states and meaning.

Figure 3-151 Indicators on a 1LTE-L card

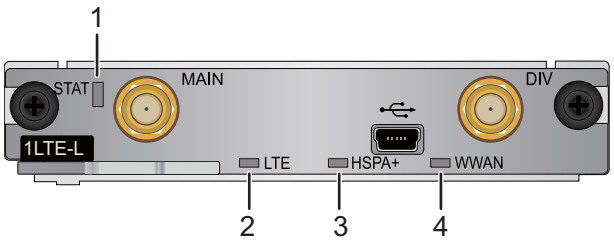

Table 3-170 1LTE-L card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	The software is not running or the card is resetting.

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Number	Indicator	Color	Description
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	HSPA+	Green	Steady on: The High Speed Packet Access plus (HSPA+) signal strength is high. Fast blinking: The HSPA+ signal strength is medium. Slow blinking: The HSPA+ signal strength is low. Off: No HSPA+ signal is available.
4	WWAN	Green	Steady on: An LTE or HSPA+ link has been set up and is active. Blinking: Data is being transmitted or received over the LTE or HSPA+ link connection. Off: The LTE or HSPA+ link has not been set up and is inactive.

Figure 3-152 shows indicators on the 1LTE-LV panel, and **Table 3-171** describes the indicator states and meanings.

Figure 3-152 Indicators on the 1LTE-LV panel

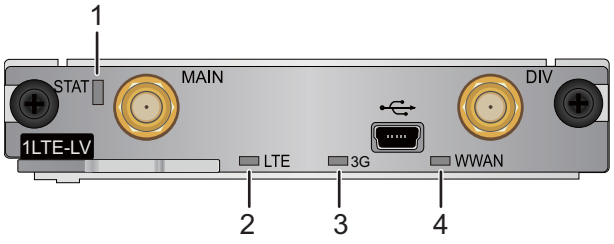

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Table 3-171 Indicators on the 1LTE-LV panel

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Interface Description

Figure 3-153 shows interfaces on the 1LTE-L card.

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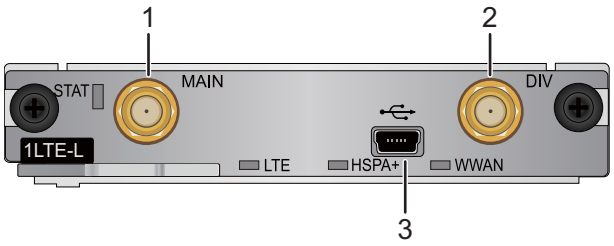
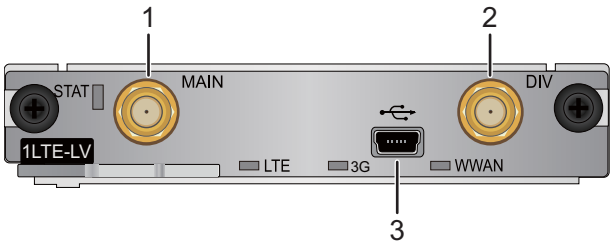
Figure 3-153 Interfaces on the 1LTE-L card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Mini USB interface

Figure 3-154 shows interfaces on the 1LTE-LV card.

Figure 3-154 Interfaces on the 1LTE-LV card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Mini USB interface

LTE antenna interfaces

The LTE antenna interfaces have a primary LTE antenna interface and a secondary LTE antenna interface. The two antenna interfaces work together. The primary interface transmits and receives LTE signals, and the secondary interface helps improve the quality of received LTE signals. **Table 3-172** lists attributes of an LTE antenna interface.

Table 3-172 LTE antenna interface attributes

Attribute	Description
Connector type	SMA RF

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Attribute	Description
Standards compliance and frequency bands supported	● 1LTE-H/1LTE-L: – LTE FDD: Band 1/2/3/5/7/8/20 – GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) – WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8 ● 1LTE-LV: – LTE FDD: Band 2/4/5/17 – DC-HSPA+/HSPA+/HSPA/WCDMA: Band B2/B4/B5
Rate	● 1LTE-H/1LTE-L: – Global System for Mobile Communications circuit switched (GSM CS): 14.4 kbit/s uplink rate and 14.4 kbit/s downlink rate – General packet radio service (GPRS): 85.6 kbit/s uplink rate and 85.6 kbit/s downlink rate – Enhanced Data Rates for GSM Evolution (EDGE): 236.8 kbit/s uplink rate and 236.8 kbit/s downlink rate – Wideband Code Division Multiple Access (WCDMA) CS: 64 kbit/s uplink rate and 64 kbit/s downlink rate – WCDMA packet switched (PS): 384 kbit/s uplink rate and 384 kbit/s downlink rate – HSPA+: 5.76 Mbit/s uplink rate and 21.6 Mbit/s downlink rate – DC-HSPA+: 5.76 Mbit/s uplink rate and 42 Mbit/s downlink rate – LTE FDD: 50 Mbit/s uplink rate and 100 Mbit/s downlink rate ● 1LTE-LV: – WCDMA packet switched (PS): 384 kbit/s uplink rate and 384 kbit/s downlink rate – DC-HSPA+: 5.76 Mbit/s uplink rate and 42 Mbit/s downlink rate – LTE FDD: 50 Mbit/s uplink rate and 100 Mbit/s downlink rate
Network protocol	LTE FDD, DC-HSPA+, HSPA+, HSPA, WCDMA
Cable type	**LTE Antenna**

SIM card slot

Before installing an LTE card to a router, insert an LTE FDD SIM card on the card. The SIM card should be installed in the SIM card slot on the rear side of the LTE card. For the installation method, see Replacing a SIM Card (on a Card).

Mini USB interface

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The Mini USB interface on an LTE card is used to commission the LTE module. **Table 3-173** lists attributes of a Mini USB interface.

Table 3-173 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

Technical Specifications

Table 3-174 lists technical specifications of a LTE card.

Table 3-174 LTE card technical specifications

Item	Specification
Card type	SIC
External interface	One primary LTE antenna interface, one secondary LTE antenna interface, and one MiniUSB interface.
Standards compliance	LTE FDD, DC-HSPA+, HSPA+, HSPA, WCDMA
Interface speed	LTE FDD: ● Uplink: 50 Mbit/s ● Downlink: 100 Mbit/s
Connector type	SMA RF
Cable	**LTE Antenna**
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 9.2 in. x 0.78 in.) ● Maximum power consumption: 7 W ● Weight: 0.2 kg (0.44 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

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Item	Specification
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-175 provides the ordering information.

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Table 3-175 LTE-L ordering information

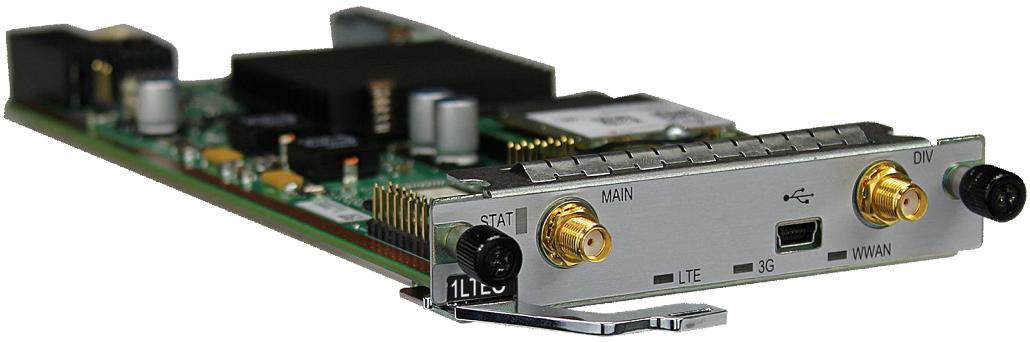
Part Number	Card Name	Card Description
03021WXD	1LTE-L	WCDMA LTE data card
03023CNG	1LTE-LV	WCDMA LTE data card

3.4.17 1LTEC (TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card)

Card Overview

Figure 3-155 shows the appearance of the 1LTEC card.

Figure 3-155 Appearance of the 1LTEC card



Version Mapping

Table 3-176 describes the mapping between the 1LTEC card and software versions.

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Table 3-176 Mapping between the 1LTEC card and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204E Series	AR2204 AR2220 AR2220E	AR2240 AR2240C	AR3200 Series	AR3600 Series
1LTEC **NOTE** This card is supported in V200R006C10 and later versions.	Y	Y	Y	Y	Y	Y

NOTE

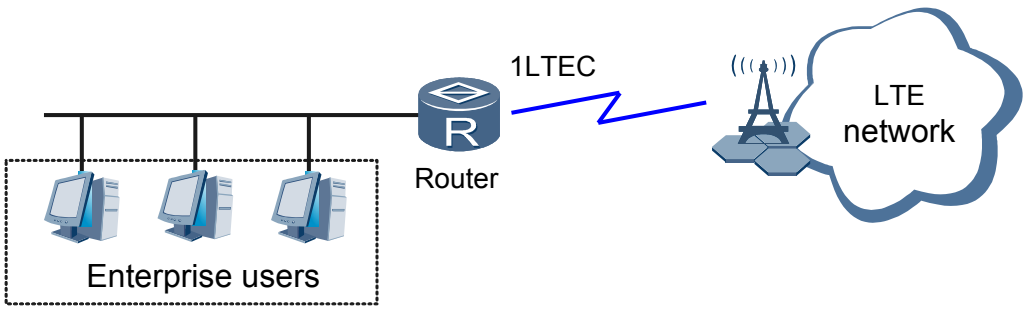
Y: supported

Application

Connecting to an LTE Network

As shown in **Figure 3-156**, enterprise users can connect to an LTE network through a 1LTEC card. The 1LTEC card provides fast, secure, reliable wireless access service for enterprise users.

Figure 3-156 LTE network access



Providing a Backup Link for LTE Network Connection

As shown in **Figure 3-157**, an enterprise's headquarters and branch networks connect to the WAN through GE interface cards and connect to an LTE network through 1LTEC cards. The WAN link is the primary link, and the LTE link is the backup link. When the primary link fails, service data is transmitted over the backup link. The use of 1LTEC cards improves communication reliability between the enterprise headquarters and branch.

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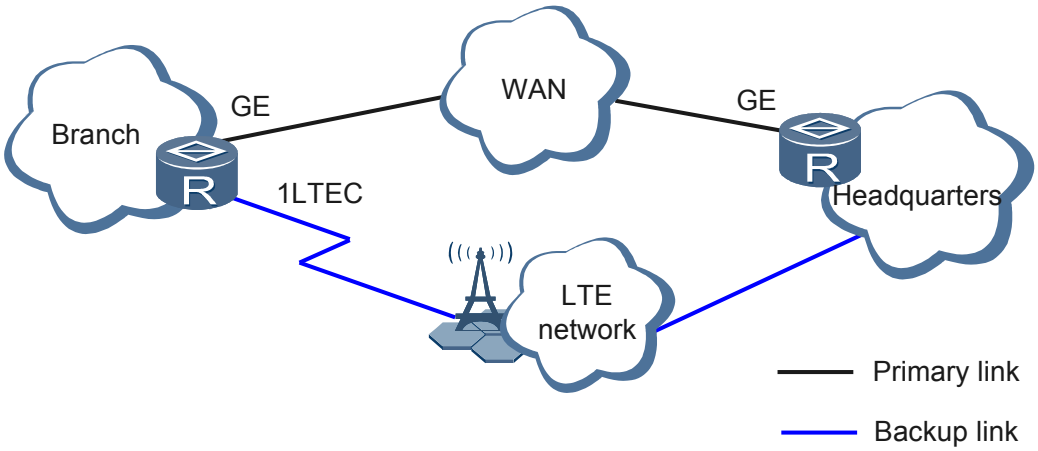
Figure 3-157 LTE link as a backup link



Functions and Features

Table 3-177 describes functions and features of the 1LTEC card.

Table 3-177 Functions and features of the 1LTEC card

Function and Feature	Description
Basic functions	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	● Supports LTE frequency division duplex (FDD LTE) and provides up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate. ● Supports LTE time division duplex (TDD LTE) and provides up to 18 Mbit/s uplink rate and 61 Mbit/s downlink rate.
Excellent 4G experience	Provides wireless QoS guarantee through the dial-on-demand function.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless format	Backward compatible with 3G services.
	Supports FDD LTE, TDD LTE, HSPA+, TD-SCDMA, and GSM protocols.

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Function and Feature	Description
	Provides 4G LTE wireless access solutions for carriers and enterprises.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Indicators and Interfaces

Indicator Description

Figure 3-158 shows indicators on the 1LTEC panel, and Table 3-178 describes the indicator states and meanings.

Figure 3-158 Indicators on the 1LTEC panel

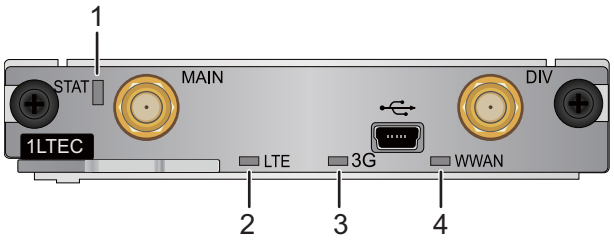

Table 3-178 Indicators on the 1LTEC panel

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The system software is not running or is resetting.

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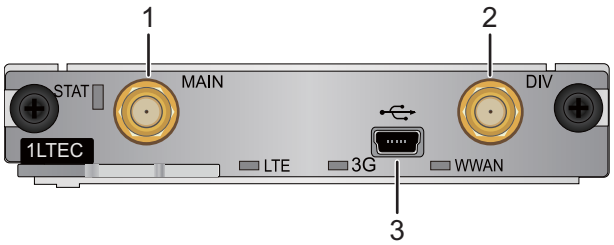
Number	Indicator	Color	Description
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Interface Description

Figure 3-159 shows interfaces on the 1LTEC card.

Figure 3-159 Interfaces on the 1LTEC card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Mini USB interface

LTE antenna interface

A 1LTEC card has two LTE antenna interfaces, one primary interface and one secondary interface. The two interfaces work together. The primary interface transmits and receives LTE

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signals, and the secondary interface helps improve the quality of received LTE signals. **Table 3-179** lists the attributes of an LTE antenna interface.

Table 3-179 LTE antenna interface attributes

Attribute	Specification
Connector type	SMA RF
Standards compliance and frequency bands supported	● FDD LTE: Band 1/3/8 ● TDD LTE: Band 38/39/40/41 ● DC-HSPA+/HSPA+/UMTS: Band 1/2/5/8 ● TD-SCDMA: Band 34/39 ● GSM/GPRS/EDGE: 900/1800/1900 (MHz)
Rate	● FDD LTE: 50 Mbit/s uplink rate and 100 Mbit/s downlink rate ● TDD LTE: 18 Mbit/s uplink rate and 61 Mbit/s downlink rate ● HSPA+: 5.76 Mbit/s uplink rate and 21.6 Mbit/s downlink rate ● DC-HSPA+: 5.76 Mbit/s uplink rate and 42 Mbit/s downlink rate ● TD-SCDMA: 384 kbit/s uplink rate and 384 kbit/s downlink rate ● TD-HSPA+: 2.2 Mbit/s uplink rate and 4.2 Mbit/s downlink rate ● GPRS: 85.6 kbit/s uplink rate and 85.6 kbit/s downlink rate ● Enhanced Data Rates for GSM Evolution (EDGE): 236.86 kbit/s uplink rate and 236.8 kbit/s downlink rate ● WCDMA circuit switched (CS): 64 kbit/s uplink rate and 64 kbit/s downlink rate ● WCDMA packet switched (PS): 384 kbit/s uplink rate and 384 kbit/s downlink rate
Network protocol	FDD LTE, TDD LTE , DC-HSPA+, HSPA+, UMTS, TD-SCDMA, and GSM
Cable type	**LTE Antenna**

SIM card slot

Before installing a 1LTEC card to a router, insert a SIM card complying with FDD LTE, TDD LTE, HSPA+, TD-SCDMA, or GSM in the 1LTEC card. The SIM card should be installed in the SIM card slot on the rear side of the 1LTEC card. For the installation method, see Replacing a SIM Card (on a Card).

Mini USB interface

The Mini USB interface on an LTE card is used to commission the LTE module. **Table 3-180** lists attributes of a Mini USB interface.

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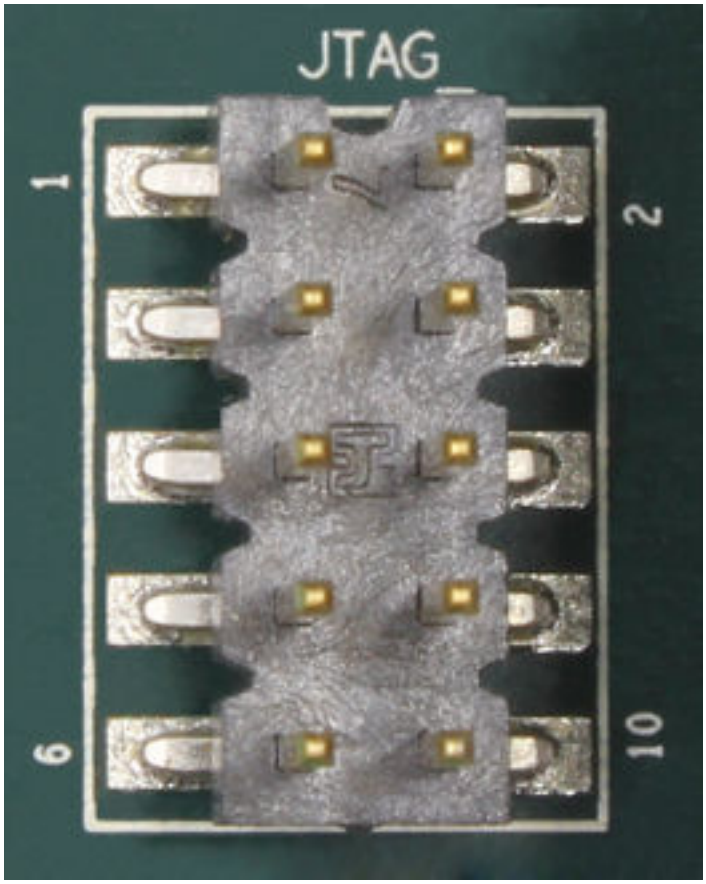
Table 3-180 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

JTAG interface

Figure 3-160 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-160 JTAG port



Technical Specifications

Table 3-181 lists technical specifications of the 1LTEC card.

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Table 3-181 Technical specifications of the 1LTEC card

Item	Specification
Card type	SIC
External interfaces	One primary LTE antenna interface, one secondary LTE antenna interface, and one Mini USB interface.
Standards compliance	FDD LTE, TDD LTE, HSPA+, TD-SCDMA, and GSM
Interface rate	● FDD LTE: 50 Mbit/s uplink rate and 100 Mbit/s downlink rate ● TDD LTE: 18 Mbit/s uplink rate and 61 Mbit/s downlink rate ● HSPA+: 5.76 Mbit/s uplink rate and 21.6 Mbit/s downlink rate ● DC-HSPA+: 5.76 Mbit/s uplink rate and 42 Mbit/s downlink rate ● TD-SCDMA: 384 kbit/s uplink rate and 384 kbit/s downlink rate ● TD-HSPA+: 2.2 Mbit/s uplink rate and 4.2 Mbit/s downlink rate ● GPRS: 85.6 kbit/s uplink rate and 85.6 kbit/s downlink rate ● Enhanced Data Rates for GSM Evolution (EDGE): 236.86 kbit/s uplink rate and 236.8 kbit/s downlink rate ● WCDMA circuit switched (CS): 64 kbit/s uplink rate and 64 kbit/s downlink rate ● WCDMA packet switched (PS): 384 kbit/s uplink rate and 384 kbit/s downlink rate
Connector type	SMA RF
Cables	**LTE Antenna**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 10.1 W ● Weight: 0.2 kg (0.44 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

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Item	Specification
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-182 provides the ordering information.

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Table 3-182 Ordering information

Part Number	Card Name	Card Description
03022STS	1LTEC	TDD LTE/FDD LTE/HSPA+/TD-SCDMA/GSM Data Card

3.4.18 4GEW-T (4-Port 1000BASE-RJ45-L3 Ethernet WAN Interface Card)

Card Overview

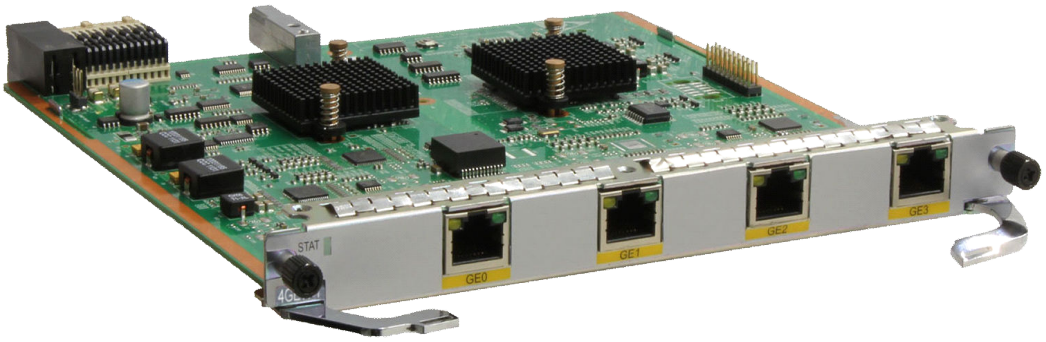
NOTE

- 4: indicates four interfaces.
- GE: indicates 1000M Ethernet.
- W: indicates WAN interface card.
- T: indicates the electrical interface.

The 4GEW-T is a high-speed WAN access module and provides four GE electrical interfaces to connect to a WAN, which improves network reliability and increases bandwidth.

Figure 3-161 shows the appearance of the 4GEW-T.

Figure 3-161 Appearance of the 4GEW-T



Version Mapping

Table 3-183 describes the mapping between the 4GEW-T and software versions.

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Table 3-183 Mapping between the 4GEW-T and software versions

Card Name	AR1200 Series (Except AR1220E Series)	AR2204 AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
4GEW-T **NOTE** V200R002C01 and later versions	Y	Y	Y	Y	Y

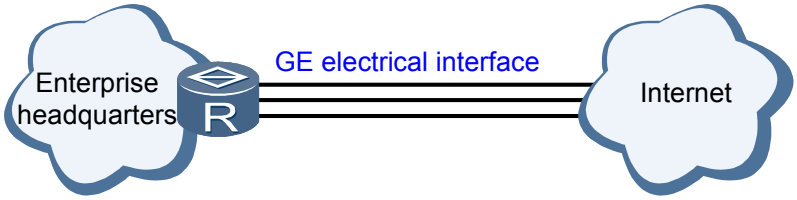
NOTE

Y: supported

Application

As shown in **Figure 3-162**, the enterprise headquarters uses two GE electrical interfaces to connect to the Internet, which improves network reliability and increases bandwidth.

Figure 3-162 WAN uplink



Functions and Features

Table 3-184 describes the functions and features of the 4GEW-T.

Table 3-184 Functions and features of the 4GEW-T

Function and Feature	Description
Four GE electrical interfaces	The four GE electrical interfaces can connect to a WAN, which improves network reliability and increases bandwidth.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Indicators and Interfaces

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Indicators on the 4GEW-T Panel

Figure 3-163 shows the indicators on the 4GEW-T panel, and **Table 3-185** describes the indicator states and meaning.

Figure 3-163 Indicators on the 4GEW-T panel

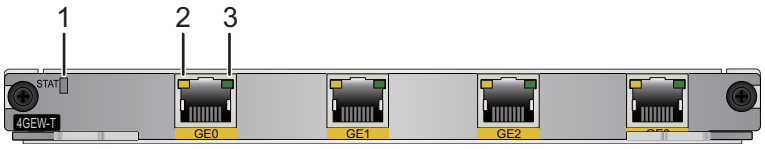


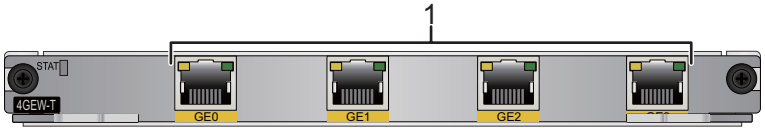
Table 3-185 Indicators on the 4GEW-T panel

Number	Indicator	Color	Description
1	STAT	Green	Stead on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	GE electrical interface indicators: ● 3: LINK indicator. ● 2: ACT indicator.	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Description of Interfaces

Figure 3-164 shows the interfaces on the 4GEW-T.

Figure 3-164 Interfaces on the 4GEW-T



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1. Four GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-186** lists attributes of a GE electrical interface.

Table 3-186 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**4.1.7 Ethernet Cable**

JTAG port

Figure 3-165 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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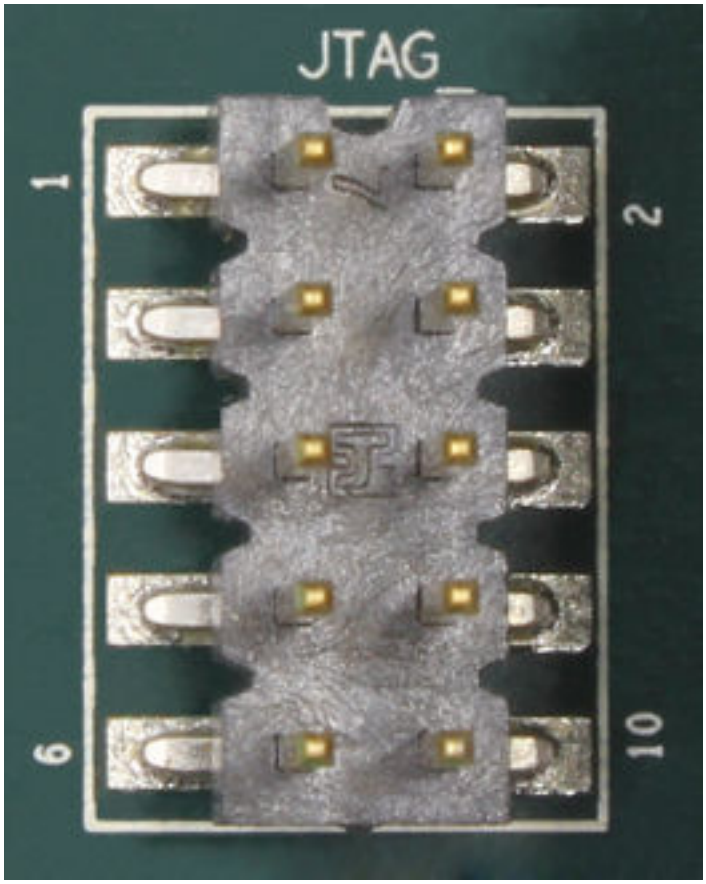
Figure 3-165 JTAG port



Technical Specifications

Table 3-187 describes the technical specifications of the 4GEW-T.

Table 3-187 Technical specifications of the 4GEW-T

Item	Specification
Card type	WSIC
External interfaces	Four GE electrical interfaces
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Transmission rate	10/100/1000 Mbit/s, in auto-sensing mode
Connector type	RJ45
Cable	**4.1.7 Ethernet Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 11 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To order the 4GEW-T, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-188 provides the ordering information.

Table 3-188 Ordering information

Part Number	Card Name	Card Description
03021LCU	4GEW-T	4-port 1000BASE-RJ45-L3 Ethernet WAN interface card

3.4.19 4GEW-S (4-Port 1000BASE-SFP-L3 Ethernet WAN Interface Card)

Card Overview

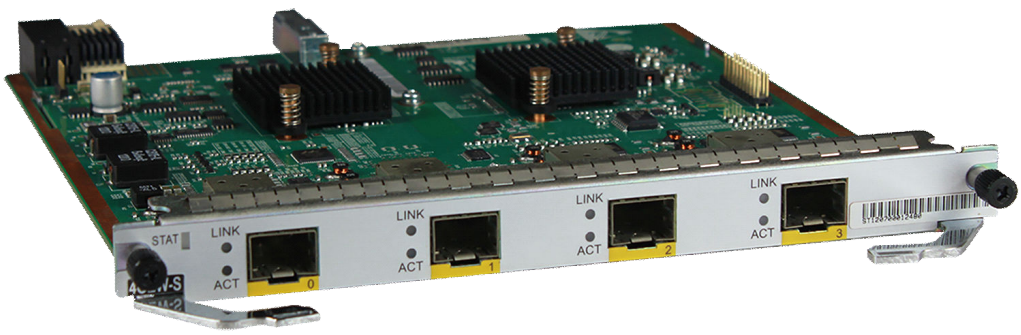
NOTE

- 4: indicates four interfaces.
- GE: indicates 1000M Ethernet.
- W: indicates WAN interface card.
- S: indicates the optical interface.

The 4GEW-S is a high-speed WAN access module and provides four GE optical interfaces to connect to a WAN, which improves network reliability, increases bandwidth, and implements long-distance transmission.

Figure 3-166 shows the appearance of the 4GEW-S.

Figure 3-166 Appearance of the 4GEW-S



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Version Mapping

Table 3-189 describes the mapping between the 4GEW-S and software versions.

Table 3-189 Mapping between the 4GEW-S and software versions

Card Name	AR1200 Series (Except AR1220E Series)	AR2204 AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
4GEW-S **NOTE** V200R002C01 and later versions	Y	Y	Y	Y	Y

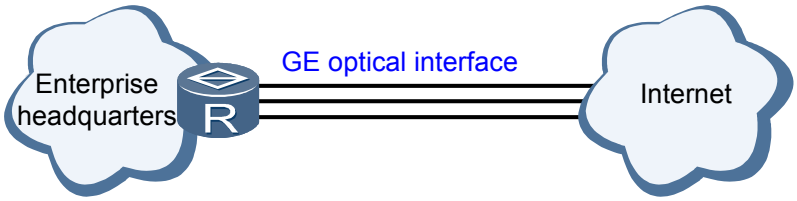
NOTE

Y: supported.

Application

As shown in Figure 3-167, the enterprise headquarters uses two GE optical interfaces to connect to the Internet, which improves network reliability and increases bandwidth. Compared with 4GEW-T, 4GEW-S provides longer transmission distance.

Figure 3-167 WAN uplink



Functions and Features

Table 3-190 describes the functions and features of the 4GEW-S.

Table 3-190 Functions and features of the 4GEW-S

Function and Feature	Description
Four GE optical interfaces	The interfaces connect to an Ethernet WAN, which improves network reliability, increases bandwidth, and implements long-distance transmission.

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Function and Feature	Description
Layer 3 protocols	IPv4, IPv6, and MPLS.

Indicators and Interfaces

Indicators on the 4GEW-S Panel

Figure 3-168 shows the indicators on the 4GEW-S panel, and Table 3-191 describes the indicator states and meaning.

Figure 3-168 Indicators on the 4GEW-S panel

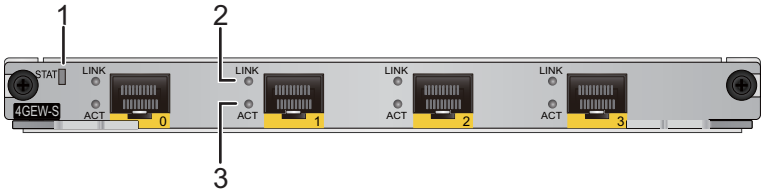

Table 3-191 Indicators on the 4GEW-S panel

Number	Indicator	Color	Description
1	STAT	Green	Stead on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	GE optical interface indicators: ● 2: LINK indicator. ● 3: ACT indicator.	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.

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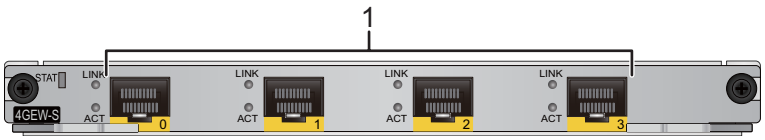
Number	Indicator	Color	Description
			Off: No data is being transmitted or received.

Description of Interfaces

Figure 3-169 shows the interfaces on the 4GEW-S.

Figure 3-169 Interfaces on the 4GEW-S



1. Four GE optical interfaces

GE optical interface(100/1000BASE-TX Ethernet Optical Interface)

A GE optical interface can send and receive services at 100 Mbit/s or 1 Gbit/s. Table 3-192 describes the attributes of a GE optical interface.

Table 3-192 Attributes of a GE optical interface

Attribute	Description
Connector type	LC/PC

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Attribute	Description
Optical interface attributes	Optical modules supported: ● SFP-FE-SX-MM1310 (SFP) ● eSFP-FE-LX-SM1310 ● eSFP-FE-LH40-SM1310 ● eSFP-FE-LH80-SM1550 ● SFP-FE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-FE-LX-SM1550-BIDI (single-fiber-bidirectional) ● eSFP-GE-SX-MM850 ● SFP-GE-LX-SM1310 ● S-SFP-GE-LH40-SM1310 ● S-SFP-GE-LH40-SM1550 ● S-SFP-GE-LH80-SM1550 ● eSFP-GE-ZX100-SM1550 ● SFP-GE-LX-SM1310-BIDI (single-fiber-bidirectional) ● SFP-GE-LX-SM1490-BIDI (single-fiber-bidirectional) ● LE2MGSC40DE0 (single-fiber-bidirectional) ● LE2MGSC40ED0 (single-fiber-bidirectional) ● 1471, CWDM-SFPGE-1471 ● 1491, CWDM-SFPGE-1491 ● 1511, CWDM-SFPGE-1511 ● 1531, CWDM-SFPGE-1531 ● 1591, CWDM-SFPGE-1591 ● 1557.36, DWDM-SFPGE-1557-36 ● 1558.17, DWDM-SFPGE-1558-17 ● 1558.98, DWDM-SFPGE-1558-98 ● 1559.79, DWDM-SFPGE-1559-79 ● 1560.61, DWDM-SFPGE-1560-61 The optical interface attributes depend on the optical modules used. For details, see **GE Optical Module**, **GE-CWDM Optical Module**, **GE-DWDM Optical Module**, **GE Copper Transceiver Module** and **FE Optical Module**.
Standards compliance	IEEE 802.3z

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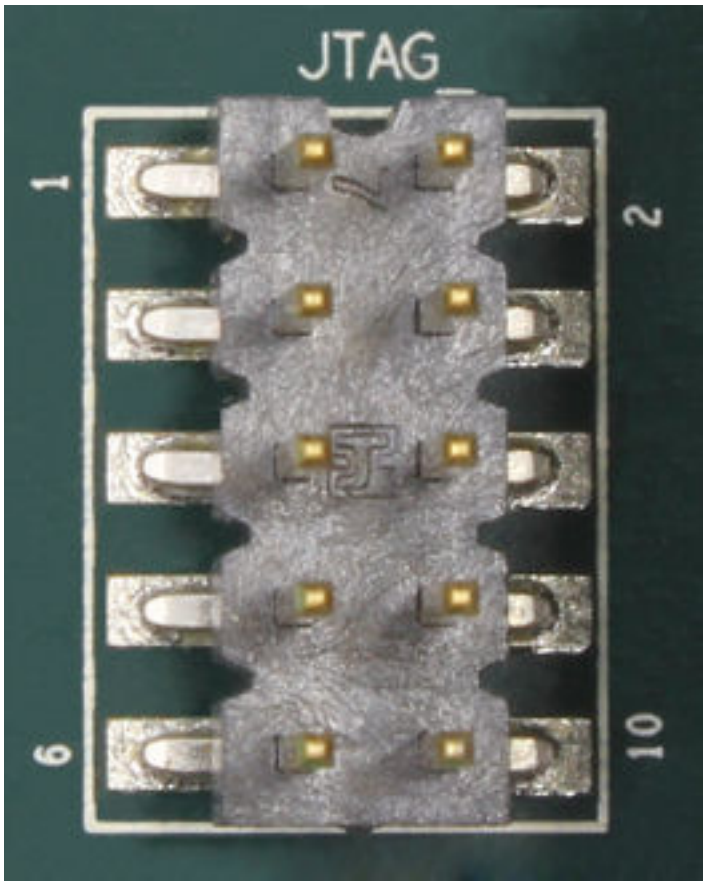
JTAG port

Figure 3-170 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-170 JTAG port



Technical Specifications

Table 3-193 describes the technical specifications of the 4GEW-S.

Table 3-193 Technical specifications of the 4GEW-S

Item	Specification
Card type	WSIC
External interfaces	Four GE optical interfaces
Standards compliance	IEEE 802.3z
Transmission rate	100/1000 Mbit/s, in auto-sensing mode
Connector type	SFP
Hot swap	Supported

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Item	Specification
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 8 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To order the 4GEW-S, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-194 provides the ordering information.

Table 3-194 Ordering information

Part Number	Card Name	Card Description
03021LXK	4GEW-S	4-Port 1000BASE-SFP-L3 Ethernet WAN interface card

3.4.20 1STM1/1STM4 (1-Port-155M/622M POS Optical Interface Card)

Card Overview

1STM series cards are high-speed WAN access modules and WSIC interface cards. They can connect to the SDH at a rate of 155 or 622 Mbit/s, and are often used on MANs and WANs.

Table 3-195 describes the differences between two types of the 1STM series cards.

Table 3-195 Differences between two types of the 1STM series cards

Card Name	Rate
1STM1	155 Mbit/s
1STM4	622 Mbit/s

Figure 3-171 shows the appearance of the 1STM1.

Figure 3-171 Appearance of the 1STM1

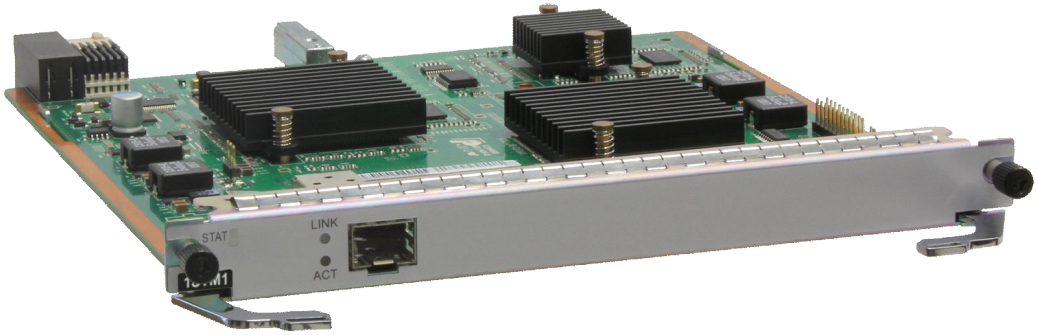

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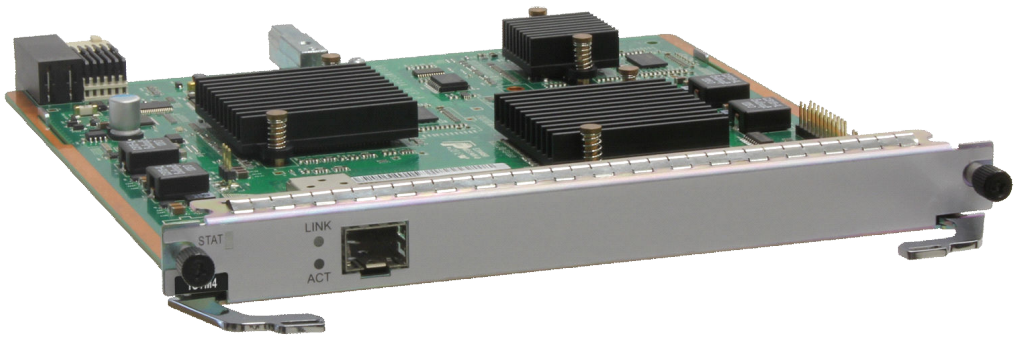
Figure 3-172 shows the appearance of the 1STM4.

Figure 3-172 Appearance of the 1STM4



Version Mapping

Table 3-196 describes the mapping between the 1STM series and software versions.

Table 3-196 Mapping between the 1STM series and software versions

Card Name	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
1STM1 1STM4 **NOTE** This card is supported in V200R003C00 and later versions.	Y	Y	Y	Y	Y

NOTE

Y: supported.

Application

As shown in Figure 3-173, large- and medium-sized enterprise branches and enterprise headquarters can use 1STM to connect to the SDH/SONET network to implement high-speed and long-distance point-to-point transmission of IP data services.

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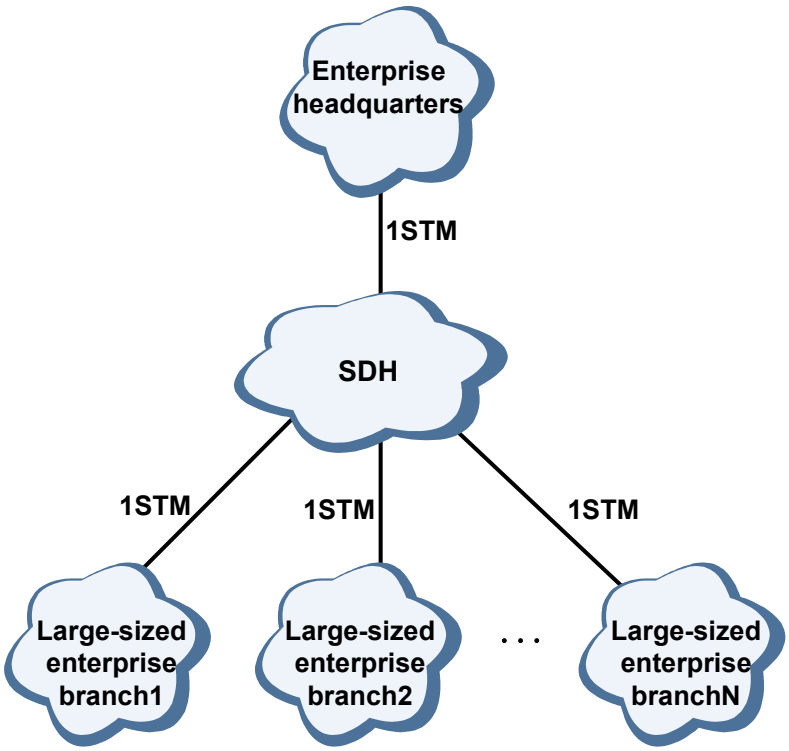
Figure 3-173 1STM application



Functions and Features

Table 3-197 describes the functions and features of the 1STM series.

Table 3-197 Functions and features of the 1STM series

Function and Feature	Description
Basic functions	Connects to the SDH with high bandwidth, and efficiently and securely transmits IP data.
	Provides transmission rates of 155 Mbit/s and 622 Mbit/s.
Protocols supported	Complies with SDH or SONET.
	Supports HDLC, PPP, and FR.

Indicators and Interfaces

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Indicators on the 1STM1 Panel

NOTE

The 1STM1 and 1STM4 have the same indicators. 1STM1 is used as an example to describe the indicators.

Figure 3-174 shows the indicators on the 1STM1 panel. and Table 3-198 describes the indicator states and meaning.

Figure 3-174 Indicators on the 1STM1 panel

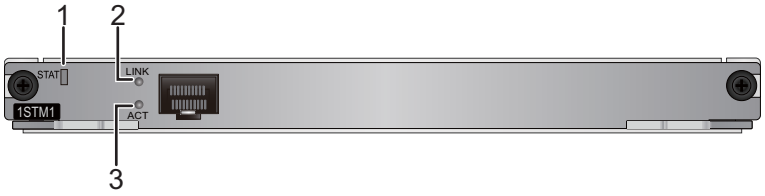

Table 3-198 Indicators on the 1STM1 panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting. Stead on: The card is powered on but the system software is not running.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Orange	Steady on: The card is installed in the slot.
2 and 3	SFP interface indicators: ● The number 2 identifies the LINK indicator. ● The number 3 identifies the ACT indicator.	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

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Description of Interfaces

Figure 3-175 shows the interfaces on the 1STM1.

Figure 3-175 Interfaces on the 1STM1

1. One 155Mbps POS optical interface

Figure 3-176 shows the interfaces on the 1STM4.

Figure 3-176 Interfaces on the 1STM4

1. One 622Mbps POS optical interface

POS optical interface

A POS optical interface provides high-speed and reliable point-to-point IP data connections, **Table 3-199** describes the attributes of the POS optical interface.

Table 3-199 Attributes of the POS optical interface

Attribute	Description
Connector type	LC/PC
Optical interface attribute	Optical modules supported: ● eSFP-SM1310-155M-2.5G-15km ● eSFP-1310nm-L-16.1 ● eSFP-1550nm-L-16.2 The optical interface attributes depend on the optical modules used. For details, see **POS Optical Module**.
Standards compliance	STM-1/STM-4
Frame format	SDH/SONET

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Attribute	Description
Network protocol	IP

Technical Specifications

Table 3-200 describes the technical specifications of the 1STM series.

Table 3-200 Technical specifications of the 1STM series

Item	Specification
Card type	WSIC
External interfaces	One POS optical interface
Standards compliance	● ITUT G.707 SONET OC-3 ● ITUT G.707 SONET SDH STM-1 ● ITUT G.707 SONET SDH STM-4
Transmission rate	● 1STM1: 155Mbit/s ● 1STM4: 622Mbit/s
Connector type	SFP
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 12 W ● Weight: 0.6 kg (1.33 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

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Item	Specification
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1STM1/1STM4, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-201 provides the ordering information.

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Table 3-201 Ordering information

Part Number	Card Name	Card Description
03021RJW	1STM1	1-Port 155M Packet over SDH/Sonet Optical Interface Card
03021XHD	1STM4	1-Port 622M Packet over SDH/Sonet Optical Interface Card

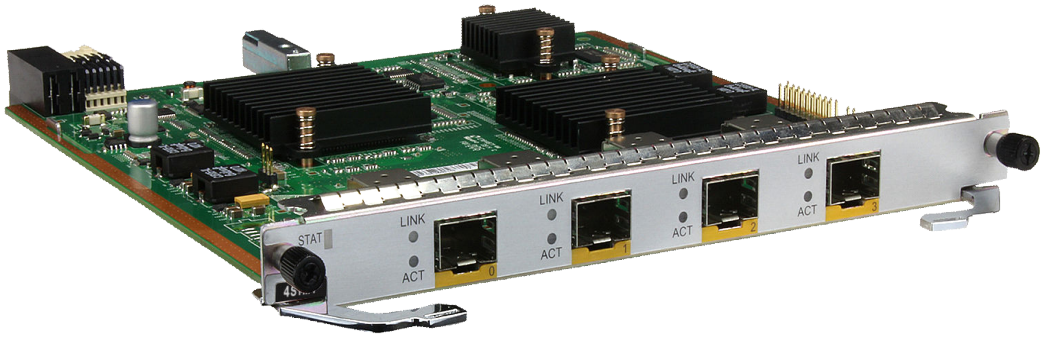
3.4.21 4STM1 (4-Port 155M Packet over SDH/SONET Optical Interface Card)

Card Overview

A 4STM1 card is a high-speed WAN access module and is used as a WSIC card. Normally, a 4STM1 card provides 155 Mbit/s bandwidth on all the four interfaces for connection to a synchronous digital hierarchy (SDH) network. You can set the bandwidth on interface 0 to 622 Mbit/s by disabling interfaces 1-3. 4STM1 cards are often used for MAN or WAN connection.

Figure 3-177 shows the appearance of the 4STM1 card.

Figure 3-177 Appearance of the 4STM1 card



Version Mapping

Table 3-202 describes the mapping between the 4STM1 card and software versions.

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Table 3-202 Mapping between the 4STM1 card and software versions

Card Name	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
4STM1 **NOTE** This card is supported in V200R005C20, V200R006C10, and later versions.	Y	Y	Y	Y	Y

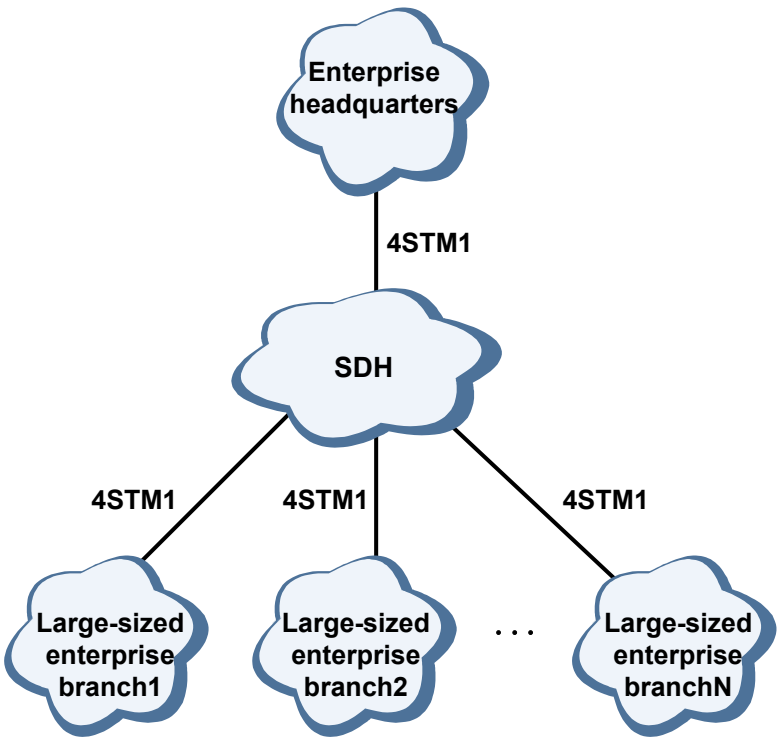
NOTE

Y: supported.

Application

As shown in **Figure 3-178**, the headquarters and branches of a medium- or large-sized enterprise connect to an SDH/SONET through 4STM1 cards. The 4STM1 cards provide high-speed, long-distance, point-to-point IP data transmission for the headquarters and branches.

Figure 3-178 4STM1 card application



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Functions and Features

Table 3-203 describes functions and features of the 4STM1 card.

Table 3-203 Functions and features of the 4STM1 card

Function and Feature	Description
Basic functions	Provides high-speed connection to an SDH network to complete high-efficient, secure IP data transmission between enterprise branches.
	Supports transmission rates of 155 Mbit/s and 622 Mbit/s for you to select flexibly. **NOTE** You can set the rate of interface 0 to 622 Mbit/s by disabling interfaces 1 to 3.
Protocol	Conforms to synchronous digital hierarchy (SDH) or synchronous optical network (SONET) standards.
	Supports link layer protocols High-Level Data Link Control (HDLC), Point-to-Point Protocol (PPP), and Frame Relay (FR).

Indicators and Interfaces

Indicator Description

Figure 3-179 shows indicators on the 4STM1 panel, and **Table 3-204** describes the indicator states and meanings.

Figure 3-179 Indicators on the 4STM1 panel

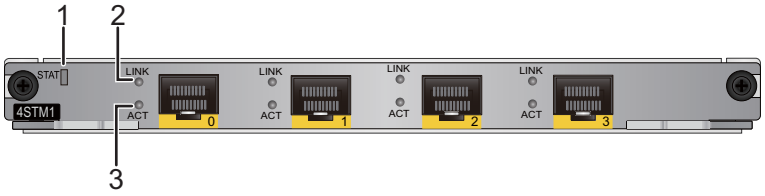

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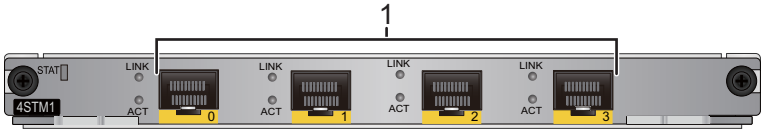
Table 3-204 Indicators on the 4STM1 panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting. Steady on: The card has been powered on, but the software is not running.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Orange	The card has been properly installed and detected by the system.
2 and 3	SFP interface indicators: ● 2: LINK indicator ● 3: ACT indicator	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.
		Yellow	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

Interface Description

Figure 3-180 shows interfaces on the 4STM1 card.

Figure 3-180 Interfaces on the 4STM1 card



1. Four 155M POS optical interfaces

NOTE

You can set the rate of interface 0 to 622 Mbit/s by disabling interfaces 1 to 3.

POS optical interface

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A POS optical interface provides high-speed and reliable point-to-point IP data connections, **Table 3-205** describes the attributes of the POS optical interface.

Table 3-205 Attributes of the POS optical interface

Attribute	Description
Connector type	LC/PC
Optical interface attribute	Optical modules supported: ● eSFP-SM1310-155M-2.5G-15km ● eSFP-1310nm-L-16.1 ● eSFP-1550nm-L-16.2 The optical interface attributes depend on the optical modules used. For details, see **POS Optical Module**.
Standards compliance	STM-1/STM-4
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

Table 3-206 lists technical specifications of a 4STM1 card.

Table 3-206 Technical specifications of a 4STM1 card

Item	Specification
Card type	WSIC
External interfaces	Four POS optical interfaces
Standards compliance	● ITUT G.707 SONET OC-3 ● ITUT G.707 SONET SDH STM-1 ● ITUT G.707 SONET SDH STM-4
Interface rate	155 Mbit/s **NOTE** You can set the rate of interface 0 to 622 Mbit/s by disabling interfaces 1 to 3.
Connector type	SFP
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption: 16.6 W ● Weight: 0.6 kg (1.32 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-207 provides the ordering information.

Table 3-207 Ordering information

Part Number	Card Name	Card Description
03022STP	4STM1	4-Port 155M Packet over SDH/SONET Optical Interface Card

3.4.22 4E1-IMA (4-Port-E1 ATM IMA Interface Card)

Card Overview

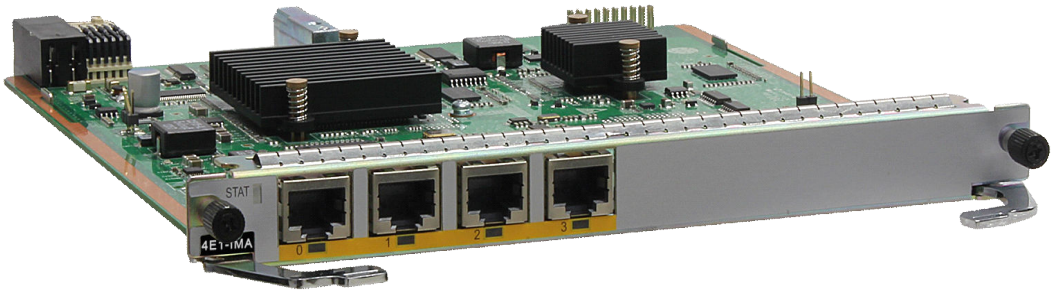
NOTE

- 4: indicates four interfaces.
- E1: indicates E1 interfaces.
- IMA: is short for Inverse Multiplexing for ATM.

The 4E1-IMA is a WAN connection module and an WSIC interface card. It uses inverse multiplexing over ATM (IMA) to bundle multiple E1 lines to form a high-bandwidth IMA group link. The IMA group link transmits multimedia services for enterprises.

Figure 3-181 shows the appearance of the 4E1-IMA.

Figure 3-181 Appearance of the 4E1-IMA



Version Mapping

Table 3-208 describes the mapping between the 4E1-IMA and software versions.

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Table 3-208 Mapping between the 4E1-IMA and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
4E1-IMA **NOTE** V200R003C00 and later versions	Y	Y	Y	Y	Y	Y

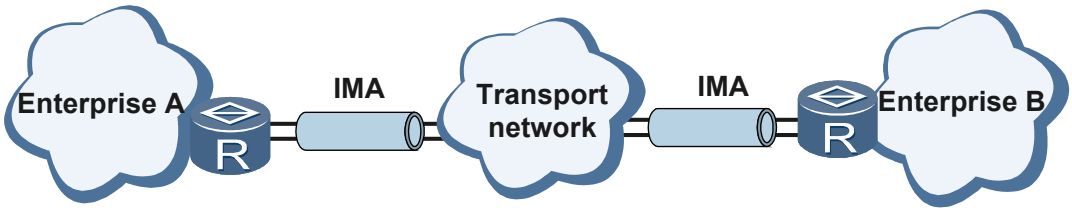
NOTE

Y: supported.

Application

As shown in **Figure 3-182**, enterprise A and enterprise B are connected through two E1-IMA links. On large-sized enterprises, as multimedia services develop and a large number of documents need to be transmitted, a single E1 line cannot meet requirements. E1-IMA provides higher bandwidth. For example, cell flows of 8 Mbit/s can be transmitted by multiplexing four E1 lines. E1-IMA allows you to flexibly adjust the network and reduces enterprise costs.

Figure 3-182 Connecting enterprises through E1-IMA



Functions and Features

Table 3-209 describes the functions and features of the 4E1-IMA.

Table 3-209 Functions and features of the 4E1-IMA

Function and Feature	Description
Basic functions	Uses IMA to transmit ATM cell streams at a high rate.

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Function and Feature	Description
	● Transmit end: Distributes ATM cell streams over multiple low-speed link. ● Receive end: Multiplexes the links to restore the cell streams.
Flexible bandwidth adjustment	The multiplexed E1 links can be added and deleted anytime, meeting various bandwidth requirements.
Low cost	Transmits ATM cell streams on multiple E1 lines at a high rate, preventing high expenses for network upgrade due to traffic burst.
ATM transmission advantages	Provides traffic management, fault tolerance capability, compatibility with traditional devices, and QoS.

Indicators and Interfaces

Indicators on the 4E1-IMA Panel

Figure 3-183 shows the indicators on the 4E1-IMA panel, and Table 3-210 describes the indicator states and meaning.

Figure 3-183 Indicators on the 4E1-IMA panel

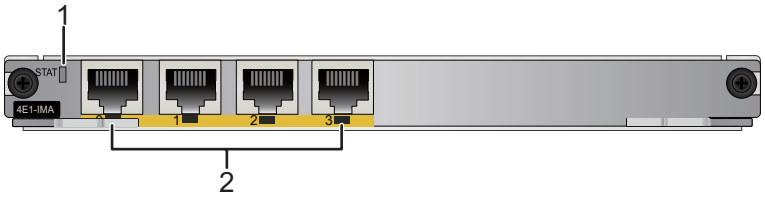

Table 3-210 Indicators on the 4E1-IMA panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

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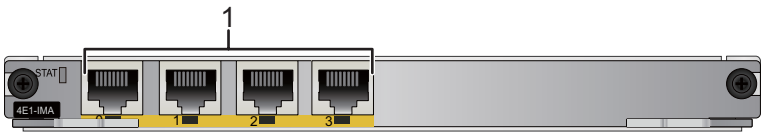
Number	Indicator	Color	Description
		Off	Off: The software is not running or is being reset.
2	E1-IMA interface indicator	Green	Steady on: A link has been established.
		Amber	Blinking: Data is being transmitted or received.
		Off	Off: There is no connection.

Description of Interfaces

Figure 3-184 shows the interfaces on the 4E1-IMA.

Figure 3-184 Interfaces on the 4E1-IMA



1. Four E1-IMA interfaces

E1-IMA interface

An E1-IMA interface is used to transmit ATM cells at a high rate. Table 3-211 describes the attributes of the E1-IMA interface.

Table 3-211 Attributes of the E1-IMA interface

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-G.703, ITU-G.704
Transmission rate	2.048 Mbit/s
Working mode	● ATM E1 independent mode ● IMA bundling mode
Protocols supported	PPPoA, PPPoEoA, IPoA, IPoEoA
Supported service type	CBR/VBR-rt/VBR-nrt/UBR

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Attribute	Description
Function	AAL5
Cable type	**4.1.9 E1/T1 Cable**

Technical Specifications

Table 3-212 describes the technical specifications of the 4E1-IMA.

Table 3-212 Technical specifications of the 4E1-IMA

Item	Specification
Card type	WSIC
External interfaces	E1-IMA interface
Standards compliance	● E1 line codec and electrical attributes: ITUT G.703 ● E1 line codec: HDB3 ● E1 line frame format: ITUT G.704 ● E1: CRC Multiframe, DoubleFrame ● IMA: af-phy-0086.001
Transmission rate	E1: 2.048 Mbit/s
Connector type	RJ45
Cable	**4.1.9 E1/T1 Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 12 W ● Weight: 0.6 kg (1.33 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)

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Item	Specification
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 4E1-IMA, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-213 provides the ordering information.

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Table 3-213 Ordering information

Part Number	Card Name	Card Description
03021RCT	4E1-IMA	4-port E1 Inverse Multiplexing for ATM Interface Card

3.5 Voice Interface Card

3.5.1 2BST (2-Port-ISDN S/T Voice Interface Card)

Card Overview

The 2BST is a voice access module and an SIC or WSIC interface card. It can connect to the ISDN to transmit voice services of internal enterprise users and external ISDN users.

2BST cards have two types: SIC and WSIC. **Table 3-214** lists the slots where the SIC card and WSIC card are installed.

Table 3-214 Slots of 2BST SIC and WSIC cards

Card Name	Slot
2BST	SIC slot
2BST-W	WSIC slot or XSIC slot **NOTE** In an XSIC slot, the WSIC card is installed in the lower part of the slot. The WSIC card uses the XSIC slot ID as its own slot ID.

Table 3-215 lists the differences between the 1BST and 2BST.

Table 3-215 Differences between the 1BST and 2BST

Card Name	Interface Quantity	Usage Scenario	Mode	Feed Supported
2BST	Two S/T interfaces	Voice services	NT	-40 V feed
1BST	One S/T interface	Data services	TE	Not supported

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Figure 3-185 shows the appearance of the 2BST.

Figure 3-185 Appearance of the 2BST

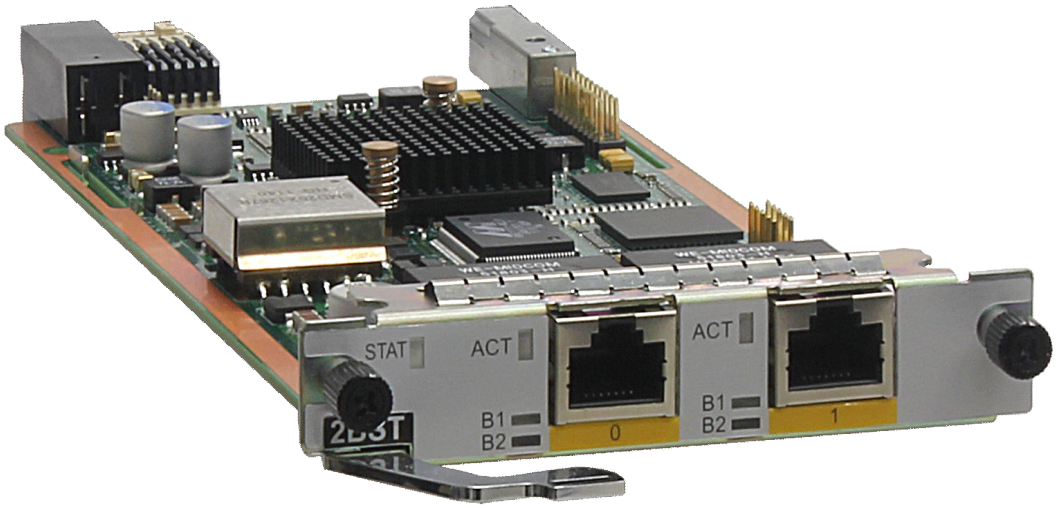

Figure 3-186 shows the appearance of the 2BST-W.

Figure 3-186 Appearance of the 2BST-W

Version Mapping

Table 3-216 describes the mapping between the 2BST and software versions.

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Table 3-216 Mapping between the 2BST and software versions

Card Name	AR1220V AR1220VW	AR1220EV AR1220EVW	AR2204	AR2220E	AR2220 AR2240	AR3260
2BST **NOTE** This card is supported in V200R001C01 and later versions.	Y	Y	Y	Y	Y	Y
2BST-W **NOTE** Huawei will stop service on this card after December 31, 2013. V200R002C00 and later versions.	Y	Y	Y	Y	Y	Y

NOTE

Y: supported.

Application

As shown in **Figure 3-187**, the enterprise headquarters and branch are connected through IP PBXs to make incoming and outgoing calls. The IP PBXs in the enterprise headquarters and branch use ISDN BRI interfaces to connect to the ISDN, which functions as the backup network. When the IP link becomes faulty, voice services are transmitted through the ISDN.

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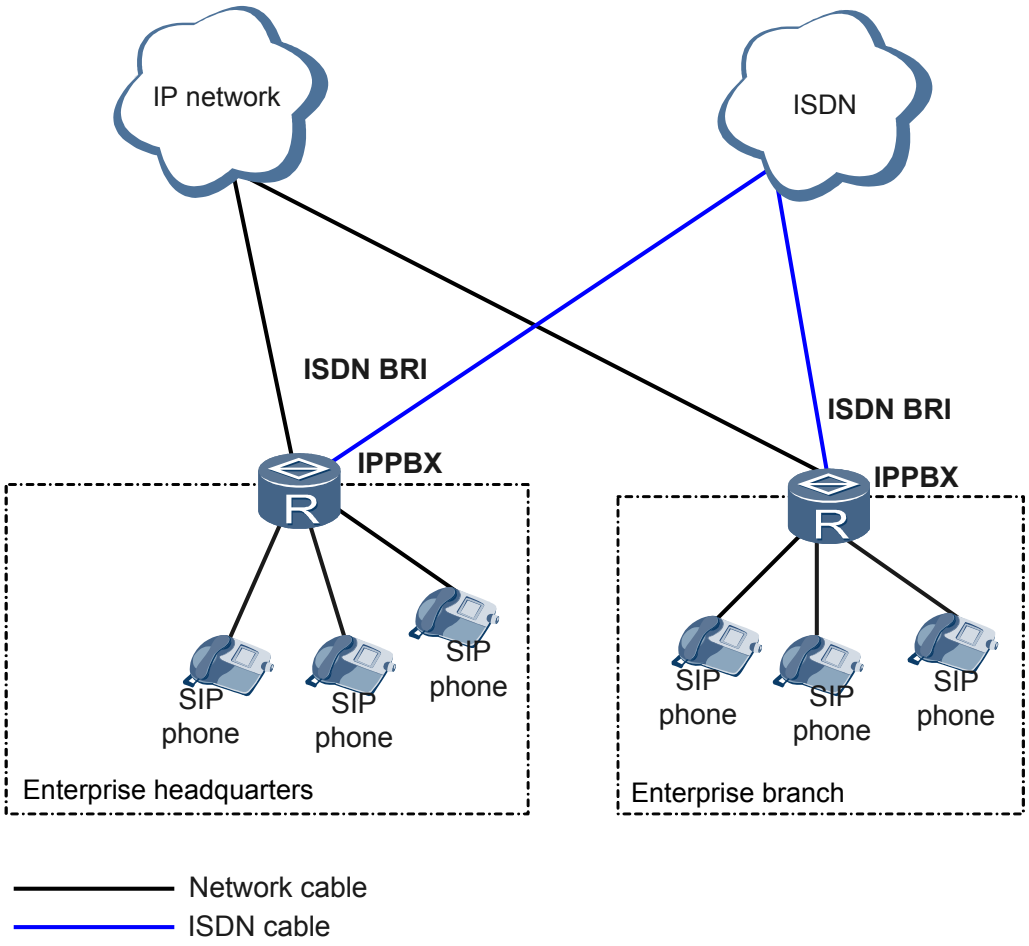
Figure 3-187 2BST application



Functions and Features

Table 3-217 describes the functions and features of the 2BST.

Table 3-217 Functions and features of the 2BST

Function and Feature	Description
Basic functions	Provides the NT mode to transmit voice services.
	Connects to the ISDN.
BEST	When a fault occurs on the WAN-side network, internal communication of an enterprise is not affected.
Link backup	The ISDN functions as a backup for the VoIP network, ensuring reliability of voice communication.

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Function and Feature	Description
Seamless migration to VoIP	On the enterprise's IP network, you can only add ARs to support VoIP. This protects investments and facilitates expansion.
Low cost	The AR provides VoIP. With VoIP, an enterprise only needs to pay the local call fee, saving the toll call fee.
Diagnosis and maintenance	Provides signaling tracing, simulation, diagnosis test, and remote packet header capture.

Indicators and Interfaces

Indicators on the 2BST Panel

NOTE

The 2BST and 2BST-W have the same indicators except for having different card types. 2BST-W is used as an example to describe the indicators.

Figure 3-188 shows the indicators on the 2BST-W panel, and **Table 3-218** describes the indicator states and meaning.

Figure 3-188 Indicators on the 2BST-W panel

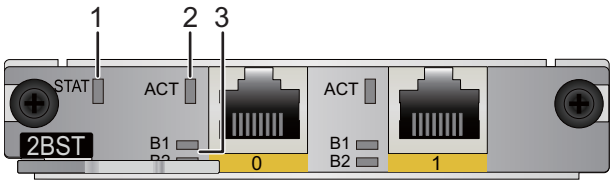

Table 3-218 Indicators on the 2BST-W panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.

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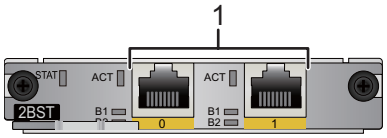
Number	Indicator	Color	Description
2	ACT (interface status indicator)	Green	Stead on: The ISDN channel has been activated.
			Off: The ISDN channel in inactive.
3	B1/B2	Green	Blinking: The B1/B2 channel is used.
			Off: The B1/B2 channel is idle.

Description of Interfaces

Figure 3-189 shows the interfaces on the 2BST.

Figure 3-189 Interfaces on the 2BST



1. Two ISDN S/T interfaces

Figure 3-190 shows the interfaces on the 2BST-W.

Figure 3-190 Interfaces on the 2BST-W

1. Two ISDN S/T interfaces

ISDN S/T interface

The ISDN S/T interface connects to the ISDN to transmit voice services. **Table 3-219** describes the attributes of the ISDN S/T interface.

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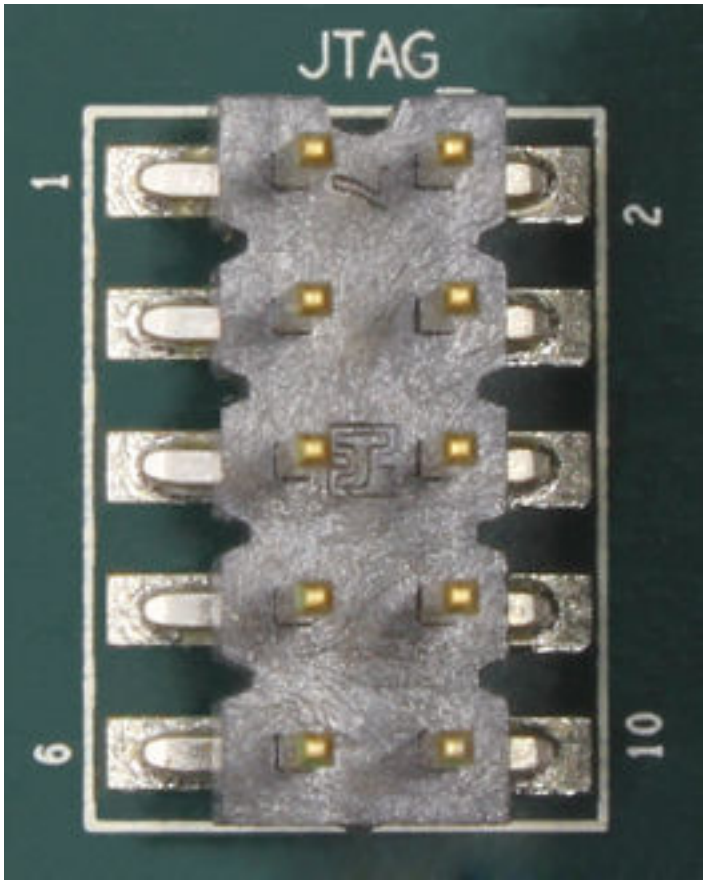
Table 3-219 Attributes of the ISDN S/T interface

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T, I.430, Q.921, Q.931
Transmission rate	192 kbit/s
Bandwidth	0 to 100 MHz
Cable type	**Crossover ISDN S/T Cable**

JTAG port

Figure 3-191 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-191 JTAG port



Technical Specifications

Table 3-220 describes the technical specifications of the 2BST.

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Table 3-220 Technical specifications of the 2BST

Item	Specification
Card type	● 2BST: SIC ● 2BST-W: WSIC
External interfaces	● 2BST: Two ISDN S/T interfaces ● 2BST-W: Two ISDN S/T interfaces
Standards compliance	ITU-T I.430, Q.921, Q.931
Transmission rate	192 kbit/s
Connector type	RJ45
Cable	**Crossover ISDN S/T Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): – 2BST: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 2BST-W: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: – 2BST: 14.2 W – 2BST-W: 14.2 W ● Weight: – 2BST: 0.3 kg (0.66 lb) – 2BST-W: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 2BST, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-221 provides the ordering information.

Table 3-221 Ordering information

Part Number	Card Name	Card Description
02310FVM	2BST	2-port-ISDN S/T voice interface card (SIC)
02310HVC	2BST-W	2-port-ISDN S/T voice interface card (WSIC)

3.5.2 4FXS1FXO (4-Port FXS + 1-Port FXO Voice Interface Card)

Card Overview

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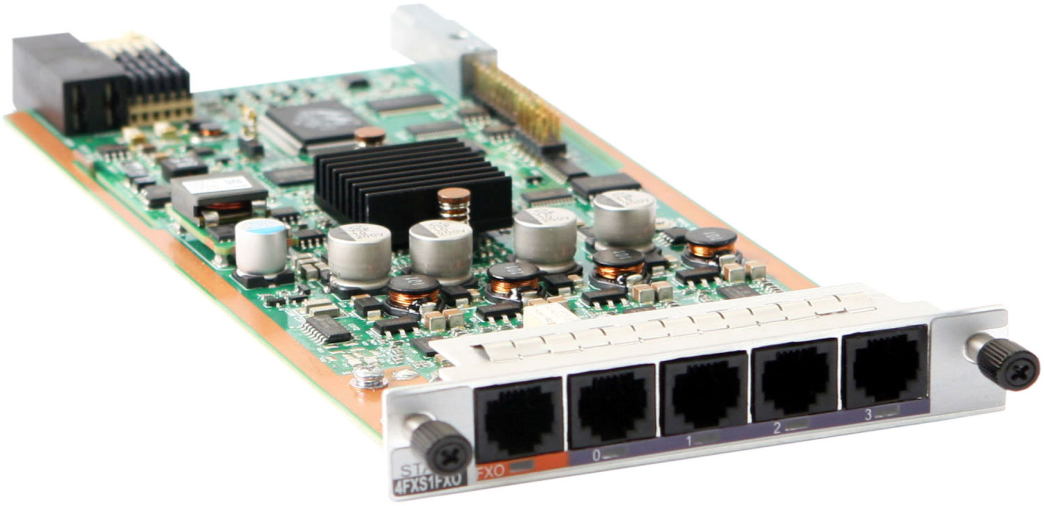
The 4FXS1FXO is a voice access module and an SIC interface card. It provides four FXS interfaces and one FXO interface that can connect to the PSTN and traditional telephone devices such as TDM PBXs, analog phones, and fax machines to transmit internal and external voice services.

Figure 3-192 shows the appearance of the 4FXS1FXO.

Figure 3-192 Appearance of the 4FXS1FXO



Version Mapping

Table 3-222 describes the mapping between the 4FXS1FXO and software versions.

Table 3-222 Mapping between the 4FXS1FXO and software versions

Card Name	AR1220V AR1220VW	AR1220EV AR1220EVW	AR2204	AR2220E	AR2220 AR2240	AR3260
4FXS1FXO **NOTE** This card is supported in V200R001C00 and later versions.	Y	Y	Y	Y	Y	Y

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NOTE

Y: supported.

Application

As shown in **Figure 3-193**, enterprise users use FXS interfaces to transmit voice services. The FXO interface is used to transmit voice services exchanged between enterprise users and external users.

FXS interfaces connect to analog phones, fax machines, and branch IP PBX to transmit voice services exchanged between enterprise branch users and between the enterprise headquarters and branch.

The FXO interface connects to the PSTN. The link of the FXO interface can function as the branch egress and best-effort link of the VoIP network to transmit voice services exchanged between enterprise users and external users and to implement link backup.

Power outage survival and BEST:

- Power outage survival: When the router (IP PBX) is powered off, all IP phones are unavailable. In this case, power outrage survival is enabled. Then the router connects the FXO line to the first FXS interface to ensure nonstop service communication.
- BEST: When a fault occurs on the WAN-side IP network, BEST configured on the router ensures voice communication.

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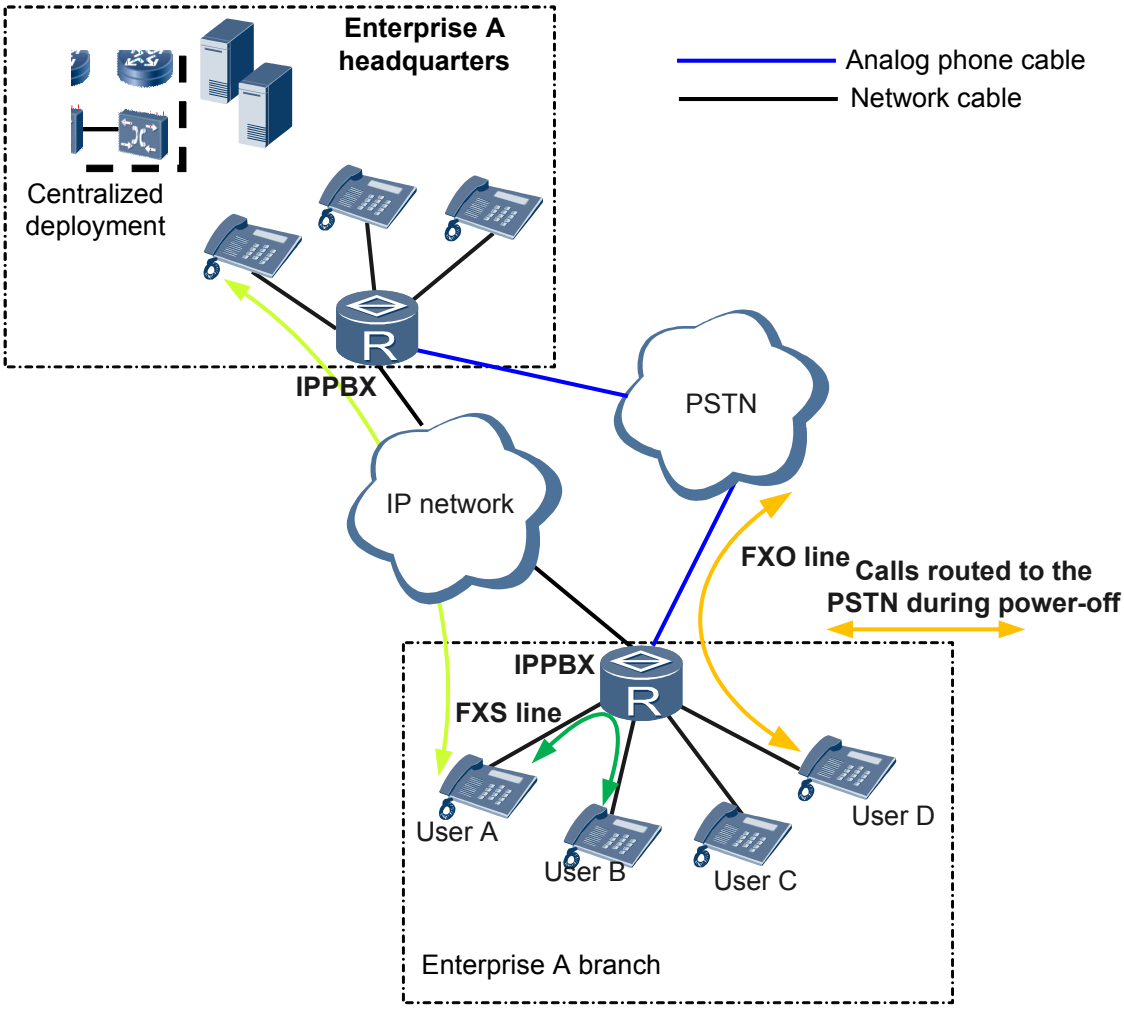
Figure 3-193 4FXS1FXO application



Functions and Features

Table 3-223 describes the functions and features of the 4FXS1FXO.

Table 3-223 Functions and features of the 4FXS1FXO

Function and Feature	Description
Basic functions	Connects to common analog phones, IP phones, fax machines, and TDM PBXs.
	Connects to the PSTN.
Power outage survival	Implements power outage survival and ensures nonstop service transmission when the enterprise egress transmission channel becomes faulty.

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Function and Feature	Description
BEST	When a fault occurs on the WAN-side network, internal communication of an enterprise is not affected.
Link backup	The PSTN functions as a backup for the enterprise's IP network. When the IP network between the headquarters and a branch fails, calls can be connected through the PSTN.
Seamless migration to VoIP	On the enterprise's IP network, you can only add ARs to support VoIP. This protects investments and facilitates expansion.
Low cost	The AR provides VoIP. With VoIP, an enterprise only needs to pay the local call fee, saving the toll call fee.
Various services	The AR provides various services including call center, secretary service, wake-up service, blacklist and whitelist, three-party service, and ONLY service.
Diagnosis and maintenance	Provides signaling tracing, simulation, diagnosis test, and remote packet header capture.

Indicators and Interfaces

Indicators on the 4FXS1FXO Panel

Figure 3-194 shows the indicators on the 4FXS1FXO panel, and **Table 3-224** describes the indicator states and meaning.

Figure 3-194 Indicators on the 4FXS1FXO panel

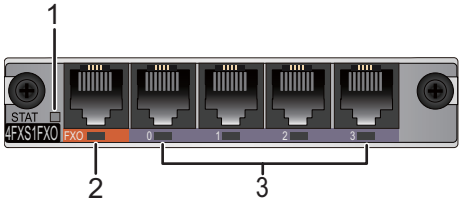

Table 3-224 Indicators on the 4FXS1FXO panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.

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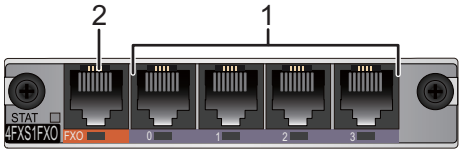
Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT (interface status indicator)	Green	Stead on: The FXO channel is being occupied by a call.
			Off: The FXO channel is idle.
3	ACT (interface status indicator)	Green	Stead on: The FXS channel is being occupied by a call.
			Off: The FXS channel is idle.

Description of Interfaces

Figure 3-195 shows the indicators on the 4FXS1FXO panel.

Figure 3-195 Indicators on the 4FXS1FXO panel



1. Four FXS interfaces (RJ11)	2. One FXO interface (RJ11)

FXS interface (RJ11)

An FXS interface is a simulated subscriber line interface and provides access to analog phones and fax machines. Table 3-225 describes the attributes of the FXS interface.

Table 3-225 Attributes of the FXS (RJ11) interface

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for FXS interfaces ITU K.20 for protection against overcurrent and overvoltage

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Attribute	Description
Dialing mode	● DTMF in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

FXO interface (RJ11)

An FXO interface is a loop trunk interface that can connect to the PSTN. **Table 3-226** describes the attributes of the FXO interface.

Table 3-226 Attributes of the FXO (RJ11) interface

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.552 for FXO interfaces ITU K.20 for protection against overcurrent and overvoltage
Dialing mode	● DTMF in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

JTAG port

Figure 3-196 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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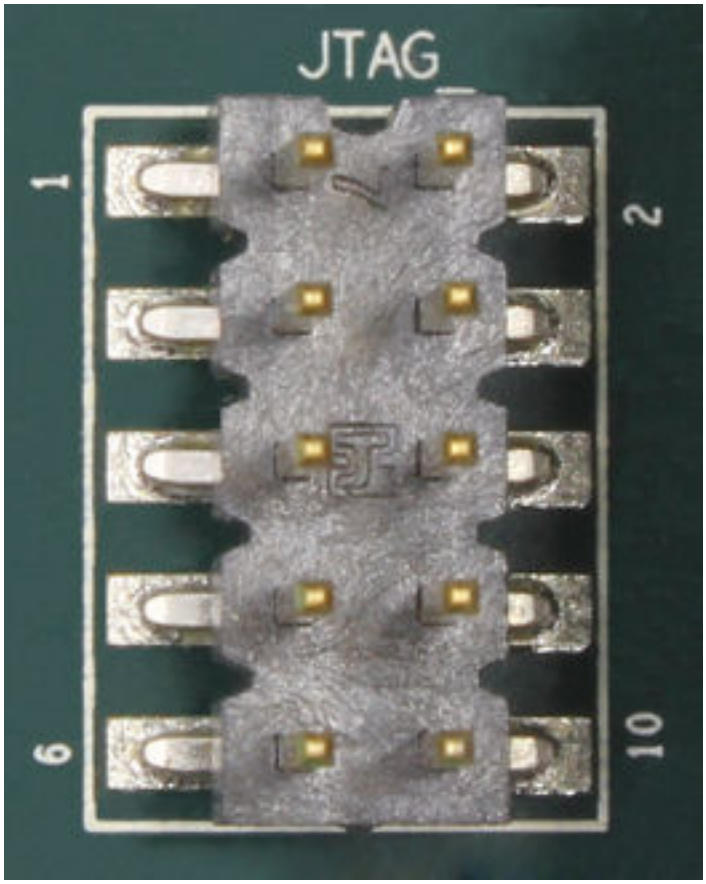
Figure 3-196 JTAG port



Technical Specifications

Table 3-227 describes the technical specifications of the 4FXS1FXO.

Table 3-227 Technical specifications of the 4FXS1FXO

Item	Specification
Card type	SIC
External interfaces	Four FXS interfaces and one FXO interface
Standards compliance	● ITU Q.512 for FXS interfaces ● ITU Q.552 for FXO interfaces ● ITU K.20 for protection against overcurrent and overvoltage
Bandwidth	300 Hz to 3.4 kHz
Dialing mode	● DTMF in accordance with GB3378 ● Pulse dialing
Connector type	RJ11
Cable	**Standard Telephone Cable**

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Item	Specification
Hot swap	Supported
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: 12.8 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Ordering Information

To order the 4FXS1FXO, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-228 provides the ordering information.

Table 3-228 Ordering information

Part Number	Card Name	Card Description
03020RMY	4FXS1FXO	4-Port FXS and 1-Port FXO Voice Interface Card

3.5.3 16/32/64/128-Channel DSP Module

Card Overview

The 16/32/64/128-channel DSP module is a VoIP voice processing DIMM that provides the voice over IP (VoIP) functions.

Figure 3-197 shows the appearance of the 16/32/64/128-channel DSP module.

Figure 3-197 Appearance of the 16/32/64/128-channel DSP module

NOTICE

Only the DSP module supported by the AR router can be inserted into the DSP DIMM slot. The DDR3 memory board or unsupported DIMMs cannot be inserted; otherwise, the AR router may be damaged or does not function properly.

Version Mapping

Table 3-229 describes the mapping between the 16/32/64/128-channel DSP module and software versions.

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Table 3-229 Mapping between the 16/32/64/128-channel DSP module and software versions

Card Name	AR2204	AR2220E	AR2220 AR2240	AR3260
16/32/64/128-channel DSP module **NOTE** This module is supported in V200R001C01 and later versions.	Y	Y	Y	Y

NOTE

Y: supported.

Functions and Features

Table 3-230 describes the functions and features of the 16/32/64/128-channel DSP module.

Table 3-230 Functions and features of the 16/32/64/128-channel DSP module

Function and Feature	Description
Basic functions	Processes the dial tone.
	Parses telephone numbers.
	Generates interactive voice response (IVR) and signal voice.
	Encode, decode, and convert voice.
	Implements voice conferences and echo canceler (EC).
	Processes IP packets.

Technical Specifications

Table 3-231 describes the technical specifications of the 16/32/64/128-channel DSP module.

Table 3-231 Technical specifications of the 16/32/64/128-channel DSP module

Item	Specification
Model	DDR3 DIMM
External interfaces	1-channel 8MHW+1GE

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Item	Specification
Standards compliance	G.711, G.723, G.726, G.729
DSP module specifications	16/32/64/128-channel DSP
Physical specifications	● Dimensions (width x height): 133.35 mm x 28 mm (5.25 in. x 1.1 in.) ● Maximum power consumption: 3.5 W ● Weight: 0.05 kg (0.11 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 16/32/64/128-channel DSP module, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-232 provides the ordering information.

Table 3-232 Ordering information

Part Number	Card Description
03021HWQ	16-channel voice DSP module
03021HWT	32-channel voice DSP module
03021HWU	64-channel voice DSP module
03020XPK	128-channel voice DSP module

3.5.4 16/32FXS (16/32-Channel FXS Voice Interface Card)

Card Overview

The 16/32FXS is an voice access module and a WSIC interface card. It provides 16 or 32 FXS interfaces that can connect to a large number of analog terminals.

Figure 3-198 shows the appearance of the 16FXS.

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Figure 3-198 Appearance of the 16FXS

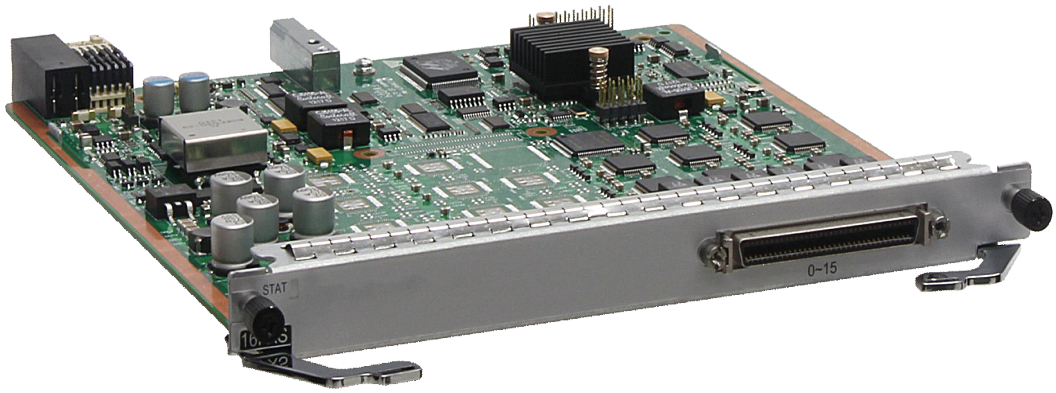
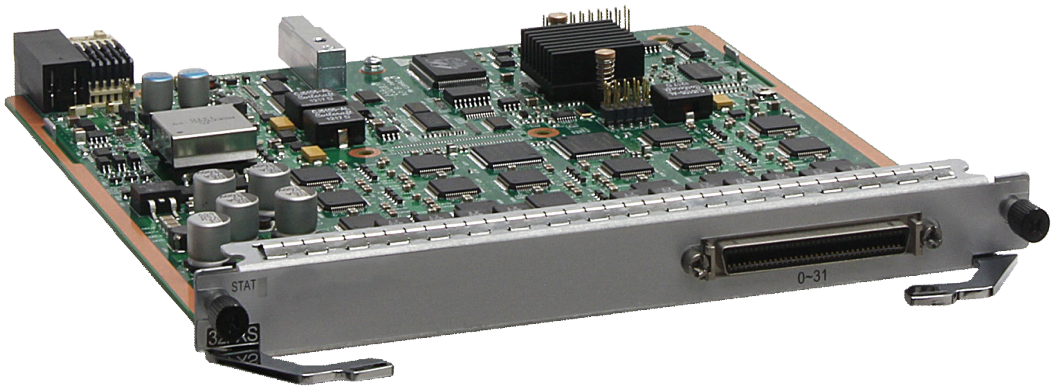


Figure 3-199 shows the appearance of the 32FXS.

Figure 3-199 Appearance of the 32FXS



Version Mapping

Table 3-233 describes the mapping between the 16/32FXS and software versions.

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Table 3-233 Mapping between the 16/32FXS and software versions

Card Name	AR1220V AR1220VW	AR1220EV AR1220EVW	AR2204	AR2220E	AR2220 AR2240	AR3260
16FXS **NOTE** This card is supported in V200R002C02 and later versions.	Y	Y	Y	Y	Y	Y
32FXS **NOTE** This card is supported in V200R002C02 and later versions.	N	N	Y	Y	Y	Y

NOTE

- Y: supported
- N: not supported

Application

As shown in **Figure 3-200**, the 16FXS/32FXS provides access to 16 or 32 analog terminals. The 16FXS/32FXS can connect to the phone patch panel or directly connect to POTS phones, fax machines, modems, and POTS machines.

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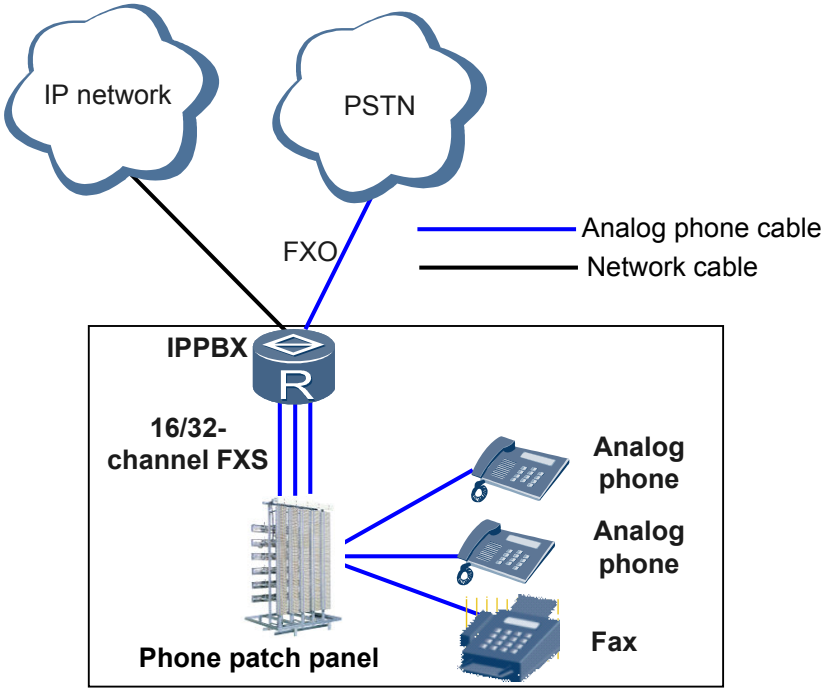
Figure 3-200 16FXS/32FXS application



Functions and Features

Table 3-234 describes the functions and features of the 16/32FXS.

Table 3-234 Functions and features of the 16/32FXS

Function and Feature	Description
Basic functions	Provides 16/32-channel analog terminal access, meeting enterprise high-density voice service requirements.
BEST	When a fault occurs on the WAN-side network, internal communication of an enterprise is not affected.
Seamless migration to VoIP	On the enterprise's IP network, you can only add ARs to support VoIP. This protects investments and facilitates expansion.
Low cost	The AR provides VoIP. With VoIP, an enterprise only needs to pay the local call fee, saving the toll call fee.
Various services	The AR provides various services including call center, secretary service, wake-up service, blacklist and whitelist, three-party service, and ONLY service.
Diagnosis and maintenance	Provides signaling tracing, simulation, diagnosis test, and remote packet header capture.

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Indicators and Interfaces

NOTE

The 16FXS and 32FXS have the same indicators except for having different channels. 32FXS is used as an example to describe the indicators.

Indicators on the 32FXS Panel

Figure 3-201 shows the indicators on the 32FXS panel, and **Table 3-235** describes the indicator states and meaning.

Figure 3-201 Indicators on the 32FXS panel

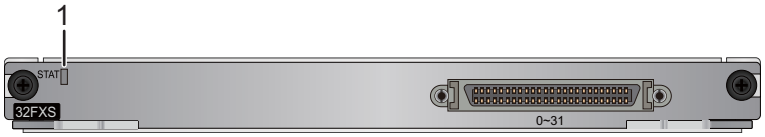


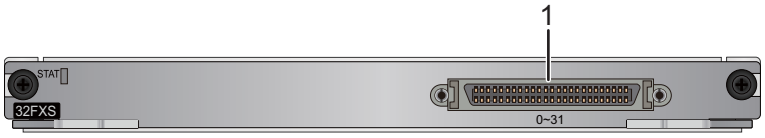
Table 3-235 Indicators on the 16/32FXS panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.

Description of Interfaces

Figure 3-202 shows the interfaces on the 32FXS panel.

Figure 3-202 Interfaces on the 32FXS panel



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1. One FXS interface (DB68)

FXS interface (DB68)

An FXS interface is a simulated subscriber line interface and provides access to AT0 loop trunk of the analog phone, fax, and telephone exchange. **Table 3-236** describes the attributes of the FXS interface (DB68).

Table 3-236 Attributes of the FXS (DB68) interface

Attribute	Description
Connector type	DB68
Standards compliance	IEEE 1284C Interface as a 36 contact connector
Cable type	Twisted pair
Dialing mode	DTMF in accordance with GB3378 Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	● 16FXS: **16FXS Cable** ● 32FXS: **32FXS Cable**

JTAG port

Figure 3-203 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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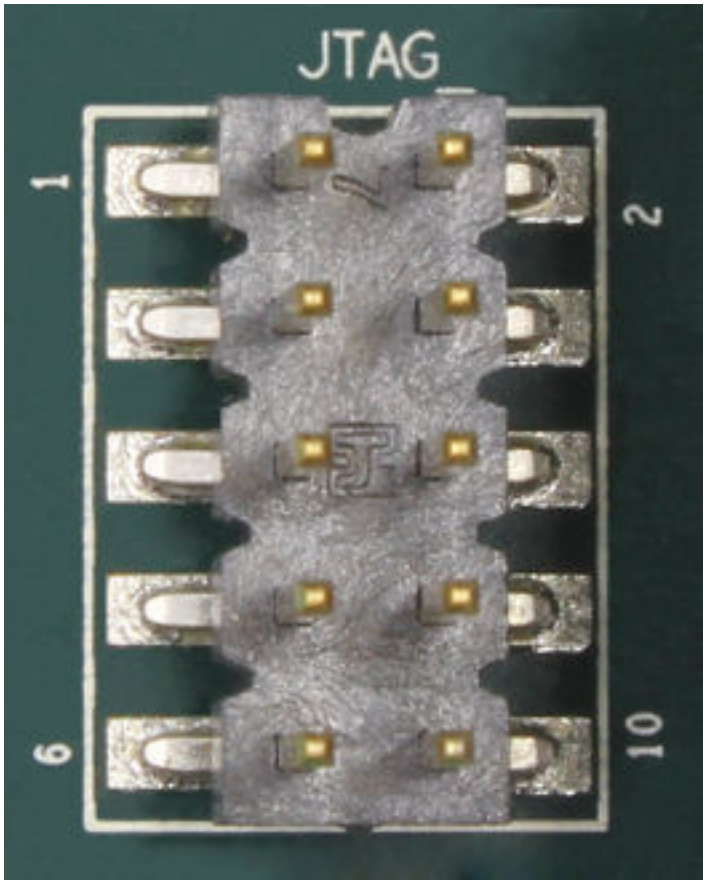
Figure 3-203 JTAG port



Technical Specifications

Table 3-237 describes the technical specifications of the 16/32FXS.

Table 3-237 Technical specifications of the 16/32FXS

Item	Specification
Card type	WSIC
External interfaces	One FXS interface (DB68)
Standards compliance	● ITU Q.512 for FXS interfaces ● ITU K.20 for protection against overcurrent and overvoltage
Bandwidth	300 Hz to 3.4 kHz
Dialing mode	● DTMF (GB3378) ● Pulse dialing
Connector type	DB68
Cable	● 16FXS: **16FXS Cable** ● 32FXS: **32FXS Cable**

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Item	Specification
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: 37.2 W ● Weight: 0.6 kg (1.33 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 16/32FXS, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-238 provides the ordering information.

Table 3-238 Ordering information

Part Number	Card Name	Card Description
03021QSU	16FXS	16-Port FXS Voice Interface Card
03020XJT	32FXS	32-Port FXS Voice Interface Card

3.5.5 4FXO (4-Port FXO Voice Interface Card)

Card Overview

The 4FXO is a voice access module and an SIC interface module. It provides four FXO interfaces to connect to the PSTN to transmit voice services.

Figure 3-204 shows the appearance of the 4FXO.

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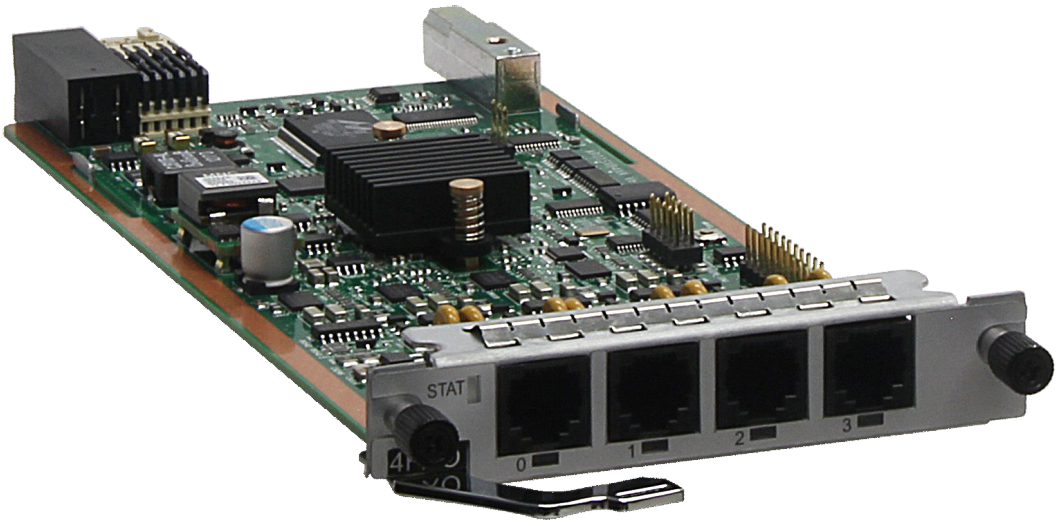
Figure 3-204 Appearance of the 4FXO



Version Mapping

Table 3-239 describes the mapping between the 4FXO and software versions.

Table 3-239 Mapping between the 4FXO and software versions

Card Name	AR1220V AR1220VW	AR1220EV AR1220EVW	AR2204	AR2220E	AR2220 AR2240	AR3260
4FXO **NOTE** This card is supported in V200R002C02 and later versions.	Y	Y	Y	Y	Y	Y

NOTE

Y: supported.

Application

As shown in Figure 3-205, the 4FXO provides FXO interfaces to connect to TDM PBXs. The FXO interfaces can be used to connect to the TDM PBXs if the enterprise branch needs to use

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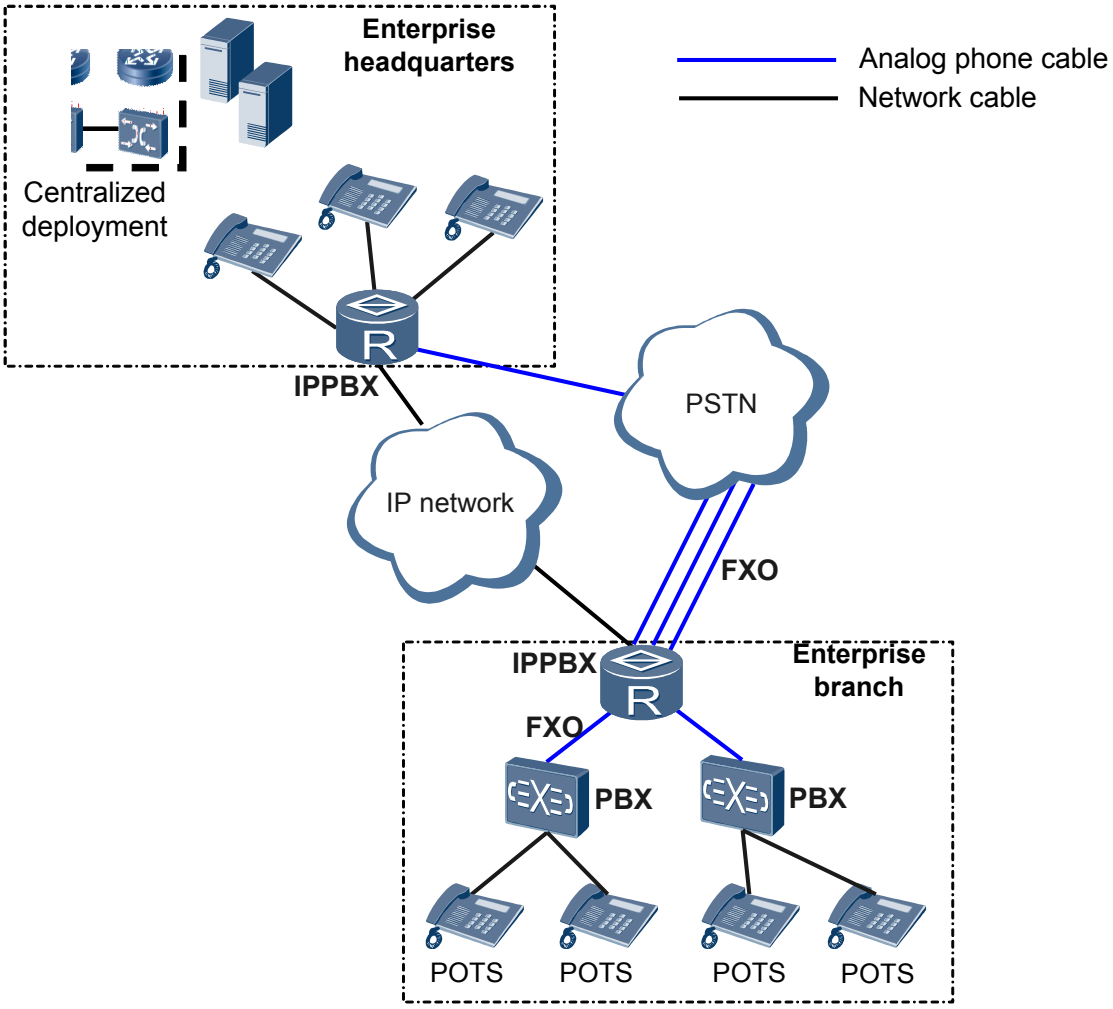
TDM PBXs to connect to more phones, and connect to the PSTN to transmit voice services between enterprise users and external users.

When the enterprise branch needs to use TDM PBXs to connect to more phones, FXO interfaces can be used to connect to the TDM PBXs and the IP network to provide the VoIP function. This implementation makes full use of existing devices and reduces investment costs.

When multiple users in the enterprise branch want to communicate with external users simultaneously, FXO interfaces can be used to connect to the PSTN.

Figure 3-205 4FXO application



Functions and Features

Table 3-240 describes the functions and features of the 4FXO.

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Table 3-240 Functions and features of the 4FXO

Function and Feature	Description
Basic functions	Provides multiple interfaces to connect to traditional PBXs, protecting investments.
	Provides multiple interfaces to connect to the PSTN.
BEST	When a fault occurs on the WAN-side network, internal communication of an enterprise is not affected.
Link backup	The PSTN functions as a backup for the enterprise's IP network. When the IP network between the headquarters and a branch fails, calls can be connected through the PSTN.
Seamless migration to VoIP	On the enterprise's IP network, you can only add ARs to support VoIP. This protects investments and facilitates expansion.
Low cost	The AR provides VoIP. With VoIP, an enterprise only needs to pay the local call fee, saving the toll call fee.
Various services	The AR provides various services including call center, secretary service, wake-up service, blacklist and whitelist, three-party service, and ONLY service.
Diagnosis and maintenance	Provides signaling tracing, simulation, diagnosis test, and remote packet header capture.

Indicators and Interfaces

Indicators on the 4FXO Panel

Figure 3-206 shows the indicators on the 4FXO panel, and **Table 3-241** describes the indicator states and meaning.

Figure 3-206 Indicators on the 4FXO panel

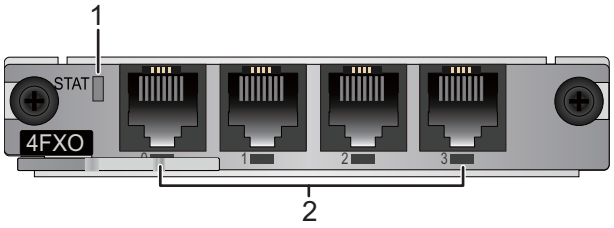

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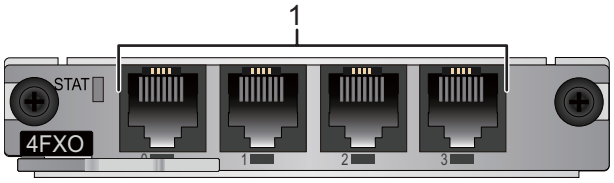
Table 3-241 Indicators on the 4FXO panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT (interface status indicator)	Green	Stead on: The FXO channel is being occupied by a call.
			Off: The FXO channel is idle.

Description of Interfaces

Figure 3-207 shows the indicators on the 4FXO panel.

Figure 3-207 Indicators on the 4FXO panel



1. Four FXO interfaces (RJ11)

FXO interface (RJ11)

An FXO interface is a loop trunk interface that can connect to the PSTN. **Table 3-242** describes the attributes of the FXO interface.

Table 3-242 Attributes of the FXO (RJ11) interface

Attribute	Description
Connector type	RJ11

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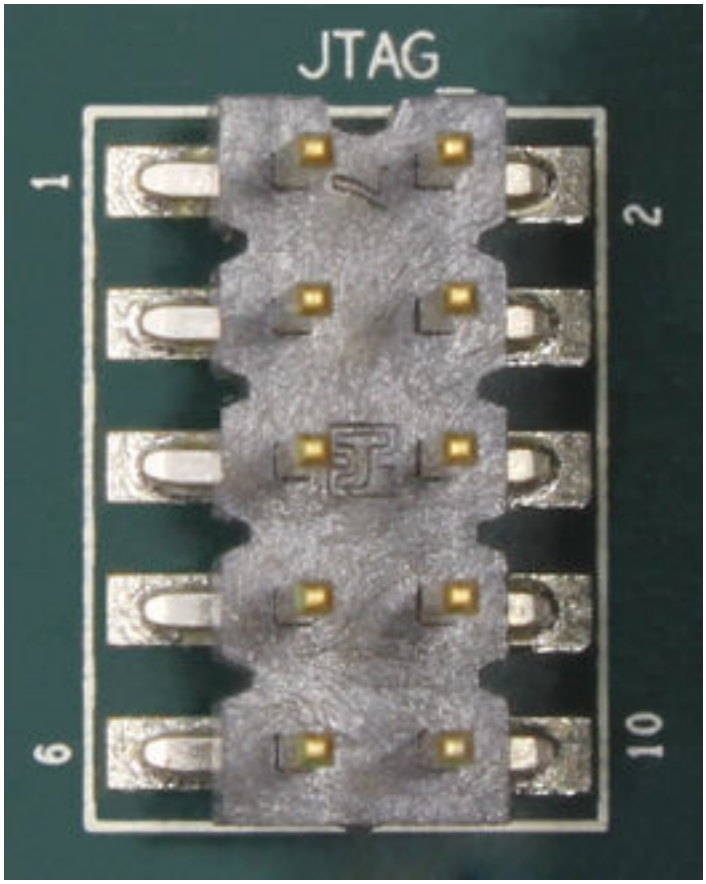
Attribute	Description
Standards compliance	ITU Q.552 for FXO interfaces ITU K.20 for protection against overcurrent and overvoltage
Dialing mode	● DTMF in accordance with GB3378 ● Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	**Standard Telephone Cable**

JTAG port

Figure 3-208 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-208 JTAG port



Technical Specifications

Table 3-243 describes the technical specifications of the 4FXO.

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Table 3-243 Technical specifications of the 4FXO

Item	Specification
Card type	SIC
External interfaces	Four FXO interfaces
Standards compliance	● ITU Q.552 for FXO interfaces ● ITU K.20 for protection against overcurrent and overvoltage
Bandwidth	300 Hz to 3.4 kHz
Dialing mode	● DTMF (GB3378) ● Pulse dialing
Connector type	RJ11
Cable	**Standard Telephone Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: 6.6 W ● Weight: 0.1 kg (0.22 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Order Information

To order the 4FXO, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-244 provides the ordering information.

Table 3-244 Ordering information

Part Number	Card Name	Card Description
03020XJU	4FXO	4-Port FXO Voice Interface Card

3.5.6 1VE1 (1-Port Voice E1 Interface Card)

Card Overview

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NOTE

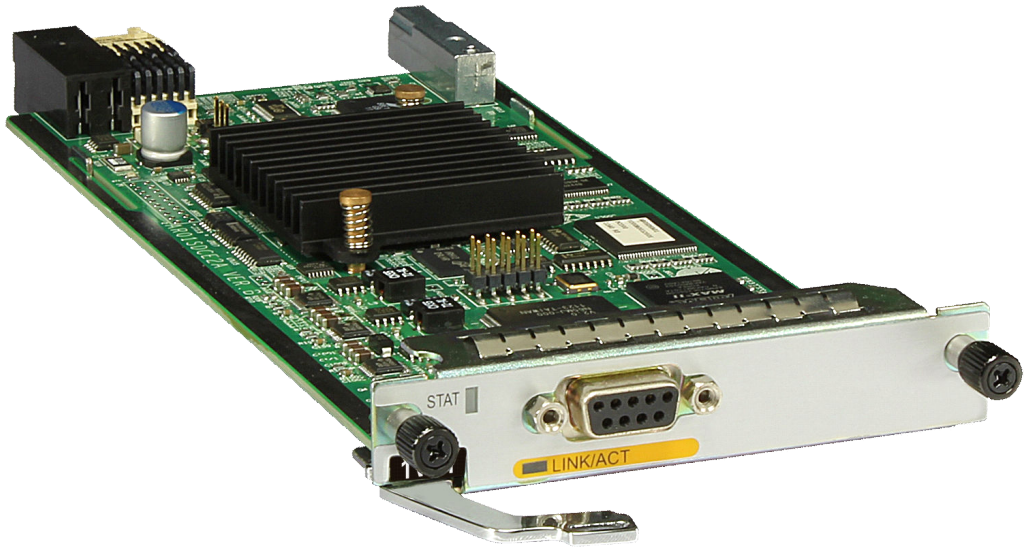
Meaning of characters in the card name:

- 1: one interface on the card
- VE1: E1 voice interface

The 1VE1 is a voice processing module for AR routers. It provides a VE1 interface and is installed in a SIC slot to provide high-density analog voice service.

Figure 3-209 shows the appearance of a 1VE1 card.

Figure 3-209 1VE1 card appearance



Version Mapping

Table 3-245 describes the mapping between the 1VE1 card and software versions of different product models.

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Table 3-245 Mapping between the 1VE1 card and software versions

Card Name	AR1220V AR1220VW	AR1220EV AR1220EVW	AR2204	AR2220E	AR2220 AR2240	AR3260
1VE1 **NOTE** This card is supported in V200R005C00 and later versions.	Y	Y	Y	Y	Y	Y

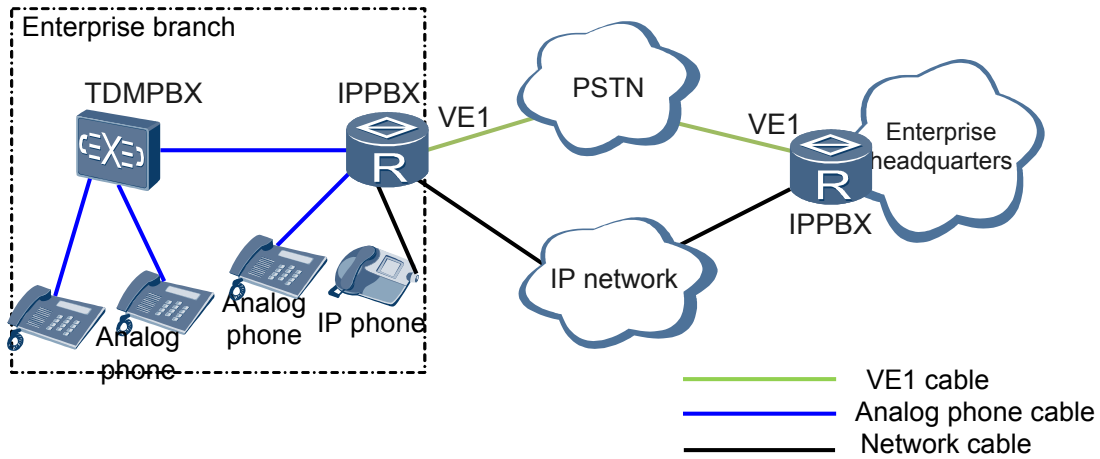
NOTE

Y: supported.

Application

As shown in **Figure 3-210**, an enterprise's headquarters and branch communicate through a public switched telephone network (PSTN). The P PBXs have 1VE1 cards installed to provide VE1 lines for PSTN access. When a 1VE1 card works in VE1 mode, each VE1 line supports a maximum of 30 voice connections. With the 1VE1 cards installed, the IP PBXs provide high-density access to the PSTN and can work with the TDM PBXs on the enterprise network.

Figure 3-210 Enterprise voice communication through VE1 lines



Functions and Features

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Table 3-246 describes functions and features of a 1VE1 card.

Table 3-246 Functions and features of a 1VE1 card

Function and Feature	Description
Data transmission	The VE1 interface connects to a WAN to complete voice data transmission.
ISDN dial-up access	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Voice gateway	Works as a gateway to provide high-density access to a PSTN or TDM network, and supports a maximum of 30 call connections on a VE1 line.
Investment protection	1VE1 cards can connect to TDM PBX devices on an enterprise network. The use of 1VE1 cards protects customers' investment and facilitates network expansion.

Indicators and Interfaces

Indicator Description

Figure 3-211 shows indicators on a 1VE1 card, and Table 3-247 describes the indicator states and meaning.

Figure 3-211 Indicators on a 1VE1 card

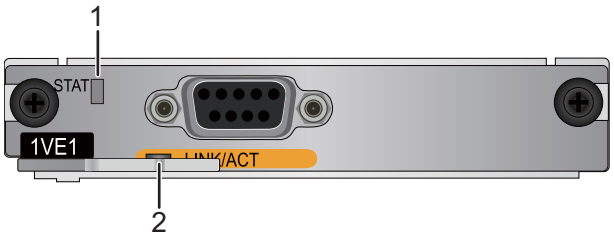

Table 3-247 1VE1 card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.

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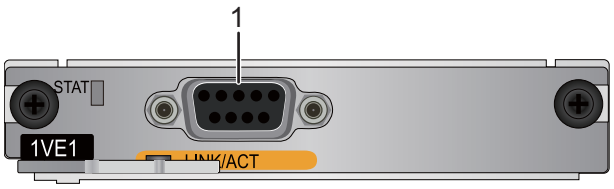
Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface.
		Yellow	Blinking: The interface is transmitting and receiving data.
		Off	No link is established on the interface.

Interface Description

Figure 3-212 shows interfaces on a 1VE1 card.

Figure 3-212 Interfaces on a 1VE1 card



1. One VE1 interface

VE1 interface

A VE1 interface uses to transmit voice signals. **Table 3-248** describes the VE1 interface attributes.

Table 3-248 VE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface speed	2.048 Mbit/s

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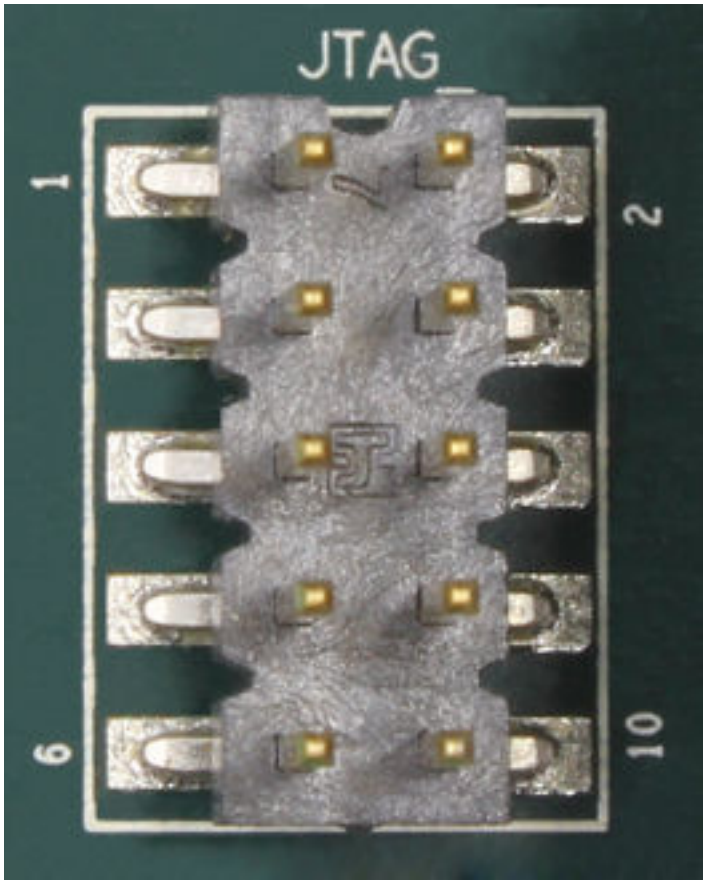
Attribute	Description
Working mode	VE1
Services provided	● Backup ● Terminal access
Cable	4.1.9 E1/T1 Cable

JTAG port

Figure 3-213 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-213 JTAG port



Technical Specifications

Table 3-249 lists technical specifications of a 1VE1 card.

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Table 3-249 1VE1 technical specifications

Item	Specification
Card type	SIC
External interface	One VE1 interface
Standards compliance	● E1 line coding and physical/electrical characteristics: ITU-T G.703 ● E1 line coding: HDB3 ● E1 line frame format: ITU-T G.704 ● E1: CRC Multiframe, DoubleFrame
Interface speed	2.048 Mbit/s
Connector type	DB9
Cable	**4.1.9 E1/T1 Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (W x D x H): 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 9.2 in. x 0.78 in.) ● Maximum power consumption: 4.7 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-250 provides the ordering information.

Table 3-250 1VE1 ordering information

Part Number	Card Name	Card Description
03021WYL	1VE1	1-Port Voice E1 Interface Card

3.5.7 1/2/4/8 Port-Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card

Card Overview

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NOTE

- 1/2/4/8: indicates one, two, four, or eight interfaces.
- E1: indicates E1 interfaces.
- T1: indicates T1 interfaces.
- M: indicates multiflex trunks.
- PRI: indicate ISDN primary rate interfaces.
- VE1: indicates voice E1 interfaces.

The 4E1/T1-M/8E1/T1-M supports only CE1 functions and can provide T1/PRI in the future.

The channelized E1/T1/PRI multifunctional interface card processes data and voice flows and provides 1-8 CE1/PRI interfaces. It implements high-density WAN interconnection, WAN aggregation, analog voice, digital voice, and dialup.

Channelized E1/T1/PRI Multifunctional Interface Card have five types. **Table 3-251** lists the differences between the five types.

Table 3-251 Slots of channelized E1/T1/PRI multifunctional interface cards

Card Name	Interface Quantity	Connector Type	Slot
1E1/T1-M	1	DB9	SIC slot
2E1/T1-M	2	DB9	SIC slot
2E1/T1-M-W	2	DB9	WSIC slot or XSIC slot **NOTE** In an XSIC slot, the WSIC card is installed in the lower part of the slot. The WSIC card uses the XSIC slot ID as its own slot ID.
4E1/T1-M	4	RJ45	
8E1/T1-M	8	RJ45	

Figure 3-214 shows the appearance of the 1E1/T1-M.

Figure 3-214 Appearance of the 1E1/T1-M

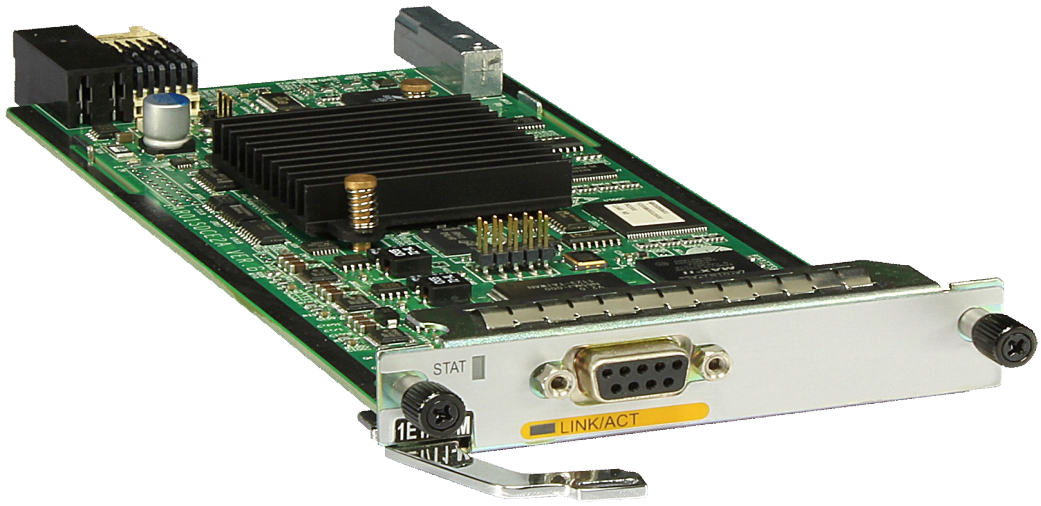

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Figure 3-215 shows the appearance of the 2E1/T1-M.

Figure 3-215 Appearance of the 2E1/T1-M

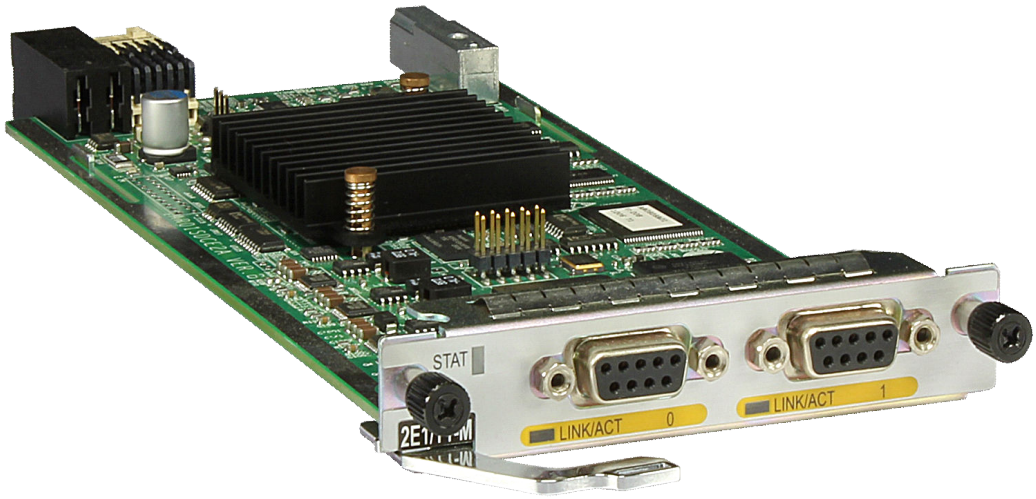

Figure 3-216 shows the appearance of the 2E1/T1-M-W.

Figure 3-216 Appearance of the 2E1/T1-M-W

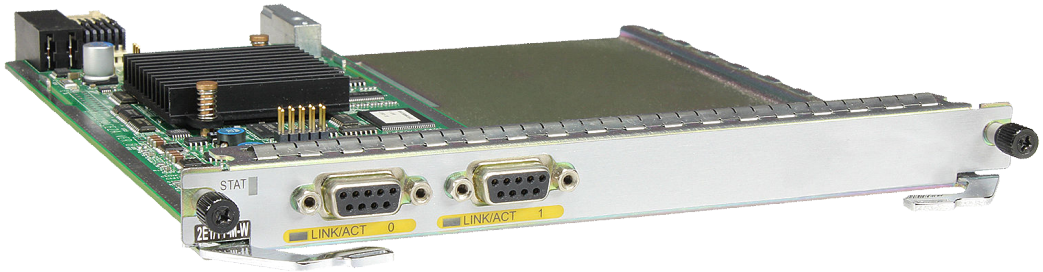

Figure 3-217 shows the appearance of the 4E1/T1-M.

Figure 3-217 Appearance of the 4E1/T1-M

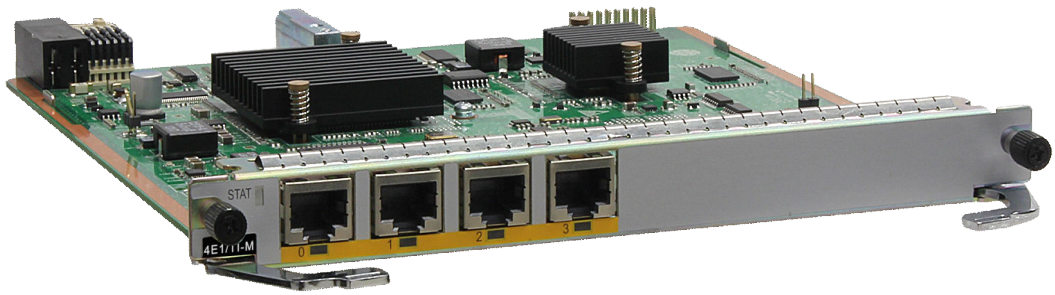

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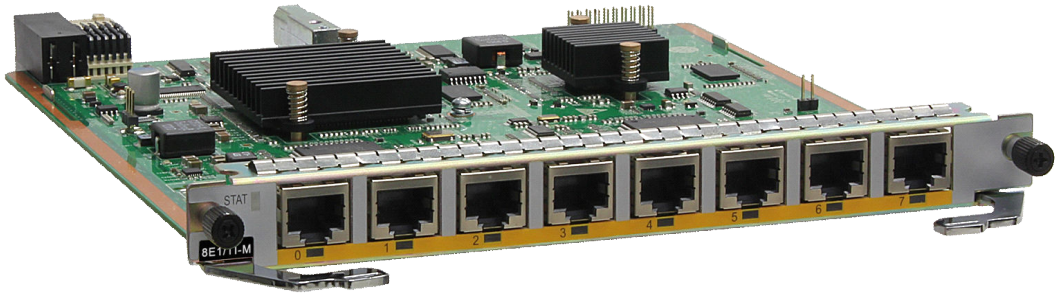
Figure 3-218 shows the appearance of the 8E1/T1-M.

Figure 3-218 Appearance of the 8E1/T1-M



Version Mapping

Table 3-252 and Table 3-253 describes the mapping between the channelized E1/T1/PRI multifunctional interface card and software versions.

Table 3-252 Mapping between the channelized E1/T1/PRI multifunctional interface card and software versions

Card Name	AR1200 Series	AR2204 AR2220 AR2220E	AR2204E Series	AR2240 AR2240C	AR3260	AR3670
1E1/T1-M 2E1/T1-M **NOTE** V200R001C00 and later versions.	Y	Y	Y	Y	Y	Y
2E1/T1-M-W **NOTE** Huawei will stop service on this card after December 31, 2013. V200R002C00 and later versions.	Y	Y	N	Y	Y	Y

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Table 3-253 Mapping between the channelized E1/T1/PRI multifunctional interface card and software versions

Card Name	AR1200 Series (Except AR1220C)	AR2204 AR2220 AR2220E	AR2204E AR2240 AR2240C	AR3260	AR3670
4E1/T1-M 8E1/T1-M **NOTE** V200R003C00 and later versions.	Y	Y	Y	Y	Y

NOTE

- Y: supported.
- N: not supported

Application

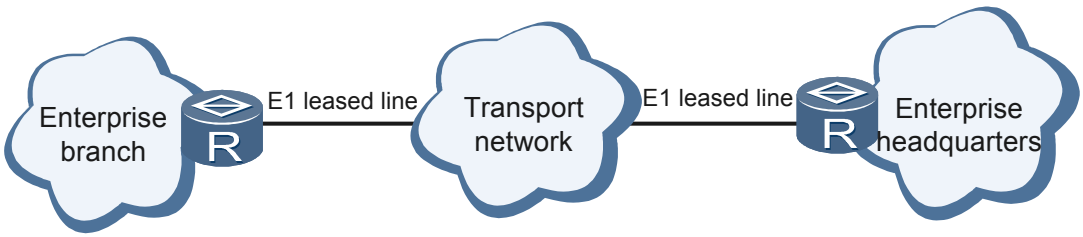
The channelized E1/T1/PRI multifunctional interface card often applies to the following scenarios:

- **WAN Interconnection**
- **WAN Aggregation in CE1 Mode**
- **Dialup Connection in PRI Mode**
- **Voice Connection in VE1 Mode**

WAN Interconnection

As shown in **Figure 3-219**, the enterprise headquarters and branch are connected through E1 lines. When the channelized E1/T1/PRI multifunctional interface card works in E1 mode, the enterprise can connect to the transport network through E1 lines to transmit data services with a total bandwidth of 2 Mbit/s.

Figure 3-219 Connecting the enterprise headquarters and branch through E1 lines



As shown in **Figure 3-220**, timeslots of the E1 channel in channelized mode can be bundled to form multiple low-speed links to synchronously transmit various services. When the

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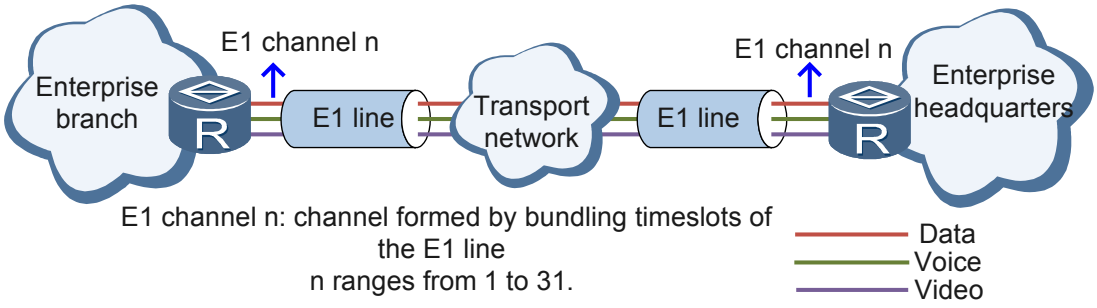
channelized E1/T1/PRI multifunctional interface card works in CE1 mode, CE1 flexibly bundles timeslots of the E1 line to form multiple low-speed E1 channels such as 128 or 256 kbit/s. Each E1 channel can transmit one service. CE1 allows multiple services to be transmitted through the E1 channels and independent of each other.

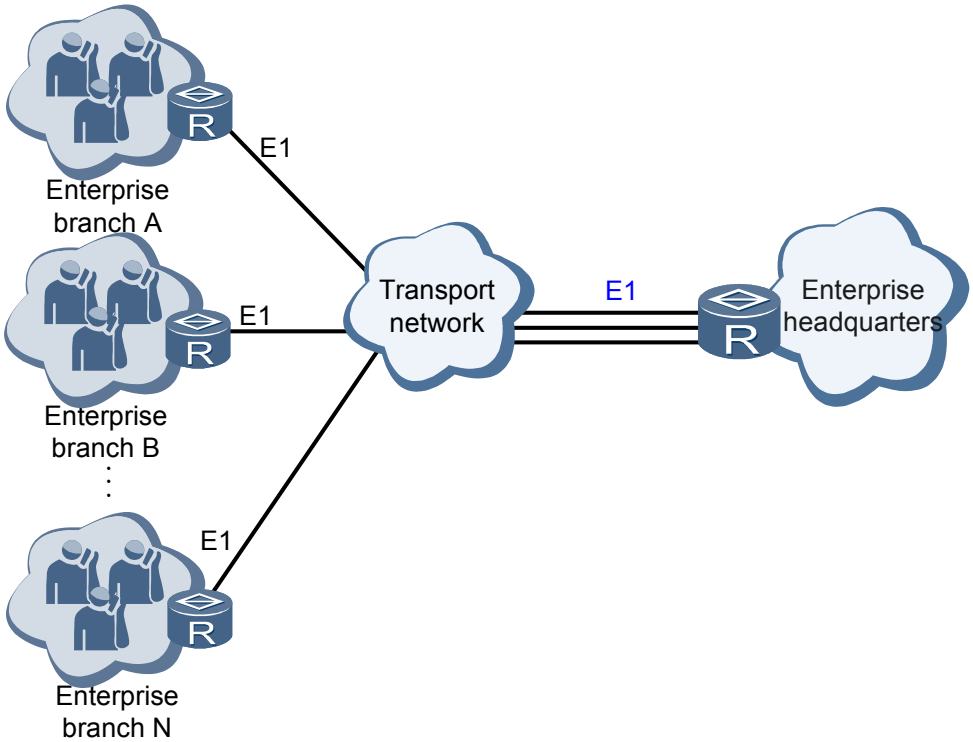
Figure 3-220 Connecting the enterprise headquarters and branch through CE1



WAN Aggregation in CE1 Mode

As shown in **Figure 3-221**, the channelized E1/T1/PRI multifunctional interface card works in CE1 mode, the enterprise headquarters uses multiple E1 lines to connect to the transport network , and the enterprise branches connect to the transport network through E1 lines.

Figure 3-221 Connecting the enterprise headquarters and branches through multiple E1 lines



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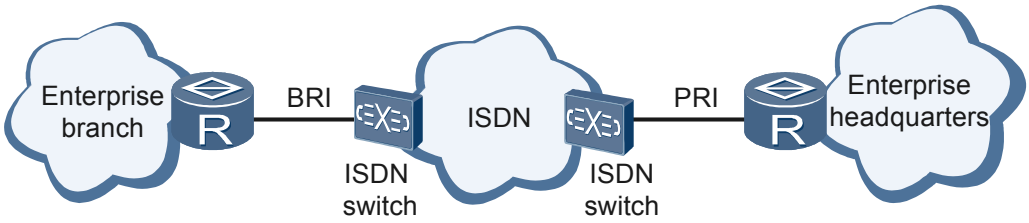
Dialup Connection in PRI Mode

As shown in **Figure 3-222**, the enterprise headquarters and branch are connected through the ISDN. When the channelized E1/T1/PRI multifunctional interface card works in PRI mode, the enterprise headquarters and branch connect to the ISDN through a PRI interface and a BRI interface respectively. In PRI mode, two ore mote timeslots can be bundled to form a TDM channel to transmit data and voice services exchanged between the enterprise headquarters and branch.

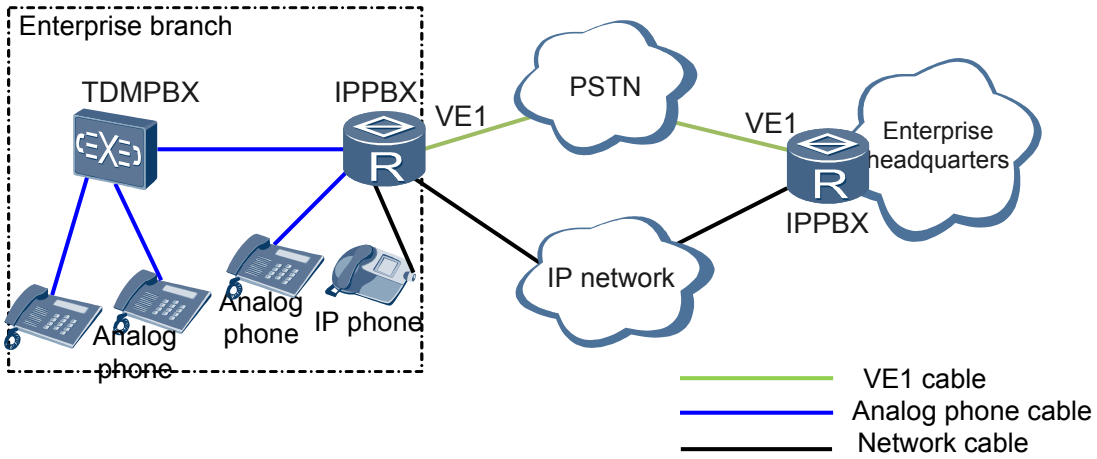
Figure 3-222 Connecting the enterprise headquarters and branch through PRI



Voice Connection in VE1 Mode

As shown in **Figure 3-223**, the enterprise headquarters and branch are connected to the PTSN through VE1 interfaces and exchange voice services through the PSTN. When the channelized E1/T1/PRI multifunctional interface card works in VE1 mode, a VE1 line supports a maximum of 30-channel voice calls. The enterprise headquarters can use multiple VE1 lines to connect to the PSTN and existing TDM PBXs of the enterprise branch.

Figure 3-223 Using VE1 to transmit voice services



Functions and Features

Table 3-254 describes the functions and features of the channelized E1/T1/PRI multifunctional interface card.

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Table 3-254 Functions and features of the channelized E1/T1/PRI multifunctional interface card

Function and Feature	Description
Data transmission	Uses E1 or CE1 interfaces to connect to a WAN for data transmission.
	E1 leased lines supports a maximum of 32 channel groups, providing a maximum of 2 Mbit/s bandwidth.
	The 31 timeslots can be randomly bundled into multiple channels at a rate of *n* multiplied by 64 kbit/s. *n* is an integer that ranges from 1 to 31.
Multi-service transmission	Separately transmits data, voice, and video services.
WAN aggregation	Uses multiple E1 lines to connect the enterprise headquarters and branch.
ISDN access	Supports various services, including voice, high-speed fax, video conference, intelligent telegraph, and teletext services and provides a maximum of 2 Mbit/s transmission rate.
Flexible and easy deployment	An interface can be flexibly configured as a WAN interface, data interface, or voice interface, which simplifies networking.
Voice gateway	Functions as a gateway to connect to the PSTN or TDM PBX network, and supports a maximum of 30-channel voice calls.
Investment protection	In VE1 mode, the card can connect to existing TDM PBXs, protecting investments and facilitating expansion.
PWE3 (supported only by the 8E1/T1-M interface card)	Pseudo Wire Emulation Edge to Edge (PWE3) allows users to smoothly connect to an IP network from their networks, without changing the original access methods.
	PWE3 technology connects networks using different access methods to an IP network.

Indicators and Interfaces

Indicators on the E1/T1-M Panel

NOTE

The 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W have the same indicators except for having different CE1/PRI interfaces. 2E1/T1-M-W is used as an example to describe the indicators.

The 4E1/T1-M and 8E1/T1-M have the same indicators except for having different CE1 interfaces. 8E1/T1-M is used as an example to describe the indicators.

Figure 3-224 shows the indicators on the 2E1/T1-M-W panel, and **Table 3-255** describes the indicator states and meaning.

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Figure 3-224 Indicators on the 2E1/T1-M-W panel

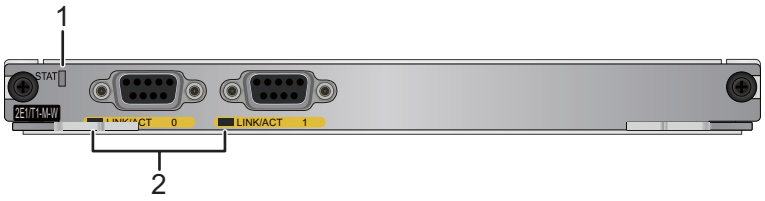

Table 3-255 Indicators on the 1E1/T1-M/2E1/T1-M/2E1/T1-M-W panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK/ACT	Green	Steady on: A link has been established. Off: No link is established.
		Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Off	Off: There is no connection.

Figure 3-225 shows the indicators on the 8E1/T1-M panel, and **Table 3-256** describes the indicator states and meaning.

Figure 3-225 Indicators on the 8E1/T1-M panel

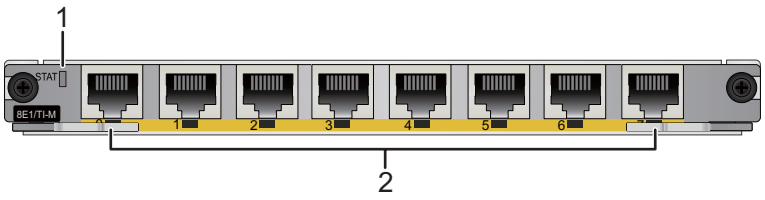

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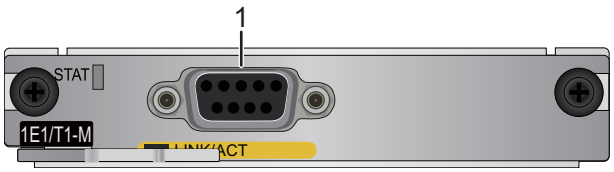
Table 3-256 Indicators on the 4E1/T1-M/8E1/T1-M panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	One double-color indicator for each CE1 interface	Green	Steady on: A link has been established. Off: No link is established.
		Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.
		Off	Off: There is no connection.

Description of Interfaces

Figure 3-226 shows the interfaces on the 1E1/T1-M.

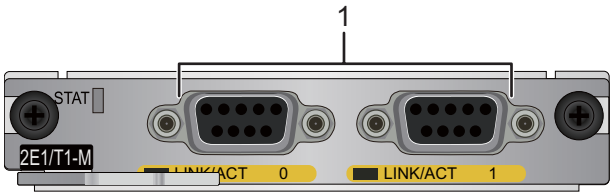
Figure 3-226 Interfaces on the 1E1/T1-M



1. One CE1/CT1/PRI interface

Figure 3-227 shows interfaces on the 2E1/T1-M.

Figure 3-227 Interfaces on the 2E1/T1-M



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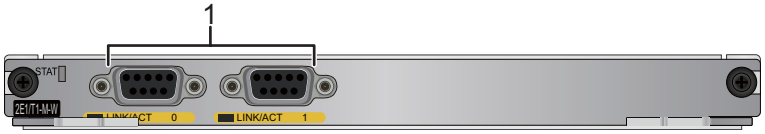
1. Two CE1/CT1/PRI interfaces

Figure 3-228 shows interfaces on the 2E1/T1-M-W.

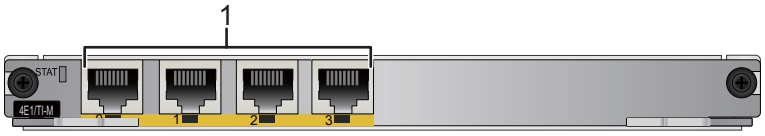
Figure 3-228 Interfaces on the 2E1/T1-M-W



1. Two CE1/CT1/PRI interfaces

Figure 3-229 shows the interfaces on the 4E1/T1-M.

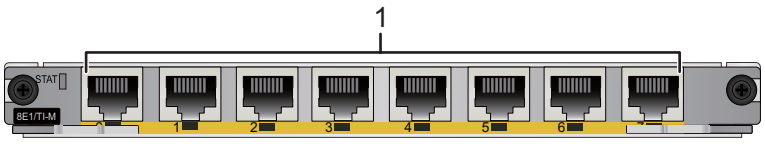
Figure 3-229 Interfaces on the 4E1/T1-M



1. Four CE1 interfaces

Figure 3-230 shows the interfaces on the 8E1/T1-M.

Figure 3-230 Interfaces on the 8E1/T1-M



1. Eight CE1 interfaces

Channelized E1 interface

An E1 interface is used to transmit voice, data, and video service packets. **Table 3-257** describes the attributes of the E1 interface.

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Table 3-257 Attributes of the channelized E1 interface

Attribute	Description
Connector type	● 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W: DB9 ● 4E1/T1-M and 8E1/T1-M: RJ45
Standards compliance	● 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W: G.703 and G.704 ● 4E1/T1-M and 8E1/T1-M: G.703
Interface rate	2.048 Mbit/s
Working mode	● 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W: E1, CE1, ISDN PRI, and VE1 ● 4E1/T1-M and 8E1/T1-M: E1 and CE1
Function	● 1E1/T1-M, 2E1/T1-M, and 2E1/T1-M-W – Backup – Terminal access – ISDN PRI ● 4E1/T1-M and 8E1/T1-M – Backup – Terminal access
Cable type	**4.1.9 E1/T1 Cable**

Channelized T1 interface

A T1 interface is used to transmit voice, data, and video service packets. **Table 3-258** describes the attributes of the fractional channelized T1 interface.

Table 3-258 Attributes of the channelized T1 interface

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Transmission rate	1.544 Mbit/s
Working mode	CT1, ISDN PRI, VT1
Function	● Backup ● Terminal access ● ISDN PRI
Cable type	**100-Ohm DB9-to-RJ45 Cable**

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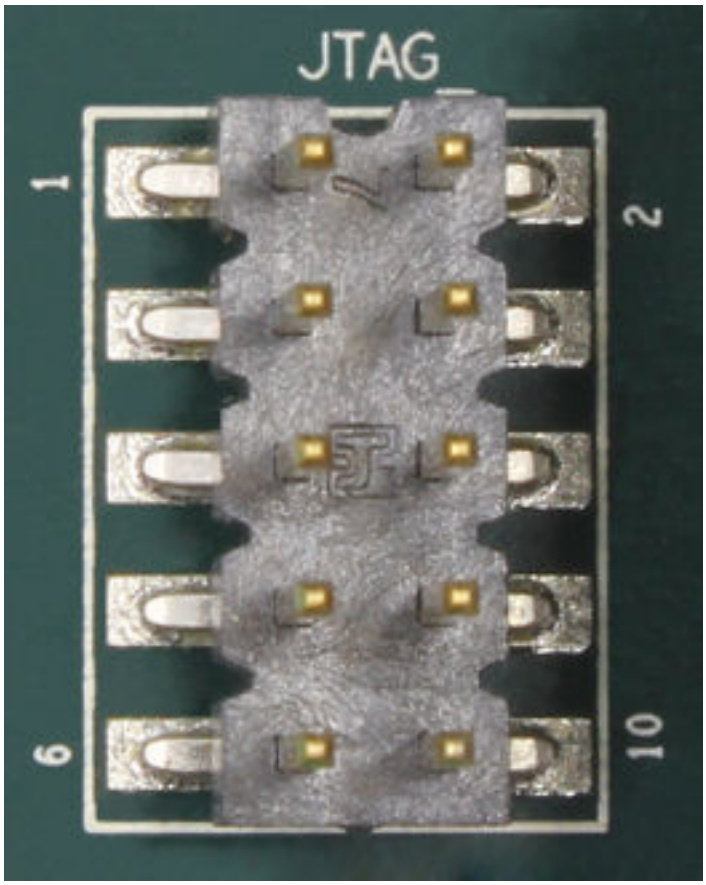
JTAG port

Figure 3-231 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-231 JTAG port



Technical Specifications

Table 3-259 describes the technical specifications of the channelized E1/T1/PRI multifunctional interface card.

Table 3-259 Technical specifications of the channelized E1/T1/PRI multifunctional interface card

Item	Specification
Card type	● 1E1/T1-M: SIC ● 2E1/T1-M: SIC ● 2E1/T1-M-W: WSIC ● 4E1/T1-M: WSIC ● 8E1/T1-M: WSIC

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Item	Specification
External interfaces	● 1E1/T1-M: One CE1/CT1 interface ● 2E1/T1-M: Two CE1/CT1 interfaces ● 2E1/T1-M-W: Two CE1/CT1 interfaces ● 4E1/T1-M: Four CE1 interfaces ● 8E1/T1-M: Eight CE1 interfaces
Standards compliance	● 1E1/T1-M/2E1/T1-M/2E1/T1-M-W: – E1/T1 line codec and electrical attributes: ITUT G.703 – E1 line codec: HDB3 – T1: AMI, B8ZS – E1/T1 line frame format: ITUT G.704 – E1: CRC Multiframe, DoubleFrame – T1: F12 Frame (Super Frame), F24 Frame (Extended Super Frame) – Channelized E1/T1, unchannelized E1/T1, PRI, and VE1 ● 4E1/T1-M/8E1/T1-M: – E1 line codec and electrical attributes: ITUT G.703 – E1 line codec: HDB3 – E1 line frame format: ITUT G.704 – E1: CRC Multiframe, DoubleFrame
Transmission rate	● 1E1/T1-M/2E1/T1-M/2E1/T1-M-W: – E1: 2.048 Mbit/s – T1: 1.544 Mbit/s ● 4E1/T1-M/8E1/T1-M: – E1: 2.048 Mbit/s
Connector type	● 1E1/T1-M/2E1/T1-M/2E1/T1-M-W: DB9 ● 4E1/T1-M/8E1/T1-M: RJ45
Cable	**4.1.9 E1/T1 Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel

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Item	Specification
Physical specifications	● Dimensions (height x width x depth): – 1E1/T1-M: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 2E1/T1-M: 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) – 2E1/T1-M-W: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) – 4E1/T1-M: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) – 8E1/T1-M: 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.8 in.) ● Maximum power consumption: – 1E1/T1-M: 4.7 W (10.36 lb) – 2E1/T1-M: 4.8 W (10.58 lb) – 2E1/T1-M-W: 4.8 W (10.58 lb) – 4E1/T1-M: 11 W (24.25 lb) – 8E1/T1-M: 12 W (26.45 lb) ● Weight: – 1E1/T1-M: 0.3 kg (0.66 lb) – 2E1/T1-M: 0.3 kg (0.66 lb) – 2E1/T1-M-W: 0.3 kg (0.66 lb) – 4E1/T1-M: 0.6 kg (1.32 lb) – 8E1/T1-M: 0.6 kg (1.32 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1E1T1-M/2E1T1-M/2E1T1-M-W/4E1T1-M/8E1T1-M, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-260 provides the ordering information.

Table 3-260 Ordering information

Part Number	Card Name	Card Description
03020YNU	1E1/T1-M	1-Port Channelized E1/T1/PRI/VE1 multifunctional Interface Card
03020YNR	2E1/T1-M	2-Port Channelized E1/T1/PRI/VE1 multifunctional Interface Card (SIC)

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Part Number	Card Name	Card Description
03021MSX	2E1/T1-M-W	2-Port Channelized E1/T1/PRI/VE1 multifunctional Interface Card (WSIC)
03021RCR	4E1/T1-M	4-Port Channelized E1/PRI multifunctional Interface Card
03021FXE	8E1/T1-M	8-Port Channelized E1/PRI multifunctional Interface Card

3.6 xDSL/xPON Interface Card

3.6.1 1ADSL-A/M and 1ADSL-B/J (1-Port-ADSL2+ ANNEX A/M and B/J WAN Interface Card)

Card Overview

An ADSL card is installed in a SIC slot for WAN connection. It provides the asymmetrical digital subscriber line service for enterprises, transmitting video, voice, and data at a high speed on the Internet.

Two types of ADSL cards are available: 1ADSL-A/M and 1ADSL-B/J. **Table 3-261** describes their differences.

Table 3-261 Differences between 1ADSL-A/M and 1ADSL-B/J

Card Name	Usage Scenario
1ADSL-A/M	● Annex A is applied to ADSL over POTS and compatible with POTS services. ● Annex M expands the uplink frequency band of ADSL and provides a higher uplink bandwidth.
1ADSL-B/J	● Annex B is applied to ADSL over ISDN and compatible with ISDN services. ● Annex J expands the uplink frequency band of ADSL and provides a higher uplink bandwidth.

Figure 3-232 shows the appearance of the 1ADSL-A/M.

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Figure 3-232 1ADSL-A/M appearance

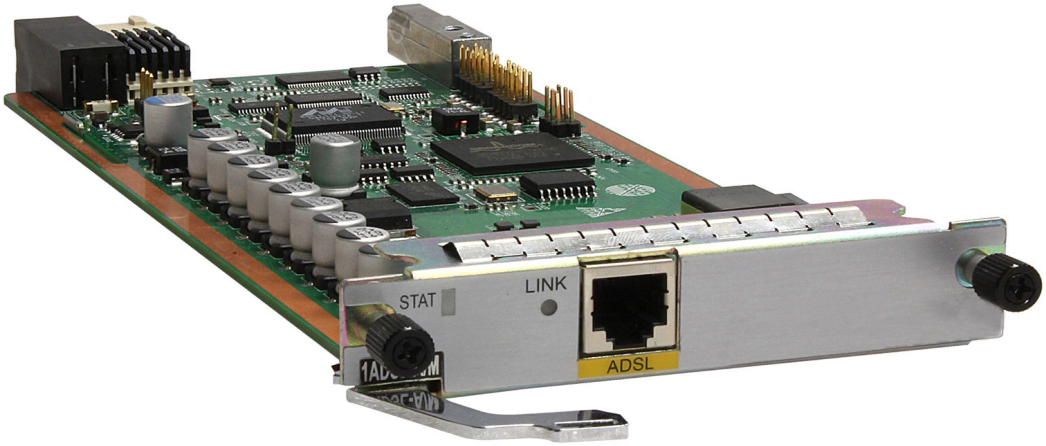
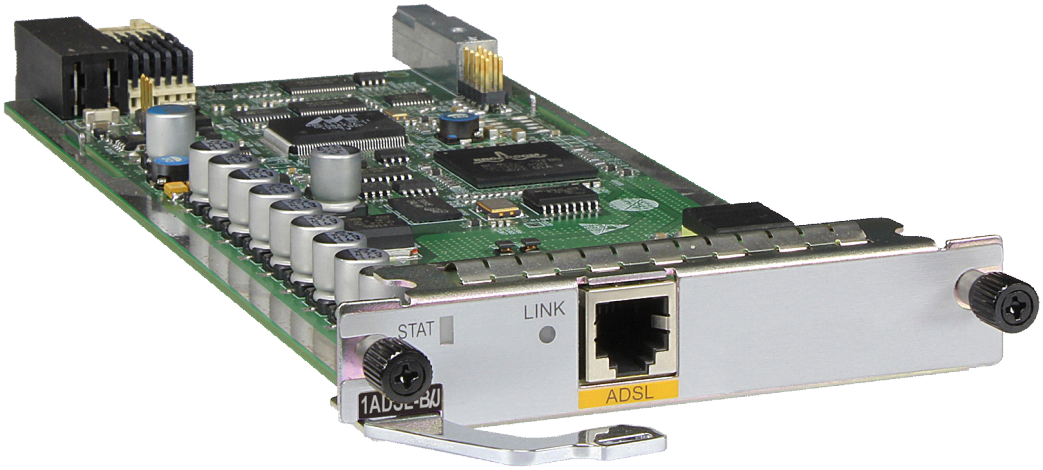


Figure 3-233 shows the appearance of the 1ADSL-B/J.

Figure 3-233 1ADSL-B/J appearance



Version Mapping

Table 3-262 describes the mapping between 1ADSL-A/M/1ADSL-B/J and software versions of different product models.

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Table 3-262 Mapping between 1ADSL-A/M/1ADSL-B/J and software versions

Card Name	AR1200 Series	AR2204E Series	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
1ADSL-A/M **NOTE** This card is supported in V200R001C00 and later versions.	Y	Y	Y	Y	Y	Y	Y
1ADSL-B/J **NOTE** This card is supported in V200R005C00 and later versions.	Y	Y	Y	Y	Y	Y	Y

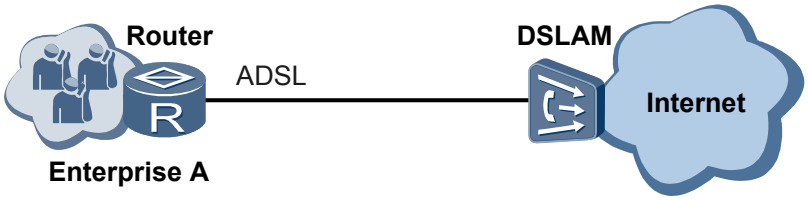
NOTE

Y: supported.

Application

As shown in **Figure 3-234**, enterprise A connects to the DSLAM through the ADSL line to transmit voice and VoD services.

Figure 3-234 ADSL application



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Functions and Features

Table 3-263 lists the functions and features of an ADSL card.

Table 3-263 Functions and features of an ADSL card

Function and Feature	Description
Basic functions	Dials up to the Internet to provide high-speed data communication and video on demand (VoD) services.
	Provides asymmetrical uplink and downlink transmission rates (up to 3 Mbit/s uplink rate and 24 Mbit/s downlink rate).
Compatibility with PSTN	The Internet access and voice services share the same telephone cable.
	Users connect to the Internet and make a call over a telephone cable at the same time, with a high Internet access rate and good voice communication quality.
Easy installation	Users can connect to the Internet by simply connecting a telephone cable to a modem.
Quick fault identification	The ADSL channel can be manually activated or deactivated for fault identification.
Standard Compliance	G.992.1, G.992.3, G.992.5, and T1.413.

Indicators and Interfaces

Indicator Description

NOTE

The 1ADSL-A/M and 1ADSL-B/J have the same indicators and interfaces but different silkscreen. The 1ADSL-B/J is used as an example here.

Figure 3-235 shows indicators on a 1ADSL-B/J card, and Table 3-264 describes the indicator states and meaning.

Figure 3-235 Indicators on a 1ADSL-B/J card

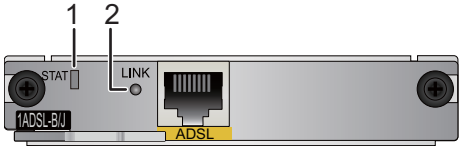

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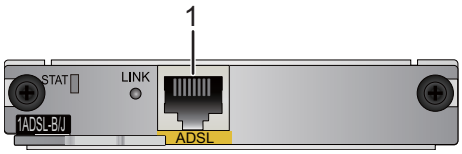
Table 3-264 1ADSL-A/M/1ADSL-B/J card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system software is running normally. Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and must be rectified manually.
		Off	The software is not running or the card is resetting.
2	LINK	Green	Steady on: The DSL channel has been activated.
			Off: The DSL channel has not been activated.
			Fast blinking: The DSL channel is being activated.

Interface Description

Figure 3-236 shows interfaces on a 1ADSL-B/J card.

Figure 3-236 Interfaces on a 1ADSL-B/J card



1. One ADSL (RJ11) interface

ADSL-B/J interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. Table 3-265 lists attributes of an ADSL-B/J interface.

Table 3-265 ADSL-B/J interface attributes

Attribute	Description
Connector type	RJ11

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Attribute	Description
Standards compliance	● ITU-T G.992.1 G.DMT ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ Annex J mode: a downlink rate of 24 Mbit/s and an uplink rate of 3 Mbit/s
Cable type	**Standard Telephone Cable**

ADSL-A/M interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 3-266** lists attributes of an ADSL-A/M interface.

Table 3-266 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T G.992.3 ● ITU-T G.992.5
Rate	● ADSL full rate mode (ITU-T G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● ADSL2 Annex M mode: a downlink rate of 12 Mbit/s and an uplink rate of 2 Mbit/s ● ADSL2+ Annex M mode: a downlink rate of 24 Mbit/s and uplink rate of 2 Mbit/s ● T1.413 mode: a downlink rate of 8 Mbit/s and an uplink rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

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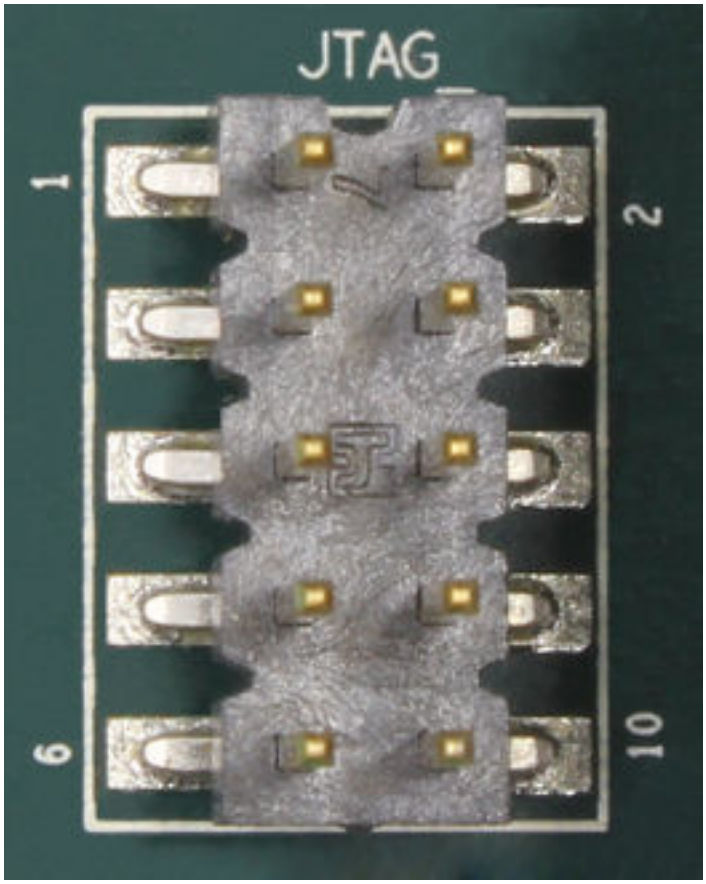
JTAG port

Figure 3-237 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-237 JTAG port



Technical Specifications

Table 3-267 describes the technical specifications of the ADSL-A/M and ADSL-B/J.

Table 3-267 Technical specifications of the ADSL-A/M and ADSL-B/J

Item	Specification
Card type	● ADSL-A/M: SIC ● ADSL-B/J: SIC
External interface	● ADSL-A/M: one ADSL-A/M interface ● ADSL-B/J: one ADSL-B/J interface
Standards compliance	● ITU-T 992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T 992.3 ● ITU-T 992.5

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Item	Specification
Interface speed	● ADSL full rate mode (ITU-T 992.1 G.DMT/ANSI T1.413): uplink rate of 1 Mbit/s and downlink rate of 8 Mbit/s ● ADSL2 full rate mode (ITU-T 992.3): uplink rate of 1 Mbit/s and downlink rate of 12 Mbit/s ● ADSL2+ full rate mode (ITU-T 992.5): uplink rate of 1 Mbit/s and downlink rate of 24 Mbit/s
Connector type	RJ11
Cable	**Standard Telephone Cable**
Hot swap	Supported
In-service upgrade	In-service upgrade through system management channel
Physical specifications	● Dimensions (W x D x H): – ADSL-A/M: 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 9.2 in. x 0.78 in.) – ADSL-B/J: 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 9.2 in. x 0.78 in.) ● Maximum power consumption: – ADSL-A/M: 5.5 W – ADSL-B/J: 5.5 W ● Weight: – ADSL-A/M: 0.3 kg – ADSL-B/J: 0.3 kg
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1ADSL-A/M or 1ADSL-B/J, contact the product manager of the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-268 provides the ordering information.

Table 3-268 ADSL card ordering information

Part Number	Card Name	Card Description
02310GAX	1ADSL-A/M	1-port ADSL2+ ANNEX A/M WAN interface module
03021WWX	1ADSL-B/J	1-port ADSL2+ ANNEX B/J WAN interface card

3.6.2 G.SHDSL (1-Port-4-Channel G.SHDSL WAN Interface Card)

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Card Overview

A G.SHDSL card is used for WAN connection. It provides the asymmetrical digital subscriber line (DSL) service for enterprises, transmitting video, voice, and data at a high speed on the Internet. Two types of G.SHDSL cards are available: SIC and WSIC.

G.SHDSL cards are available in two models: 4G.SHDSL and 1GBIS4W. **Table 3-269** describes their differences.

Table 3-269 List of G.SHDSL cards

Card Name	Slot
4G.SHDSL	SIC slot
1GBIS4W	WSIC slot or XSIC slot **NOTE** To install the card in an XSIC slot, install it in the lower part of the slot. The WSIC card uses the XSIC slot ID as its own slot ID.

Figure 3-238 shows the appearance of the 4G.SHDSL card.

Figure 3-238 Appearance of the 4G.SHDSL card

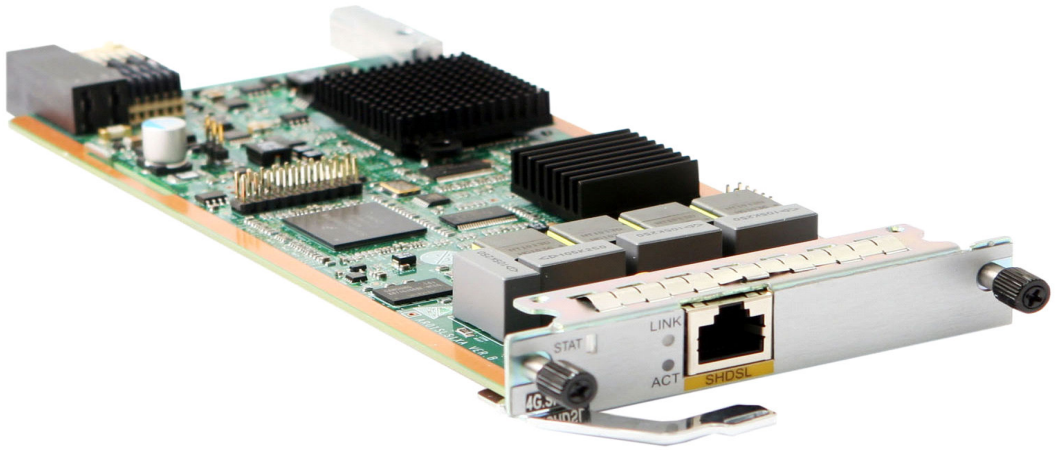
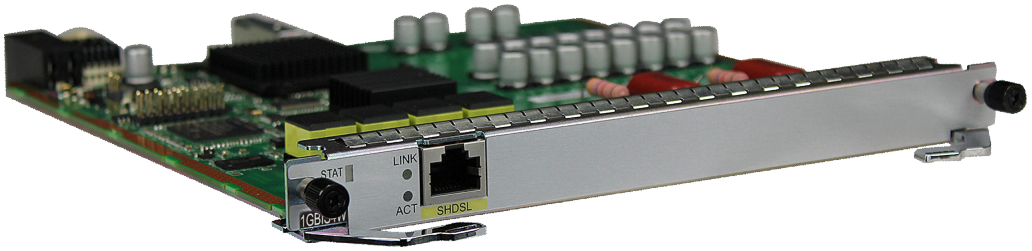


Figure 3-239 shows the appearance of the 1GBIS4W card.

Figure 3-239 Appearance of the 1GBIS4W card



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Version Mapping

Table 3-270 describes the mapping between the G.SHDSL and software versions.

Table 3-270 Mapping between the G.SHDSL and software versions

Card Name	AR1200 Series	AR2204E Series	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
4G.SHDSL **NOTE** V200R001C00 and later versions	Y	Y	Y	Y	Y	Y	Y
1GBIS4W **NOTE** V200R006C10 and later versions	Y	N	Y	Y	Y	Y	Y

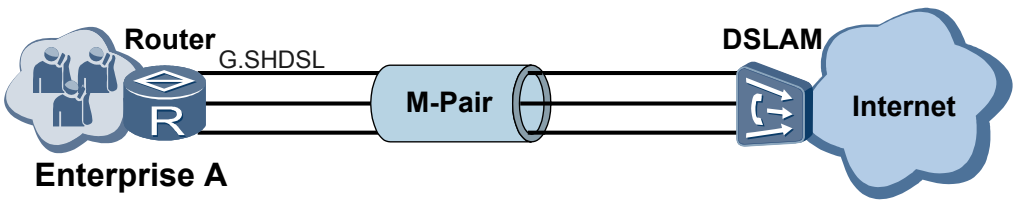
NOTE

- Y: supported.
- N: not supported.

Application

As shown in Figure 3-240, enterprise A connects to the DSLAM through the G.SHDSL line to transmit voice and VoD services. G.SHDSL is easy to deploy and provides symmetrical uplink and downlink bandwidth. When enterprise A finds that the current bandwidth cannot meet data transmission requirements, G.SHDSL interfaces can be bundled to provide higher bandwidth.

Figure 3-240 G.SHDSL application



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Functions and Features

Table 3-271 describes the functions and features of the G.SHDSL.

Table 3-271 Functions and features of the G.SHDSL

Function and Feature	Description
Basic functions	Connects to the Internet through dialup, and implements high-speed data communication and video on demand (VoD).
Symmetrical service	Provides symmetrical uplink and downlink rates, and provides high bandwidth by bundling interfaces.
Good compatibility	G.SHDSL is compatible with other access transmission technologies including Digital Subscriber Line (DSL). This extends the transmission distance.
High-speed transmission	G.SHDSL is rate-adaptive and meets diverse customer requirements.
Long transmission distance and strong anti-interference	G.SHDSL provides a longer transmission distance for the same transmission rate.
Good performance and wide range of services	G.SHDSL provides comprehensive solutions for networks of small- and medium-scale enterprises and branch networks of medium- and large-scale enterprises. It meets diverse requirements of enterprises, such as security, Virtual Private Network (VPN), and service extension plan. It also provides service providers with voice and video conference services.

Indicators and Interfaces

Indicators on the 4G.SHDSL Panel

NOTE

The 4G.SHDSL and 1GBIS4W cards have the same indicators. A 4G.SHDSL card is used as an example here.

Figure 3-241 shows indicators on the 4G.SHDSL panel, and Table 3-272 describes the indicator states and meanings.

Figure 3-241 Indicators on the 4G.SHDSL panel

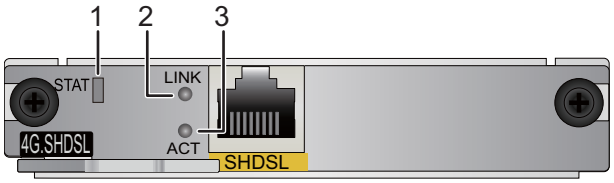

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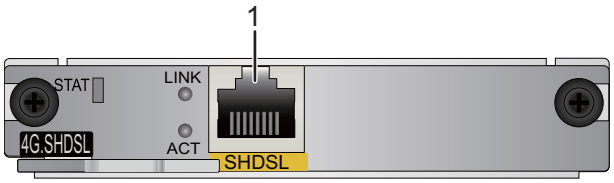
Table 3-272 Indicators on the 4G.SHDSL panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
		Off	Off: The software is not running or is resetting.
2	LINK	Green	Stead on: The four DSL channels have been activated.
			Off: The four DSL channels have not been activated.
			● Steady on for 0.25 seconds and blinks three times in the next 0.75 seconds: One DSL channel has been activated. ● Steady on for 0.5 seconds and blinks twice in the next 0.5 seconds: Two DSL channels have been activated. ● Steady on for 0.75 seconds and blinks in the next 0.25 seconds: Three DSL channels have been activated.
3	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Description of Interfaces

Figure 3-242 shows the interfaces on the 4G.SHDSL card.

Figure 3-242 Interfaces on the 4G.SHDSL



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1. One G.SHDSL interface (RJ45)

Figure 3-243 shows interfaces on the 1GBIS4W card.

Figure 3-243 Interfaces on the 1GBIS4W card

1. One G.SHDSL interface (RJ45)

G.SHDSL interface

A G.SHDSL interface symmetrically transmits LAN-side services to upper-layer devices at a high rate. G.SHDSL provides a longer transmission distance than ADSL. **Table 3-273** describes the attributes of the G.SHDSL interface.

Table 3-273 Attributes of the G.SHDSL interface

Attribute	Description
Connector type	RJ45
Standards compliance	G.991.2
Transmission rate	● 4G.SHDSL: 5.696 Mbit/s/pair ● 1GBIS4W: 15.296 Mbit/s/pair
Cable type	**4.1.13 G.SHDSL Cable** or **4.1.7 Ethernet Cable**

JTAG interface

Figure 3-244 shows the JTAG interface. The JTAG interface is an internal interface and is used to check and diagnose equipment faults.

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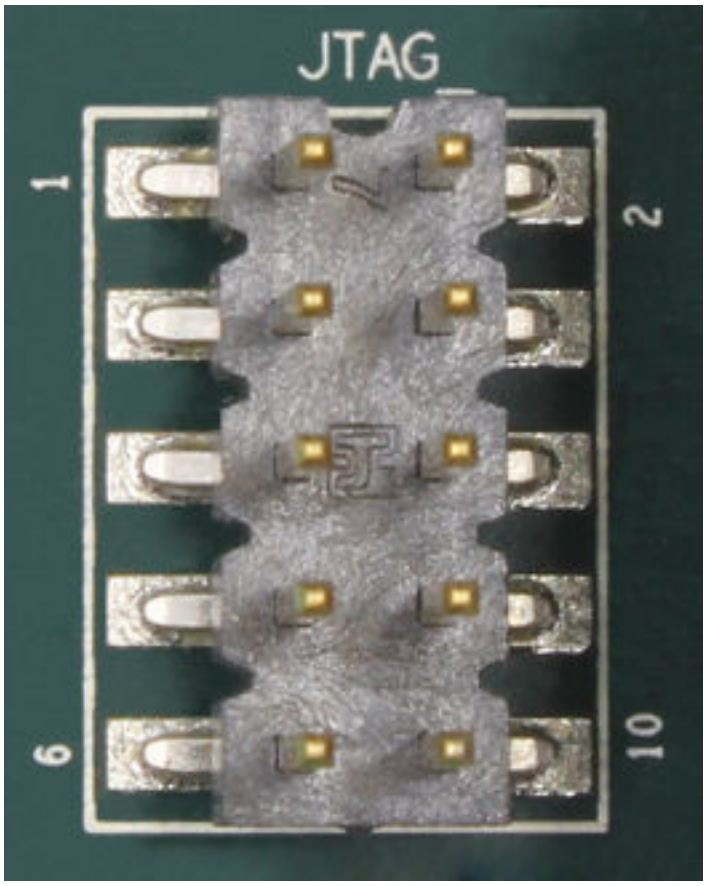
Figure 3-244 JTAG interface



Technical Specifications

Table 3-274 describes the technical specifications of the G.SHDSL cards.

Table 3-274 Technical specifications of the G.SHDSL cards

Item	Specification
Card type	● 4G.SHDSL: SIC ● 1GBIS4W: WSIC
External interfaces	One G.SHDSL interface
Standards compliance	G.991.2
Transmission rate	● 4G.SHDSL: 5.696 Mbit/s/pair ● 1GBIS4W: 15.296 Mbit/s/pair
Connector type	RJ45
Cable	**4.1.13 G.SHDSL Cable** or **4.1.7 Ethernet Cable**
Hot swap	Supported

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Item	Specification
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (W x D x H) – 4G.SHDSL: 100.1 mm x 223.5 mm x 19.82 mm (3.94 in. x 8.80 in. x 0.78 in.) – 1GBIS4W: 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.80 in. x 0.78 in.) ● Maximum power consumption – 4G.SHDSL: 8.2 W – 1GBIS4W: 7.8 W ● Weight – 4G.SHDSL: 0.35 kg (0.77 lb) – 1GBIS4W: 0.35 kg (0.77 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-275 provides the ordering information.

Table 3-275 Ordering information

Part Number	Card Name	Card Description
02310DRN	4G.SHDSL	1-Port 4 Pair G.SHDSL WAN Interface Card
03022STQ	1GBIS4W	1-Port 4 Pair G.SHDSL WAN Interface Card (WSIC)

3.6.3 1PON (1-Port GPON/EPON Dual-Mode Interface Card)

Card Overview

NOTE

- 1 port: There are two ports on the 1PON card, one of which is the backup port. Therefore, the 1PON card is also called the 1PON.
- One ARrouter can have only one PON installed. Excess PON cards cannot be powered on.

The 1PON is a WAN connection module and an SIC interface card. It uses the point-to-multipoint optical access technology to transmit video, audio, and data services on the Internet at a high rate.

Figure 3-245 shows the appearance of the 1PON.

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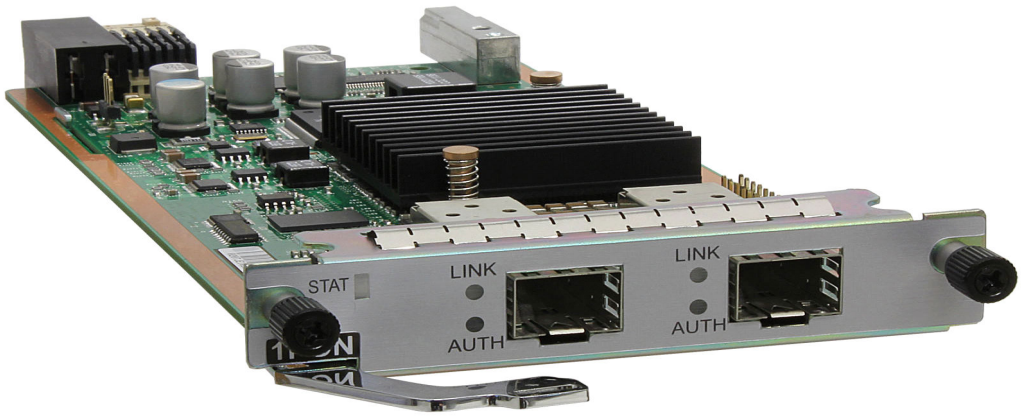
Figure 3-245 Appearance of the 1PON



Version Mapping

Table 3-276 describes the mapping between the 1PON and software versions.

Table 3-276 Mapping between the 1PON and software versions

Card Name	AR1200 Series	AR2204E Series	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
1PON **NOTE** V200R002C00 and later versions	Y	Y	Y	Y	Y	Y	Y

NOTE

Y: supported.

Application

As shown in Figure 3-246, a PON system consists of three elements: optical line terminal (OLT), optical distribution network (ODN), and optical network unit (ONU). Enterprises connect to the Internet through 1PON cards.

- An OLT is an aggregation device that terminates PON protocol packets on a carrier network.
- An ODN is an intermediate network that connects ONUs to an OLT. It distributes data to downstream ONUs and aggregates data sent to the upstream OLT.

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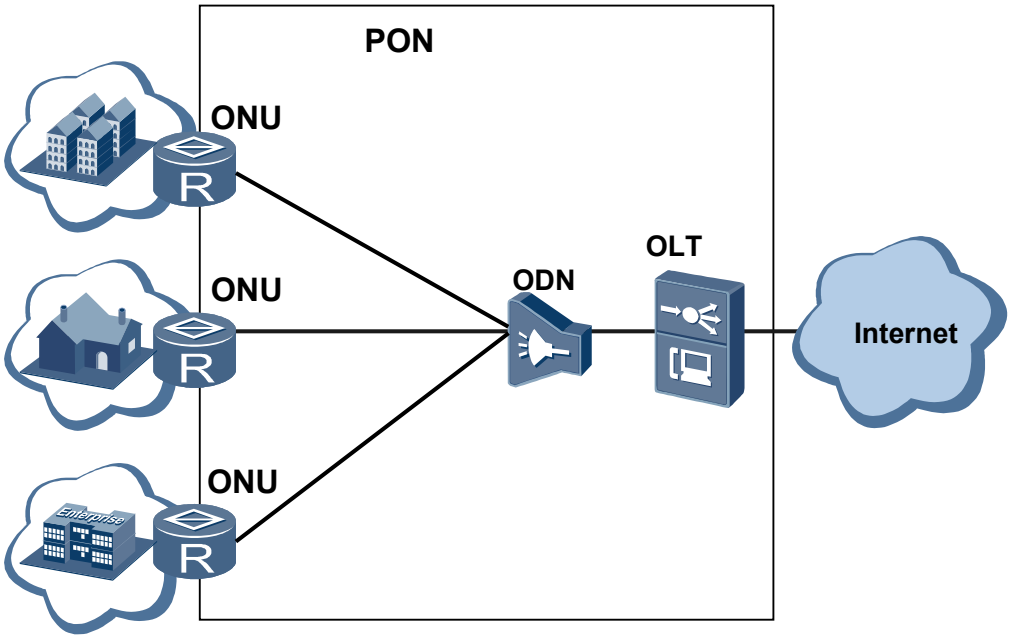
- An ONU is a user-side device that provides interfaces for users.

Figure 3-246 1PON application



Functions and Features

Table 3-277 describes the functions and features of the 1PON.

Table 3-277 Functions and features of the 1PON

Function and Feature	Description
Basic functions	Uses fibers to connect to the Internet so that services can be transmitted with high bandwidth and high reliability.
	Supports EPON/GPON but not GE.
	As FTTH becomes popular, PON access gradually becomes the mainstream mode.
High bandwidth	The PON network provides the bandwidth of 1 Gbit/s and allows migration to 10 Gbit/s.
High reliability	Compared with traditional leased lines, PON technology provides higher reliability and longer transmission distance.
Optical interface shutdown	The CPU of the SD5103 implements optical interface shutdown.
Power-off alarm	If the card is powered off, the PON interface reports a power-off alarm to the OLT.

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Function and Feature	Description
DDM detection	Detects the receiving optical power and monitors the transmitting optical power.
ONU function	● Receives cells broadcast in TDM mode at a downlink rate of 1.25 Gbit/s (EPON) or 2.488 Gbit/s (GPON). ● Supports burst transmission in TDMA mode at an uplink rate of 1.25 Gbit/s (EPON) or 1.244 Gbit/s (GPON).

Indicators and Interfaces

Indicators on the 1PON Panel

Figure 3-247 shows the indicators on the 1PON panel, and **Table 3-278** describes the indicator states and meaning.

Figure 3-247 Indicators on the 1PON panel

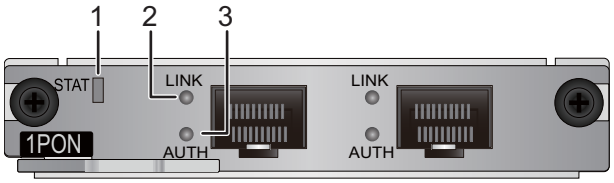

Table 3-278 Indicators on the 1PON panel

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	PON interface indicators: ● Upper LINK indicator: indicates that	Green	If both the LINK indicator and AUTH indicator are steady on, the ONU has registered successfully.

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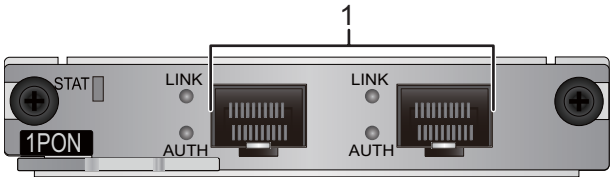
Number	Indicator	Color	Description
	optical signals are received from the downstream device. ● Lower ACT indicator: indicates the authentication status.		If the LINK indicator steady on and the AUTH indicator blinks fast, the ONU is registering.
			If both the LINK indicator and AUTH indicator blink fast, optical transmission from the ONU times out. That is, the ONU is a rogue ONU.
			If both the LINK indicator and AUTH indicator are off, the 1PON does not request data transmission.

Description of Interfaces

Figure 3-248 shows the interfaces on the 1PON panel.

Figure 3-248 Interfaces on the 1PON panel



1. Two PON interfaces

PON interface

Passive optical network (PON) interfaces include Ethernet PON (EPON) interfaces and gigabit PON (GPON) interfaces. They transmit data, voice, and video services, **Table 3-279** describes the attributes of the PON interfaces.

Table 3-279 Attributes of the PON interface

Attribute	Description
Connector type	SC
PON interface attributes	Optical modules supported: SFP-GPON-ONU The optical interface attributes depend on the optical modules used. For details, see **GPON/EPON Optical Module**.
Frame format	Ethernet_II, Ethernet_SNAP, IEEE 802.2 and IEEE 802.3.

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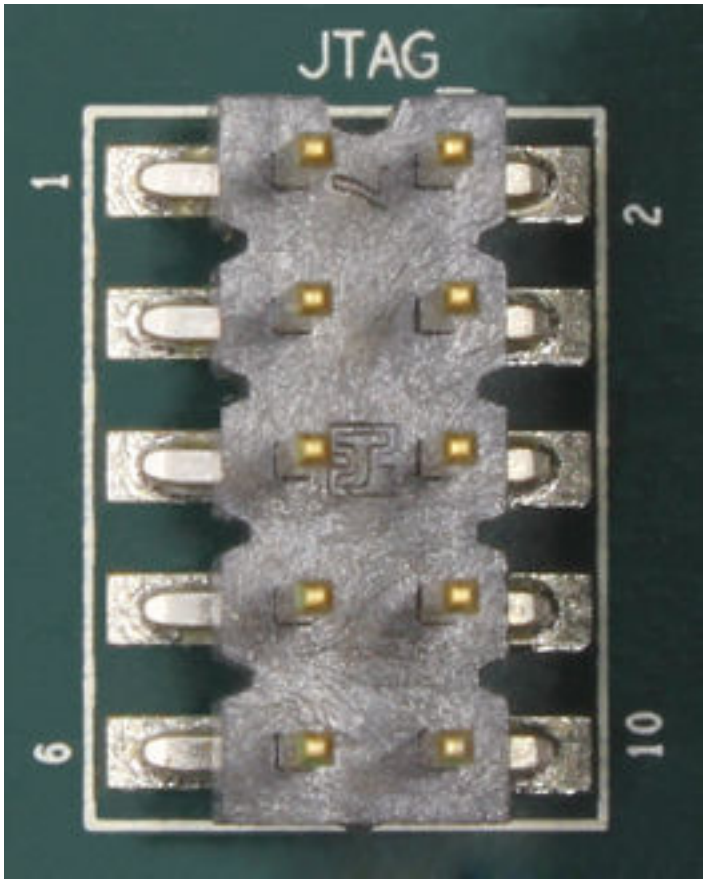
Attribute	Description
Network protocol	IP

JTAG port

Figure 3-249 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

Figure 3-249 JTAG port



Technical Specifications

Table 3-280 describes the technical specifications of the 1PON.

Table 3-280 Technical specifications of the 1PON

Item	Specification
Card type	SIC
External interfaces	Two PON optical interfaces

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Item	Specification
Standards compliance	● EPON: IEEE 802.3ah ● GPON: ITUT G.984-1 to 4
Transmission rate	● GPON: – Downstream transmission rate: 2488 Mbit/s – Upstream transmission rate: 1244 Mbit/s ● EPON: – Downstream transmission rate: 1250 Mbit/s – Upstream transmission rate: 1250 Mbit/s
Connector type	SFP optical transceiver
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: 8.8 W ● Weight: 0.3 kg (0.66 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the 1PON, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-281 provides the ordering information.

Table 3-281 Ordering information

Part Number	Card Name	Card Description
03020TJE	1PON	1-Port GPON/EPON Dual-mode Interface Card

3.6.4 VDSL2 (1-Port VDSL2 over POTS WAN Interface Card)

Card Overview

The VDSL2 is a WAN connection module and an SIC interface card. It provides symmetrical DSL services and transmits video, audio, and data packets on the Internet at a high rate.

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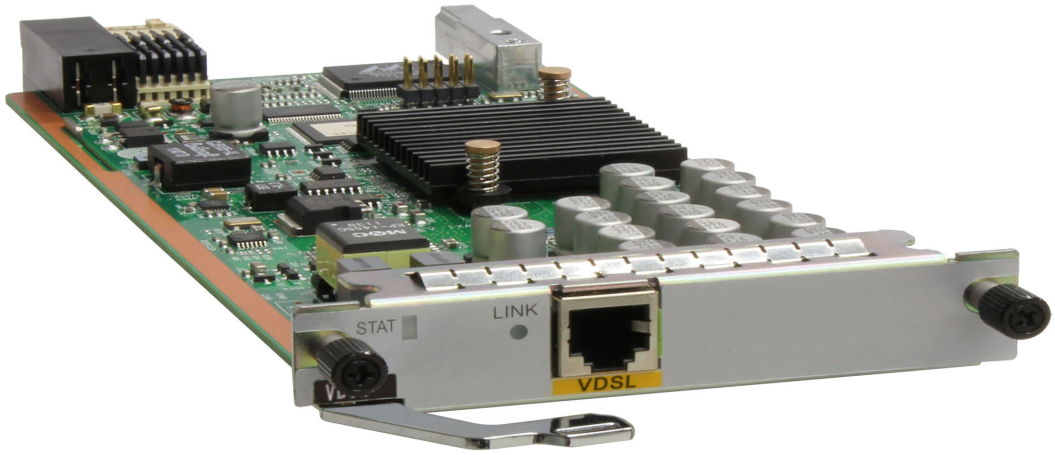
Figure 3-250 shows the appearance of the VDSL2.

Figure 3-250 Appearance of the VDSL2



Version Mapping

Table 3-282 describes the mapping between the VDSL2 and software versions.

Table 3-282 Mapping between the VDSL2 and software versions

Card Name	AR1200 Series	AR2204E Series	AR2204	AR2220 AR2220E	AR2240 AR2240C	AR3260	AR3670
VDSL2 **NOTE** V200R002C01 and later versions	Y	Y	Y	Y	Y	Y	Y

NOTE

Y: supported.

Application

As shown in Figure 3-251, enterprise A connects to the DSLAM through the VDSL2 line to transmit voice and VoD services. VDSL2 is easy to deploy and provides symmetrical uplink and downlink bandwidth, meeting high-bandwidth requirements.

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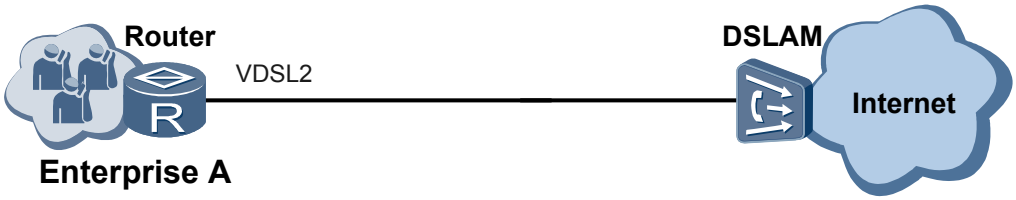
Figure 3-251 VDSL2 application



Functions and Features

Table 3-283 describes the functions and features of the VDSL2.

Table 3-283 Functions and features of the VDSL2

Function and Feature	Description
Basic functions	Connects to the Internet through dialup, and implements high-speed data communication and video on demand (VoD).
Flexible transmission mode	Provides both asymmetrical and symmetrical transmission.
Fast transmission rate	Provides asymmetric uplink and downlink rates, with a maximum of 50 Mbit/s uplink rate and 100 Mbit/s downlink rate.
	Within 1 km, VDSL2 provides 10 Mbit/s uplink and downlink transmission rates.
Good transmission quality	Provides good transmission quality and supports HD video conference, VoD, and BTV.
Low cost	Transmits signals over a copper twisted pair without layout new lines or reconstructing the existing network.
Enhanced compatibility	Supports both traditional voice services and ISDN services. VDSL2 can use the same phone line with the existing phone line and ISDN.
Standard compliance	Works in VDSL2 mode that complies with ITU-T G.993.2 and supports profile 17a defined in G.993.2.
	Rolls back to ADSL2+ mode that complies with G.992.5.
DyingGasp	When the VDSL2 is powered off, it sends a message to the connected DSLAM.

Indicators and Interfaces

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Indicators on the VDSL2 Panel

Figure 3-252 shows the indicators on the VDSL2 panel, and **Table 3-284** describes the indicator states and meaning.

Figure 3-252 Indicators on the VDSL2 panel

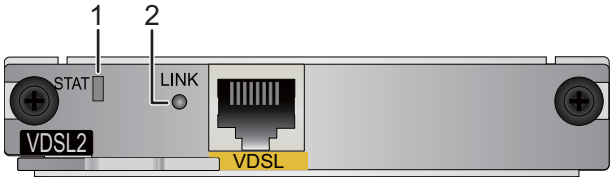


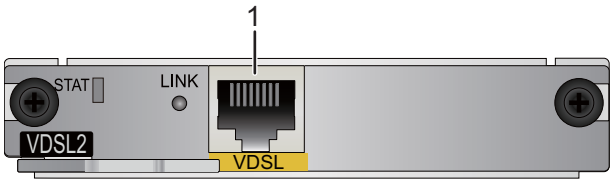
Table 3-284 Indicators on the VDSL2 panel

Number	Indicator	Color	Description
1	STAT	Green	Stead on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Stead on: The VDSL2 channel has been activated.
			Off: The VDSL2 channel has not been activated.
			Fast blinking: The VDSL2 channel is being activated.

Description of Interfaces

Figure 3-253 shows the interfaces on the VDSL2.

Figure 3-253 Interfaces on the VDSL2



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1. One VDSL2 interface

VDSL2 interface

A VDSL2 interface transmits LAN-side services to upper-layer devices at a high rate through twisted cables. **Table 3-285** describes the attributes of the VDSL2 interface.

Table 3-285 Attributes of the VDSL2 interface

Attribute	Description
Connector type	RJ11
Standards compliance	VDSL2: ITU-T 993.2 ITU-T 992.5 ITU-T 992.3 ITU-T 992.1 G.DMT
Transmission rate	VDSL2: ● ADSL2+ full rate mode (ITU-T 992.5): a downstream transmission rate of 24 Mbit/s and an upstream transmission rate of 1 Mbit/s ● VDSL2 mode (ITU-T 993.2): a downstream transmission rate of 100 Mbit/s and an upstream transmission rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T 992.3): a downstream transmission rate of 12 Mbit/s and an upstream transmission rate of 1 Mbit/s ● ADSL full rate mode (992.1 G.DMT): a downstream transmission rate of 8 Mbit/s and an upstream transmission rate of 1 Mbit/s
Cable type	**Standard Telephone Cable**

JTAG port

Figure 3-254 shows the JTAG port. The JTAG port is an internal port of the switch and is used to check and diagnose equipment faults.

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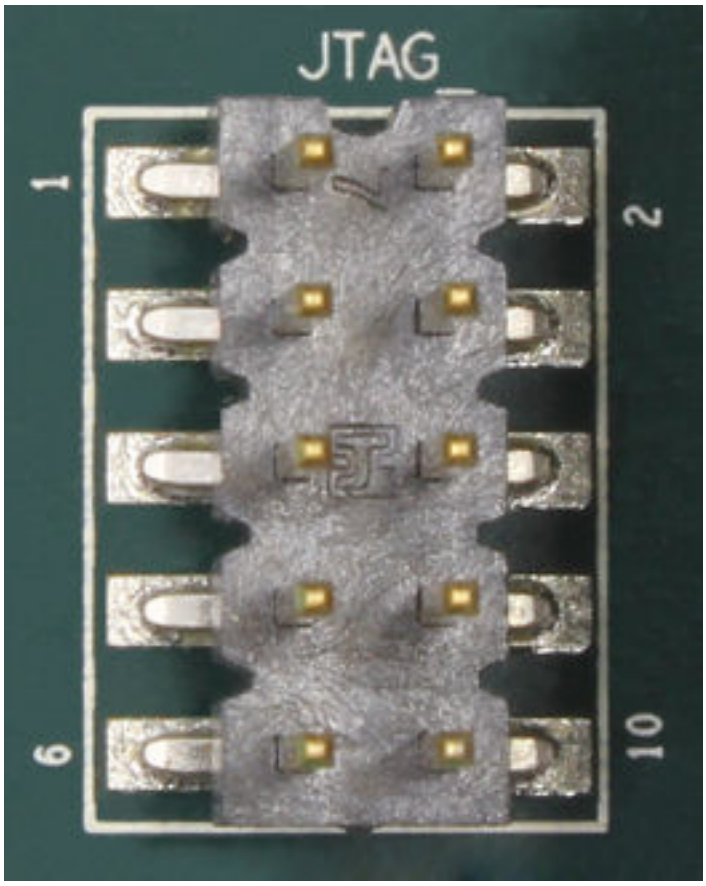
Figure 3-254 JTAG port



Technical Specifications

Table 3-286 describes the technical specifications of the VDSL2.

Table 3-286 Technical specifications of the VDSL2

Item	Specification
Card type	SIC
External interfaces	One VDSL2 interface
Standards compliance	● ITUT-993.2 ● ITU-T 992.1 G.DMT ● ANSI T1.413 Issue 2 ● ITU-T 992.3 ● ITU-T 992.5
Transmission rate	Profile 17a, 0 km: uplink 50 Mbit/s, downlink 100 Mbit/s
Connector type	RJ11
Cable	Telephone cable

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Item	Specification
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	● Dimensions (height x width x depth): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.8 in.) ● Maximum power consumption: 9.5 W ● Weight: 0.2 kg (0.44 lb)
Environment parameters	● Operating temperature: 0°C to 45°C (32°F to +113°F) ● Relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +70°C (-40°F to +158°F) ● Operating altitude: 0 to 5000 m (16404.2 ft.)
Safety standards compliance	● UL 60950-1 ● EN 60950-1 ● IEC 60950-1 ● BS EN 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● IS 13252 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.
EMC standards compliance	● FCC 47CFR Part15 Class A ● ICES 003 Class A ● EN55022 Class A ● CISPR22 Class A ● CISPR24 ● AS/NZS CISPR22 Class A ● VCCI Class A ● ETSI EN 300 386 Class A ● EN55024 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

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Item	Specification
Environmental standards compliance	● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 For details, see the *Huawei AR1200&AR2200&AR3200&AR3600 Series Enterprise Routers Safety and Regulatory Compliance Information*.

Ordering Information

To order the VDSL2, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (**http://enterprise.huawei.com**).

Table 3-287 provides the ordering information.

Table 3-287 Ordering information

Part Number	Card Name	Card Description
02310JLJ	VDSL2	1-Port VDSL2 over POTS WAN Interface card

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4 Cables

About This Chapter

4.1 Cables for Enterprise Gateways

4.2 Cables for Mobile Internet Gateways

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4.1 Cables for Enterprise Gateways

4.1.1 Power Cables

AC Power Cable

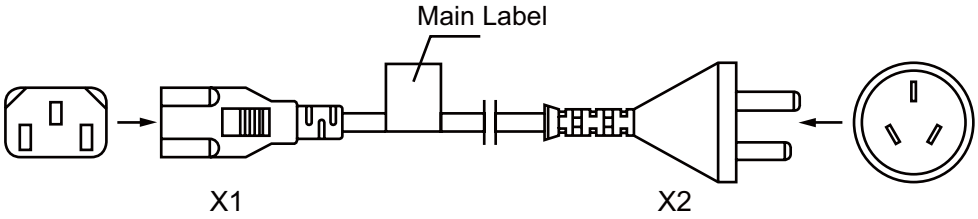
Description

An AC power cable has a C13 connector at one end, and the connector on the other end is determined based on the standard in the country or region to which the cable is delivered. This section describes the AC power cable used in China. **Table 4-1** lists the AC power cables applicable in different countries and regions.

Appearance and Structure

Figure 4-1 shows the structure of an AC power cable used in China.

Figure 4-1 Structure of an AC power cable used in China



Connection

An AC power cable is connected as follows:

- The C13 straight female connector is connected to the AC power socket of a router.
- The PI straight male connector is connected to an external power source.

Ordering Information

Table 4-1 provides the AC power ordering information.

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Table 4-1 AC power cable ordering information

Country/ Region	Part Number	Description	Remarks
China	04041104	Power Cords Cable, China AC Power 250V10A, 3.0m, PISM, 227IEC53-1.0^2(3C), C13SF, Black	Optional
China	04150254	Power Cords Cable, China AC Power 250V10A, 1.0m, PIAM, 227IEC53-1.0^2(3C), C13SF, Black	Optional
Japan	04040887	Power Cable, Japan AC Power Cable 125V12A, 3.0m, PBSM, HVCTF-1.25mm^2(3C), C13SF, Black	Optional
Brazil	04150258	Power Cable, Brazil AC Power Cable 250V10A, 3.0m, PJSM-I, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
Europe	04041056	Power Cords Cable, Europe AC Power Cable 250V10A, 3m, PFSM, H05VVF 1.0^2(3C), C13SF, Black	Optional
Australia	04040888	Power Cords Cable, Australia AC Power Cable 250V10A, 3.0m, PISM, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
South Africa	04040889	Power Cords Cable, South Africa AC Power Cable 250V10A, 3.0m, PDAM, H05VV-F-1.5mm^2(3C), C13SF, Black	Optional
America	04020728	Power Cable, America AC Power Cable 125V10A, 3.0m, PBSM, 18SJT(3C), C13SF, Black	Optional
Britain	04040890	Power Cable, Britain AC Power Cable 250V10A, 3.0m, PGAM, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
Switzerland	04041119	Power Cable, Switzerland AC Power Cable 250V10A, 3.0m, PJSM, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
Italy	04041120	Power Cable, Italy AC Power Cable 250V10A, 3.0m, PLSM, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
Argentina	04047785	Power Cords Cable, Argentina AC Power 250V10A, 3.0m, PISM, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
Korea	0405G028	Power Cords Cable, Korea AC Power 250V10A, 3m, PFSM, H05VV-F 3*1.0^2(3C), C13SF, Black	Optional

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Country/ Region	Part Number	Description	Remarks
Denmark	0405G02K	Power Cords Cable, Denmark AC Power 250V10A, 3m, PKSM, H05VV-F-3*1.0^2(3C), C13SF, Black	Optional
India	04051035	Power Cords Cable, India AC Power 250V10A, 3.0m,PD-I AM, IS 694-1.0mm^2(3C), C13 SF, 250V, 10A, Black	Optional

DC Power Cable

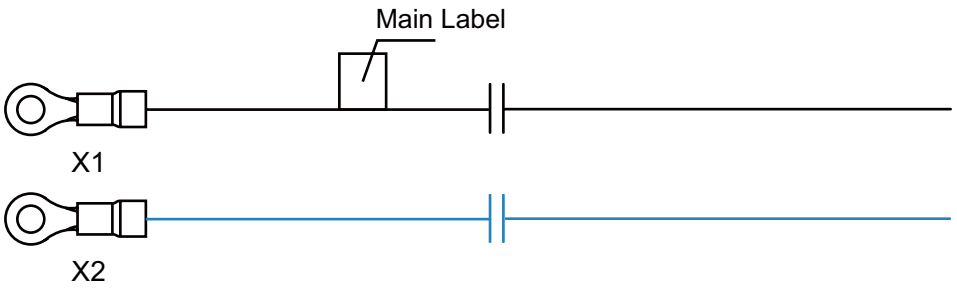
Description

DC power cables for a router include a -48 V return ground cable (blue) and a -48 V power cable (black), which are connected to the RTN(+) and NEG(-) terminals on the router's DC power module respectively.

Appearance and Structure

Figure 4-2 shows the structure of DC power cables.

Figure 4-2 Structure of DC power cables



Connection

An DC power cable is connected as follows:

- One end is connected to the matching DC power terminal on the DC power module of a router.
- The other end is connected to an external power source.

Ordering Information

Table 4-2 provides the DC power cable ordering information.

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Table 4-2 DC power cable ordering information

Part Number	Description	Remarks
04150075	Power Cable, 3.0m, 1.0mm^2, (2*OT1-4), (18UL1007BL+18UL1007B), All products	Standard configuration

4.1.2 Power Cable (AR509G-L-D-H)

Structure and Pin Assignments

Figure 4-3 shows the structure of a power cable.

Figure 4-3 Structure of a power cable

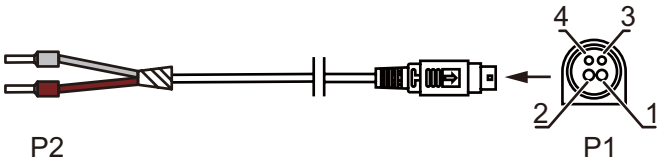

Table 4-3 lists the pin assignments of a power cable.

Table 4-3 Pin assignments of a power cable

P1	Signal	P2
1	+12 V	Red cord-end terminal
2	+12 V	
3	GND	Black cord-end terminal
4	GND	

Connection

A power cable is connected as follows:

- The input terminal (P1) is connected to the power jack on a router.
- The output terminal (P2) is connected to an external DC power source.

4.1.3 Power Adapters

24 W Power Adapter

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Description

A 24 W power adapter provides 12 V/2 A power supply to a router. It is applicable to the router models listed in **Table 4-4**.

Table 4-4 Router models supporting a 24 W power adapter

Power Adapter	Router Model
24 W power adapter	AR121 AR129 AR121W AR129W
	AR151W-P AR151G-HSPA+7 AR156W AR157W AR157G-HSPA+7
	AR168F AR169F AR161FG-L AR161FGW-L AR161F AR161FW AR161 AR161G-L AR169 AR169G-L AR169BF AR161W AR169W AR161FV-1P AR161FGW-La

NOTE

A 24 W power adapter is an integrated power adapter and does not need an additional power cable. The 24 W power adapter used for a router must comply with the local standard. This section describes the 24 W power adapter used in China.

Structure and Pin Assignments

Figure 4-4 shows the structure of a 24 W power adapter used in China.

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Figure 4-4 Structure of a 24 W power adapter used in China

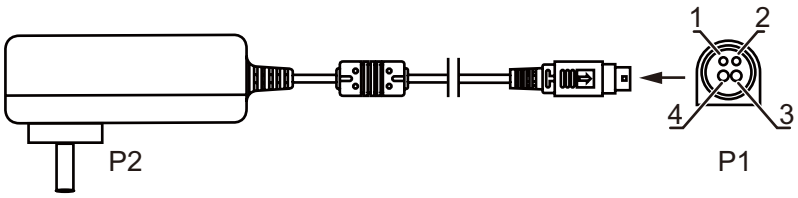

Table 4-5 lists the pin assignments of a 24 W power adapter.

Table 4-5 Pin assignments of a 24 W power adapter

P1	Signal
1	GND
2	GND
3	+12V
4	+12V

Connection

A 24 W power adapter is connected as follows:

- The output terminal (P1) is connected to the DC power jack on a router.
- The input terminal (P2) is connected to an external AC power source.

Ordering Information

Table 4-6 lists the 24 W power adapter ordering information.

Table 4-6 24 W power adapter ordering information

Standard	Applicable Country	Part Number	Description	Remarks
Chinese standard	China	02220362	AC/DC Adapter, -5degC, 45degC, 90V-270V, 12V/2A, China Standard, DC inlet	Optional
European standard	Greek Germany France Italy	02220363	AC/DC Adapter, -5degC, 45degC, -90V-270V,12V/2A, Europe Standard, DC inlet	Optional

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Standard	Applicable Country	Part Number	Description	Remarks
British standard	Britain Hong Kong Singapore	02220364	AC/DC Adapter, -5degC, 45degC, 90V-270V, 12V/2A, UK Standard, DC inlet	Optional
American standard	U.S Japan Mexico	02220365	AC/DC Adapter, -5degC, 45degC, 90V-270V, 12V/2A, US Standard, DC inlet	Optional
Australian standard	Australia New Zealand	02220366	AC/DC Adapter, -5degC, 45degC, 90V-270V, 12V/2A, Australia Standard, DC inlet	Optional

36 W Power Adapter

Description

A 36 W power adapter provides 12 V/3 A power supply to a router. It must be used with a power cable complying with the local standard.

A 36 W power adapter is applicable to the router models listed in **Table 4-7**.

Table 4-7 Router models supporting a 36 W power adapter

Power Adapter	Router Model
36 W power adapter	AR151 AR156 AR157 AR158E
	AR162F
	AR201 AR201VW-P AR206 AR207 AR207V AR207V-P AR207G-HSPA+7 AR208E

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Structure and Pin Assignments

Figure 4-5 shows the structure of a 36 W power adapter.

Figure 4-5 Structure of a 36 W power adapter

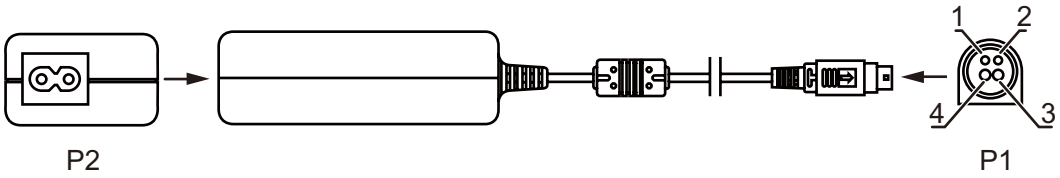

Table 4-8 lists the pin assignments of a 36 W power adapter.

Table 4-8 Pin assignments of a 36 W power adapter

P1	Signal
1	GND
2	GND
3	+12V
4	+12V

Connection

A 36 W power adapter is connected as follows:

- The output terminal (P1) is connected to the DC power jack on a router.
- The input terminal (P2) is connected to a power cable, which is then connected to an external AC power source.

Ordering Information

Table 4-9 lists the 36 W power adapter ordering information.

Table 4-9 36 W power adapter ordering information

Part Number	Description	Remarks
02220288	Adapter, -5degC, 40degC, 90V-264V, 12V/3A, 2PIN/4PIN	Optional

60 W Power Adapter

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Description

A 60 W power adapter provides 12 V/5 A power supply to a router. It must be used with a power cable complying with the local standard.

A 60 W power adapter is applicable to the router models listed in **Table 4-10**.

Table 4-10 Router models supporting a 60 W power adapter

Power Adapter	Router Model
60 W power adapter	AR157VW AR158EVW
	AR161FW-P-M5 AR169FVW AR169FGVW-L AR169FGW-L AR169-P-M9 AR169W-P-M9 AR169RW-P-M9
	AR207VW

Structure and Pin Assignments

Figure 4-6 shows the structure of a 60 W power adapter.

Figure 4-6 Structure of a 60 W power adapter

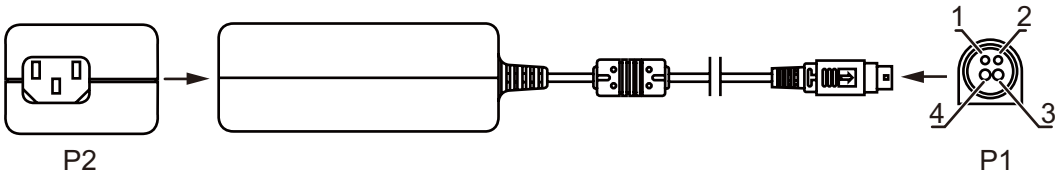

Table 4-11 lists the pin assignments of a 60 W power adapter.

Table 4-11 Pin assignments of a 60 W power adapter

P1	Signal
1	GND
2	GND
3	+12V
4	+12V

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Connection

A 60 W power adapter is connected as follows:

- The output terminal (P1) is connected to the DC power jack on a router.
- The input terminal (P2) is connected to a power cable, which is then connected to an external AC power source.

Ordering Information

Table 4-12 lists the 60 W power adapter ordering information.

Table 4-12 60 W power adapter ordering information

Part Number	Description	Remarks
02220289	Adapter, -5degC, 40degC, 90V-264V, 12V/5A, 2PIN In/4PIN Out	Optional
02220404	Adapter, -5degC, 40degC, 90V-264V, 12V/5A, 2PIN In/4PIN Out (02220289 grounding)	Optional

4.1.4 RPS150 Power Cables

RPS150 Power and Communication Cable

Description

An RPS150 power and communication cable connects an RPS150 power supply to a router. An RPS150 power and communication cable is applicable to the router models listed in Table 4-13.

Table 4-13 Router models supporting an RPS150 power and communication cable

Cable	Router Model
RPS150 power and communication cable	AR2201-48FE
	AR2202-48FE
	AR2204

Structure and Pin Assignments

Figure 4-7 shows the structure of an RPS150 power and communication cable.

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Figure 4-7 Structure of an RPS150 power and communication cable

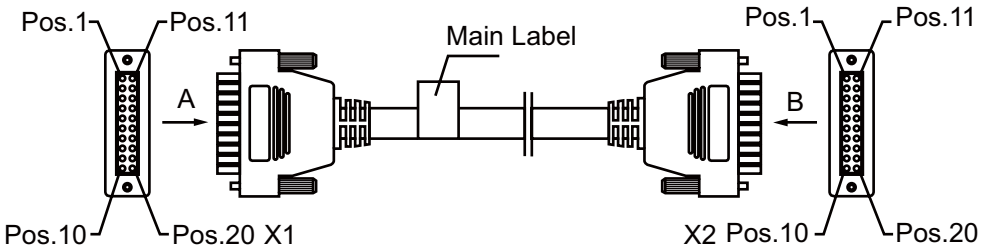

Table 4-14 lists the pin assignments of an RPS150 power and communication cable.

Table 4-14 Pin assignments of an RPS150 power and communication cable

X1 (20 Pins)	Signal	Direction	X2 (20 Pins)
1, 3, 5	-48V	→	1, 3, 5
2, 4, 6	RTN	←	2, 4, 6
9	IIC_SCL	→	9
10	IIC_SDA	←→	10
11	DEV_PRE	→	11
12	RPS_PRE	←	12
15	12V_DEV	→	15
16	FORCE_POWERUP	→	16
17, 19	12V_RPS	←	17, 19
18, 20	GND	-	18, 20

Connection

NOTE

An RPS150 power and communication cable is often used as a common power cable and is not hot swappable.

- Power-on: Connect the RPS150 power and communication cable to the router and RPS power supply, and then power on the router and RPS150 power supply.
- Power-off: Power off the router and RPS150 power supply, and then remove the RPS150 power and communication cable.

An RPS150 power and communication cable is connected as follows:

- One end (20 pins) is connected to the RPS connector on a router.
- The other end (20 pins) is connected to an RPS150 power supply.

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Ordering Information

Table 4-15 provides the ordering information of an RPS150 power and communication cable.

Table 4-15 RPS150 power and communication cable ordering information

Part Number	Description	Remarks
04151432	Power cable, 1.5m, H20(4.2), 13*18UL3385B +CC4P0.5PB(S), H20(4.2)	Standard configuration

RPS150 AC Power Cable

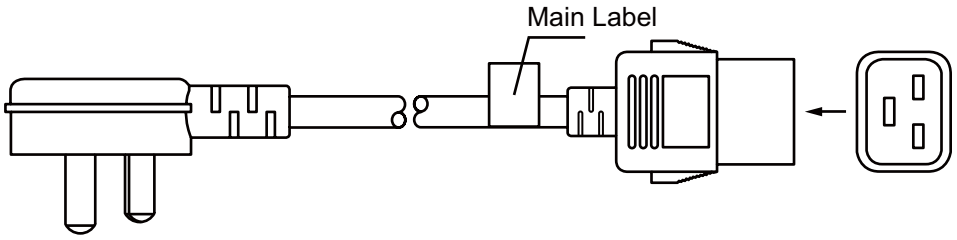
Description

An RPS150 AC power cable has a C19 connector at one end, and the connector on the other end is determined based on the standard in the country or region to which the cable is delivered. This section describes an RPS150 AC power cable used in China. Table 4-16 lists the RPS150 AC power cables applicable in different countries and regions.

Appearance and Structure

Figure 4-8 shows the structure of an RPS150 AC power cable used in China.

Figure 4-8 Structure of an RPS150 AC power cable used in China



Connection

An RPS150 AC power cable is connected as follows:

- The C19 straight female connector is connected to the AC power socket of an RPS150 power supply.
- The PI angle male connector is connected to an external power source.

Ordering Information

Table 4-16 provides the RPS150 AC power cable ordering information.

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Table 4-16 RPS150 AC power cable ordering information

Country/ Region	Part Number	Description	Remarks
China	04043396	Power Cords Cable, China AC Power 250V16A, 3.0m, PIAM, 227IEC53-2.5mm^2(3C), C19SF, Black	Optional
Japan	04044600	Power Cable, Japan AC Power Cable 125V20A, 3.0m,PMAM, HVCTF-3.5mm^2(3C), C19SF, Black	Optional
Europe	04044598	Power Cords Cable, Europe AC Power 250V16A, 3.0m, PFAM, H05VV-F-1.5mm^2(3C), C19SF, Black	Optional
Britain	04050850	Power Cords Cable, Britain AC Power Cable, 250V13A, 3.0m, PG AM, H05VV-F-1.5mm^2(3C), C19 SF, Black	Optional
North America	04044603	Power Cords Cable, North America AC Power 125V20A, 3.0m, PMAM, 12SJT(3C), C19SF, Black	Optional
Australia	04045184	Power Cords Cable, Australia AC Power 250V16A, 3.0m, PISM, H05VV-F-2.5mm^2(3C), C19SF, Black	Optional
Brazil	04150259	Power Cords Cable, Brazil AC Power 250V16A, 3.0m, PJSM-I, H05VV-F-1.5mm^2(3C), C19SF, Black	Optional
South Africa	04044597	Power Cords Cable, South Africa AC Power 250V16A, 3.0m, PDAM, H05VVF-1.5mm^2(3C), C19SF, Black	Optional

4.1.5 Ground Cable

Description

A ground cable grounds a router to protect it from lightning and electromagnetic interference.

Appearance and Structure

Figure 4-9 shows the structure of a ground cable.

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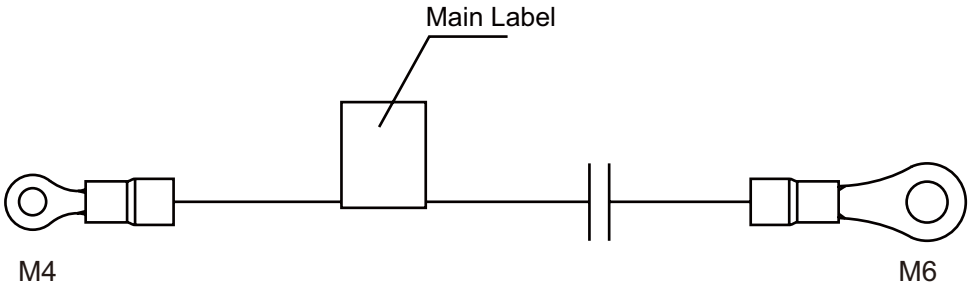
Figure 4-9 Structure of a ground cable



Connection

A ground cable is connected as follows:

- The M4 lug is connected to the ground point on a router.
- The M6 lug is connected to the ground point or equipotential terminal on a cabinet.

Ordering Information

Table 4-17 provides the ground cable ordering information.

Table 4-17 Ground cable ordering information

Part Number	Description	Remarks
04150052	Power Cable, 0.4m, 6mm^2, Yellow&Green, OT6-4, H07Z-K-6^2G&Y, OT6-6, LSZH	Standard configuration

4.1.6 Console Cable

Description

A console cable connects the console interface of a router to the serial interface of a computer. The cable connects to the router through the RJ45 connector and connects to the PC through the DB9 connector.

Structure and Pin Assignments

Figure 4-10 shows the structure of a console cable.

Figure 4-10 Structure of a console cable

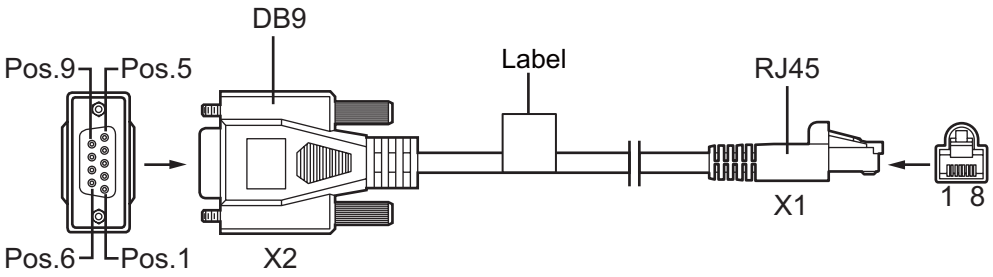


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Table 4-18 lists the pin assignments of a console cable.

Table 4-18 Pin assignments of a console cable

X1 (RJ45)	Signal	Direction	X2 (DB9)
3	TXD	→	2
5	GND	-	5
6	RXD	←	3

NOTE

- TXD and RXD are defined based on signal stream direction on the router, and the corresponding wires must be connected to the RXD and TXD wires on the remote device (computer).
- A console cable does not have an RTS, CTS, DSR, or DTR signal wire, and therefore does not support hardware-based flow control.
- Pins not listed in the table are not connected.

Connection

A console cable is connected as follows:

- The RJ45 connector is connected to the console interface of a router.
- The DB9 connector is connected to a maintenance terminal, generally a computer.

Ordering Information

Each router is configured with a console cable, which is delivered in the installation accessory package.

Table 4-19 provides the console cable ordering information.

Table 4-19 Console cable ordering information

Part Number	Description	Remarks
04040838	Single Cable, Serial Port Cable, 3m, D9F, CC2P0.32PWG1U, MP8-VI,S3026V	Standard configuration

4.1.7 Ethernet Cable

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Description

An Ethernet cable consists of twisted pairs and RJ45 connectors at both ends. Pin assignments in the RJ45 connectors comply with the T568A or T568B standard. **Table 4-20** describes the two standards.

Table 4-20 T568A and T568B standards

T568A		T568B	
Pin	**Wire Color**	**Pin**	**Wire Color**
1	White and green	1	White and orange
2	Green	2	Orange
3	White and orange	3	White and green
4	Blue	4	Blue
5	White and blue	5	White and blue
6	Orange	6	Green
7	White and brown	7	White and brown
8	Brown	8	Brown

Depending on whether RJ45 connectors at both ends comply with the same standard, Ethernet cables are classified into two types:

- Straight-through cable: The RJ45 connectors at both ends comply with the T568B standard.
- Crossover cable: One RJ45 connector complies with the T568A standard, and the other RJ45 connector complies with the T568B standard.

Structure and Pin Assignments

Figure 4-11 shows the structure of an Ethernet cable.

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Figure 4-11 Structure of an Ethernet cable

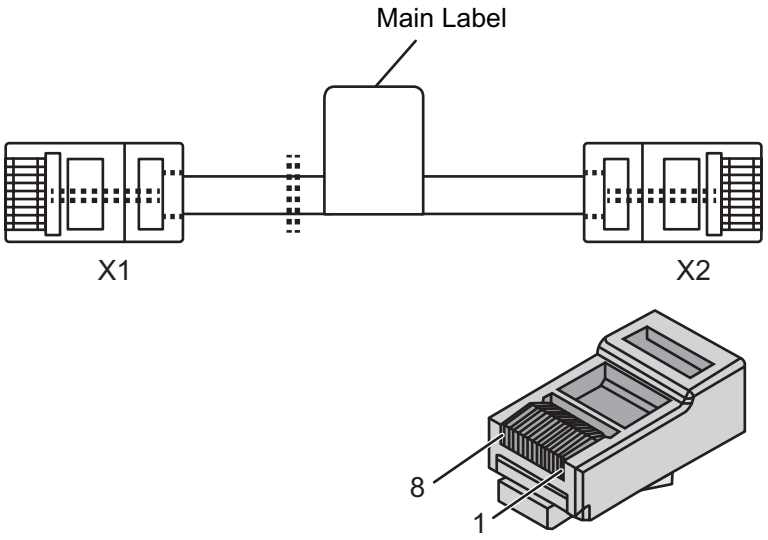

Table 4-21 lists the pin assignments of a straight-through cable.

Table 4-21 Pin assignments of a straight-through cable

X1 (RJ45)	Wire Color	X2 (RJ45)
1	White and orange	1
2	Orange	2
3	White and green	3
4	Blue	6
5	White and blue	4
6	Green	5
7	White and brown	7
8	Brown	8

Table 4-22 lists the pin assignments of a crossover cable.

Table 4-22 Pin assignments of a crossover cable

X1 (RJ45)	Wire Color	X2 (RJ45)
1	White and orange	3
2	Orange	6
3	White and green	1

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X1 (RJ45)	Wire Color	X2 (RJ45)
4	Blue	4
5	White and blue	5
6	Green	2
7	White and brown	7
8	Brown	8

Connection

A straight-through cable can connect devices at different network layers in the following scenarios:

- Connect a switch or hub to a router.
- Connect a computer (server or workstation) to a switch or hub.
- Connect a switch to an upper-layer switch through an uplink interface.

A crossover cable can connect devices at the same network layer in the following scenarios:

- Connect a computer to a router.
- Connect two switches at the same layer.
- Connect two hubs.
- Connect two computers.
- Connect two routers.
- Connect an Ethernet interface of an ADSL modem to the network interface of a computer.

NOTE

Most network devices support auto-negotiation on their interfaces. After auto-negotiation is enabled, the local and remote interfaces can automatically negotiate about communication parameters. In this case, the two interfaces can be connected by either a straight-through cable or a crossover cable.

Ordering Information

Select straight-through or crossover cables according to your network requirements. In an environment with severe electromagnetic interference, shielded Ethernet cables are recommended.

Table 4-23 provides the Ethernet cable ordering information.

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Table 4-23 Ethernet cable ordering information

Part Number	Description	Remarks
04070050	Signal Cable, Shielded Straight Through Cable, 2.0m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
04070006	Signal Cable, Shielded Straight Through Cable, 3m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
04070007	Signal Cable, Shielded Crossover Network Cable, 3m, MP8-II,CC4P0.5GY(S), MP8-II, FTP	Optional
04024336	Single Cable, Straight Through Cable, 2.00m, MP8-I, CC4P0.5GY, MP8-I, Unshielded, DL3470d	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

4.1.8 Optical Fiber

Description

Determine the type and number of optical fibers based on the optical modules used:

- Single-mode optical modules must be used with single-mode optical fibers.
- Multimode optical modules must be used with multimode optical fibers.
- PON optical modules must be used with 1SC/PC-1SC/PC single-mode optical fibers.
- Each optical module with separate Tx and Rx channels must be used with two optical fibers of the same type.
- Each single-fiber-bidirectional optical module is used with only one optical fiber.

NOTE

A single-mode optical fiber and a multimode optical fiber have the same appearance but different colors. A single-mode optical fiber is yellow and a multimode optical fiber is orange.

Structure and Pin Assignments

Figure 4-12 shows the structure of an LC/PC single-mode optical fiber.

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Figure 4-12 Structure of an LC/PC single-mode optical fiber

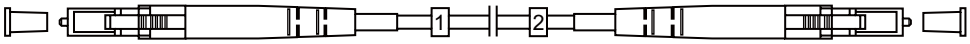

Figure 4-13 shows the structure of an SC/PC single-mode optical fiber.

Figure 4-13 Structure of an SC/PC single-mode optical fiber

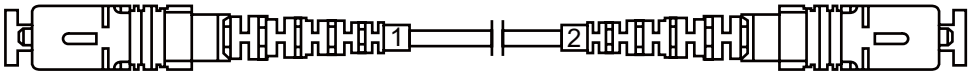

Figure 4-14 shows the structure of an LC/PC multimode optical fiber.

Figure 4-14 Structure of an LC/PC multimode optical fiber

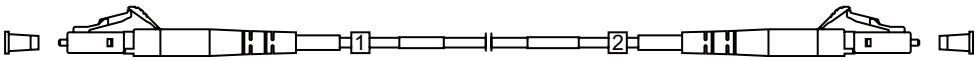

Table 4-24 lists the pin assignments of an optical fiber.

Table 4-24 Pin assignments of an optical fiber

Terminal on the Local Device	Signal Direction	Terminal on the Remote Device
Optical interface Tx terminal	->	Optical interface Rx terminal
Optical interface Rx terminal	<-	Optical interface Tx terminal

Connection

An optical fiber is a carrier of optical signals and transmits optical signals over a short distance. An optical fiber is connected as follows:

- One end is connected to an optical interface of router.
- The other end is connected to an optical distribution frame (ODF) or an optical interface of the upstream device or another device.

Ordering Information

Table 4-25 provides the optical fiber ordering information.

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Table 4-25 Optical fiber ordering information

Part Number	Description	Remarks
14130221	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 10m	Optional
14130197	Patch Cord, FC/PC-LC/PC, Single mode, 2mm, 10m	Optional
14130222	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 10m	Optional
14130295	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 20m	Optional
14130199	Patch Cord, LC/PC-LC/PC, Single mode, G.652D, 2mm, 10m	Optional
14130251	Patch Cord, LC/PC-LC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130223	Patch Cord, LC/PC-SC/PC, Multimode, A1b, 2mm, 10m	Optional
14130279	Patch Cord, LC/PC-SC/PC, Multimode, A1b, 2mm, 20m	Optional
14130196	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 10m	Optional
14130280	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130276	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 30m	Optional
14130277	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 30m	Optional
14130278	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 30m	Optional
14130282	Patch Cord, LC/PC-LC/PC, Single mode, G.652, 2mm, 30m	Optional
14130294	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 30m	Optional
14130273	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 20m	Optional

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Part Number	Description	Remarks
14130274	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130248	Adapter, LC/PC-LC/PC, 2, Blue, Shell:Plastic, Sleeve:Zirconia, Square	Optional
14130001	Adapter, FC-FC, 2, Silvery white, Shell:Metal, Sleeve:Zirconia, Round	Optional
14130134	Adapter, SC-SC, 2, Blue, Shell:Plastic, Sleeve:Zirconia, Square	Optional
14130253	Patch Cord, FC/PC-SC/PC, Single mode, G.652, 3mm, 10m	Optional
14130230	Patch Cord, SC/PC-SC/PC, Single mode, G.652, 3mm, 10m	Optional
14130275	Patch Cord, LC/PC, SC/PC, Multimode, 2mm, 30m	Optional
14130098	Patch Cord, SC/PC-SC/PC, Single mode, G.652D, 3mm, 5m	Optional
14130126	Patch Cord, 1SC/PC-1SC/PC, Single mode, 3mm, 15m	Optional
14130147	Patch Cord, 1SC/PC-1SC/PC, Single mode, 3mm, 20m	Optional

4.1.9 E1/T1 Cable

75-Ohm DB9-to-BNC Cable

Description

A 75-ohm DB9-to-BNC cable is applicable to the interface card models listed in **Table 4-26**.

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Table 4-26 Interface card models supporting a 75-ohm DB9-to-BNC cable

Cable	Card Model	Network Device Interface Type	Working Mode
75-ohm DB9-to-BNC cable	● 1E1/T1-M ● 2E1/T1-M ● 2E1/T1-M-W	BNC	E1/CE1/PRI
	● 2E1/T1-F ● 1E1/T1-F	BNC	E1-F
	1VE1	BNC	VE1

Structure and Pin Assignments

Figure 4-15 shows the structure of a 75-ohm DB9-to-BNC cable.

Figure 4-15 Structure of a 75-ohm DB9-to-BNC cable

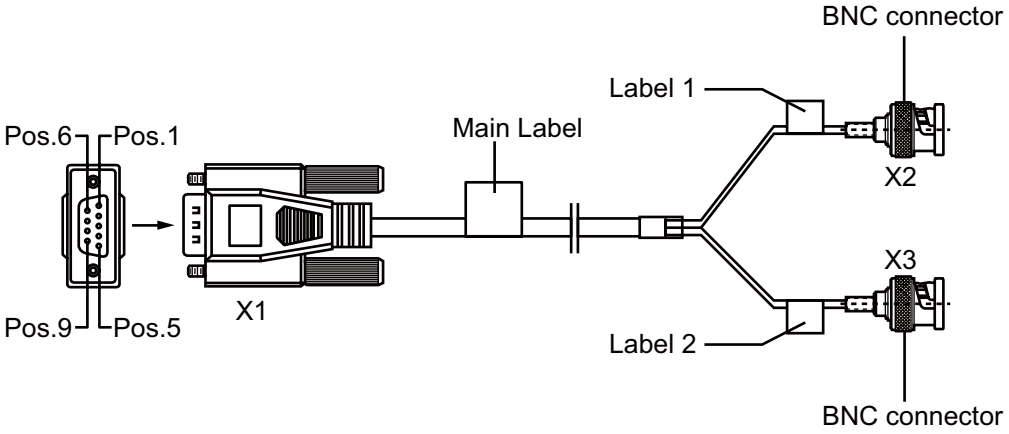

Table 4-27 shows the pin assignments of a 75-ohm DB9-to-BNC cable.

Table 4-27 Pin assignments of a 75-ohm DB9-to-BNC cable

DB9		BNC		
Pin	**Signal**	**Label**	**Pin**	**Signal**
1	Rx +	R	Core wire	Rx
2	Rx -		Insulated wire	GND
6	Tx +	T	Core wire	Tx
7	Tx -		Insulated wire	GND

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NOTE

- Tx stands for transmission, and Rx stands for receiving.
- The R and T tags on BNC coaxial cables indicate the signal directions on a router. The R and T BNC coaxial cables must be connected to the Tx and Rx interfaces on the remote device.

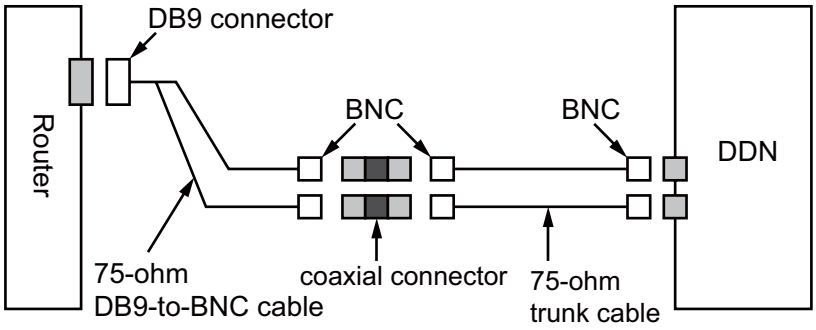
Trunk Cable

NOTE

A 75-ohm DB9-to-BNC cable is 3 m long by default. If the default length is not enough for cable connection, you can use a 75-ohm trunk cable as an extension cable.

When using a 75-ohm trunk cable to prolong a 75-ohm DB9-to-BNC cable, connect one BNC connector of the trunk cable to a coaxial connector and the other BNC connector to the remote device, as shown in **Figure 4-16**.

Figure 4-16 Connection of a 75-ohm trunk cable



Connection

A 75-ohm DB9-to-BNC cable is connected as follows:

- The DB9 connector is connected to a router.
- The BNC connectors at the other end are connected to a network device.

Ordering Information

NOTE

If 75-ohm DB9-to-BNC cables need to be prolonged, configure two RF coaxial connectors and two 75-ohm trunk cables for each 75-ohm DB9-to-BNC cable.

Table 4-28 provides the 75-ohm DB9-to-BNC cable ordering information.

Table 4-28 75-ohm DB9-to-BNC cable ordering information

Part Number	Description	Remarks
04120275	Trunk Cable, 3m, 75ohm, 1E1, 2.2mm, D9M, SYFVZP75-1.2/0.25*4(S), 2*BNC75SM-V, For AR	Optional

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Part Number	Description	Remarks
04024299	Trunk Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

75-Ohm RJ45-to-BNC Cable

Description

A 75-ohm RJ45-to-BNC cable is applicable to the interface card models listed in **Table 4-29**.

Table 4-29 Interface card models supporting a 75-ohm RJ45-to-BNC cable

Cable	Card Model	Network Device Interface Type	Working Mode
75-ohm RJ45-to-BNC cable	● 4E1/T1-M ● 8E1/T1-M	BNC	E1/CE1/PRI
	● 4E1/T1-F ● 8E1/T1-F	BNC	E1-F
	AR161FV-1P	BNC	VE1

Structure and Pin Assignments

Figure 4-17 shows the structure of a 75-ohm RJ45-to-BNC cable.

Figure 4-17 Structure of a 75-ohm RJ45-to-BNC cable

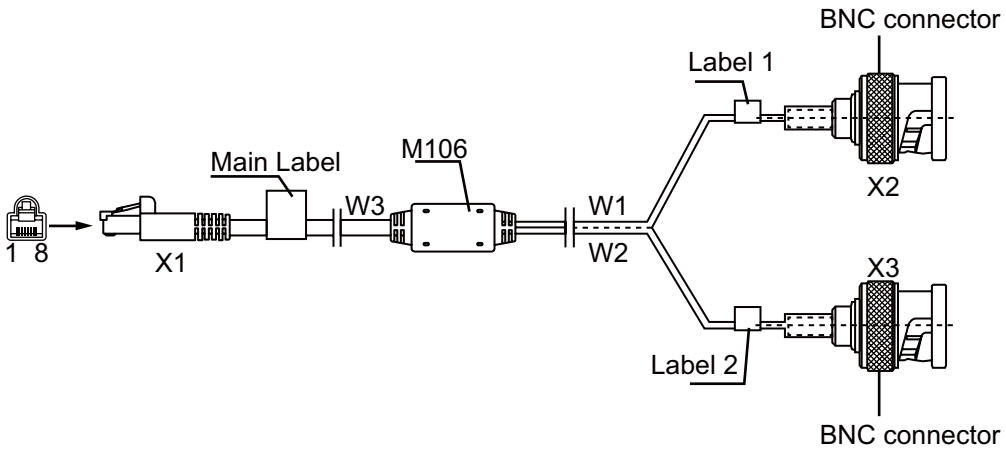

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Table 4-30 shows the pin assignments of a 75-ohm RJ45-to-BNC cable.

Table 4-30 Pin assignments of a 75-ohm RJ45-to-BNC cable

RJ45		BNC		
Pin	**Signal**	**Label**	**Pin**	**Signal**
1	Rx -	R	Core wire	Rx
2	Rx +		Insulated wire	GND
4	Tx -	T	Core wire	Tx
5	Tx +		Insulated wire	GND

NOTE

- Tx stands for transmission, and Rx stands for receiving.
- The R and T tags on BNC coaxial cables indicate the signal directions on a router. The R and T BNC coaxial cables must be connected to the Tx and Rx interfaces on the remote device.

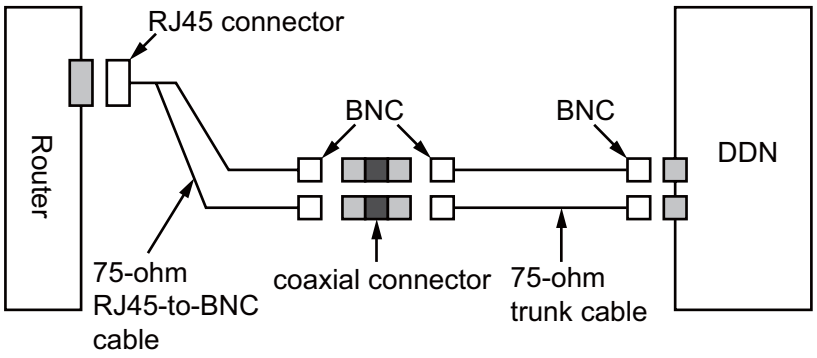
Trunk Cable

NOTE

A 75-ohm RJ45-to-BNC cable is 3 m long by default. If the default length is not enough for cable connection, you can use a 75-ohm trunk cable as an extension cable.

When using a 75-ohm trunk cable to prolong a 75-ohm RJ45-to-BNC cable, connect one BNC connector of the trunk cable to a coaxial connector and the other BNC connector to the remote device, as shown in Figure 4-18.

Figure 4-18 Connection of a 75-ohm trunk cable



Connection

A 75-ohm RJ45-to-BNC cable is connected as follows:

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- The RJ45 connector is connected to a router.
- The BNC connectors at the other end are connected to a network device.

Ordering Information

NOTE

If 75-ohm RJ45-to-BNC cables need to be prolonged, configure two RF coaxial connectors and two 75-ohm trunk cables for each 75-ohm RJ45-to-BNC cable.

Table 4-31 provides the 75-ohm RJ45-to-BNC cable ordering information.

Table 4-31 75-ohm RJ45-to-BNC cable ordering information

Part Number	Description	Remarks
04120387	Trunk Cable, 3m, 75ohm, 1E1, 2.2mm, 2*BNC75SM-V, 2*SYFYZ75-1.2/0.26PWG1U/120CC2P0.4P430U(S)-I, MP8-II	Optional
04024299	Trunk Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

120-Ohm DB9-to-RJ45 Cable

Description

A 120-ohm DB9-to-RJ45 cable is applicable to the interface card models listed in Table 4-32.

Table 4-32 Interface card models supporting a 120-ohm DB9-to-RJ45 cable

Cable	Card Model	Network Device Interface Type	Working Mode
120-ohm DB9-to-RJ45 cable	● 1E1/T1-M ● 2E1/T1-M ● 2E1/T1-M-W	RJ45	E1/CE1/PRI

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Cable	Card Model	Network Device Interface Type	Working Mode
	● 2E1/T1-F ● 1E1/T1-F	RJ45	E1-F
	1VE1	RJ45	VE1

Structure and Pin Assignments

Figure 4-19 shows the structure of a 120-ohm DB9-to-RJ45 cable.

Figure 4-19 Structure of a 120-ohm DB9-to-RJ45 cable

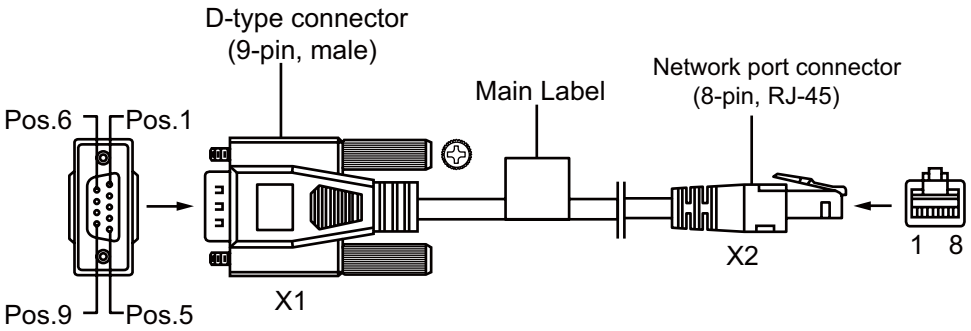

Table 4-33 shows the pin assignments of a 120-ohm DB9-to-RJ45 cable.

Table 4-33 Pin assignments of a 120-ohm DB9-to-RJ45 cable

DB9		RJ45	
Pin	**Signal**	**Pin**	**Signal**
1	Rx +	4	Rx +
2	Rx -	5	Rx -
6	Tx +	1	Tx +
7	Tx -	2	Tx -

Trunk Cable

NOTE

A 120-ohm DB9-to-RJ45 cable is 3 m long by default. If the default length is not enough for cable connection, you can use a 120-ohm trunk cable as an extension cable.

When using a 120-ohm trunk cable to prolong a 120-ohm DB9-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface connector and the other RJ45 connector to the remote device, as shown in Figure 4-20.

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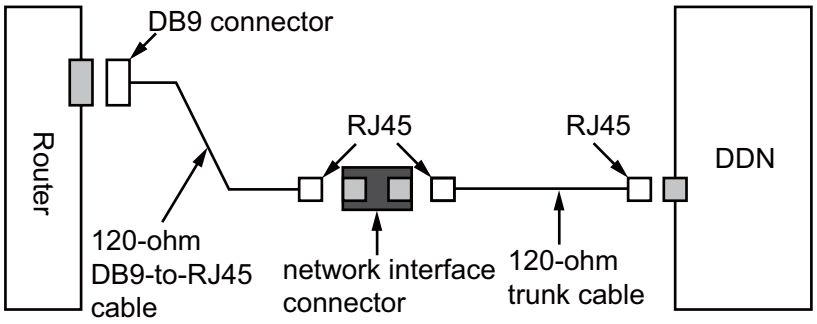
Figure 4-20 Connection of a 120-ohm trunk cable



Connection

A 120-ohm DB9-to-RJ45 cable is connected as follows:

- The DB9 connector is connected to a router.
- The RJ45 connector is connected to a network device.

Ordering Information

NOTE

If 120-ohm DB9-to-RJ45 cables need to be prolonged, configure one network interface connector and one 120-ohm trunk cable for each 120-ohm DB9-to-RJ45 cable.

Table 4-34 provides the 120-ohm DB9-to-RJ45 cable ordering information.

Table 4-34 120-ohm DB9-to-RJ45 cable ordering information

Part Number	Description	Remarks
04120276	Trunk Cable, 3m, 120ohm, 1E1, D9M, 120CC2P0.4P430U(S), MP8-II, For AR	Optional
04040497	Trunk Cable, 3m, 120ohm, 1E1,0.4mm, MP8-II, 120CC4P0.4P430U(S), MP8-II, Expert 2.0	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

120-Ohm RJ45-to-RJ45 Cable

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Description

A 120-ohm RJ45-to-RJ45 cable is applicable to the interface card models listed in **Table 4-35**.

Table 4-35 Interface card models supporting a 120-ohm RJ45-to-RJ45 cable

Cable	Card Model	Network Device Interface Type	Working Mode
120-ohm RJ45-to-RJ45 cable	● 4E1/T1-M ● 8E1/T1-M	RJ45	E1/CE1/PRI
	● 4E1/T1-F ● 8E1/T1-F	RJ45	E1-F
	AR161FV-1P	RJ45	VE1

Structure and Pin Assignments

Figure 4-21 shows the structure of a 120-ohm RJ45-to-RJ45 cable.

Figure 4-21 Structure of a 120-ohm RJ45-to-RJ45 cable

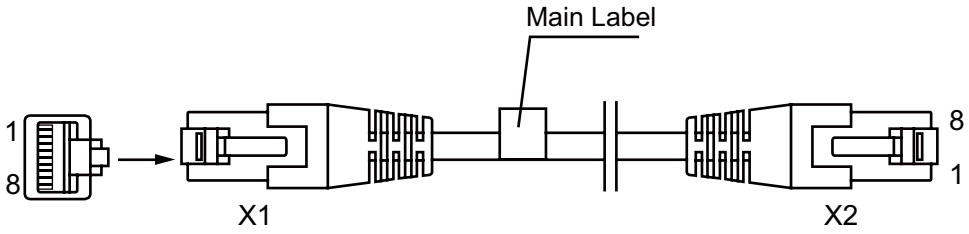

Table 4-36 shows the pin assignments of a 120-ohm RJ45-to-RJ45 cable.

Table 4-36 Pin assignments of a 120-ohm RJ45-to-RJ45 cable

X1		X2	
Pin	**Signal**	**Pin**	**Signal**
1	Rx -	4	Rx -
2	Rx +	5	Rx +
4	Tx -	1	Tx -
5	Tx +	2	Tx +

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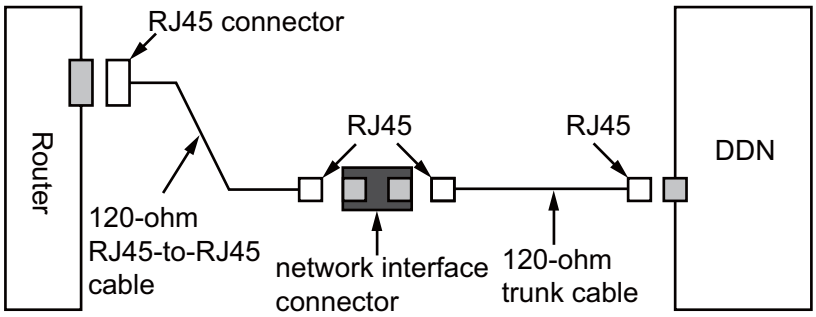
Trunk Cable

NOTE

A 120-ohm RJ45-to-RJ45 cable is 3 m long by default. If the default length is not enough for cable connection, you can use a 120-ohm trunk cable as an extension cable.

When using a 120-ohm trunk cable to prolong a 120-ohm RJ45-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface connector and the other RJ45 connector to the remote device, as shown in **Figure 4-22**.

Figure 4-22 Connection of a 120-ohm trunk cable



Connection

A 120-ohm RJ45-to-RJ45 cable is connected as follows:

- One RJ45 connector is connected to a router.
- The other RJ45 connector is connected to a network device.

Ordering Information

NOTE

If 120-ohm RJ45-to-RJ45 cables need to be prolonged, configure one network interface connector and one 120-ohm trunk cable for each 120-ohm RJ45-to-RJ45 cable.

Table 4-37 provides the 120-ohm RJ45-to-RJ45 cable ordering information.

Table 4-37 120-ohm RJ45-to-RJ45 cable ordering information

Part Number	Description	Remarks
04040497	Trunk Cable, 3m, 120ohm, 1E1,0.4mm, MP8-II, 120CC4P0.4P430U(S), MP8-II, Expert 2.0.	Optional
04120278	Trunk Cable, 15m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC2P0.4P430U(S), MP8-II.	Optional

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Part Number	Description	Remarks
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed.	Optional

100-Ohm DB9-to-RJ45 Cable

Description

A 100-ohm DB9-to-RJ45 cable is applicable to the interface card models listed in **Table 4-38**.

Table 4-38 Interface card models supporting a 100-ohm DB9-to-RJ45 cable

Cable	Card Model	Network Device Interface Type	Working Mode
100-ohm DB9-to-RJ45 cable	● 1E1/T1-M ● 2E1/T1-M ● 2E1/T1-M-W ● 2E1/T1-F ● 1E1/T1-F	RJ45	T1

Structure and Pin Assignments

Figure 4-23 shows the structure of a 100-ohm DB9-to-RJ45 cable.

Figure 4-23 Structure of a 100-ohm DB9-to-RJ45 cable

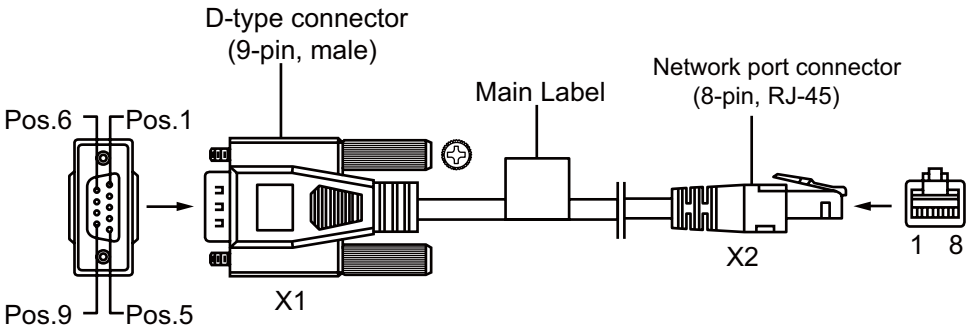

Table 4-39 shows the pin assignments of a 100-ohm DB9-to-RJ45 cable.

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Table 4-39 Pin assignments of a 100-ohm DB9-to-RJ45 cable

DB9		RJ45	
Pin	**Signal**	**Pin**	**Signal**
1	Rx +	4	Rx +
2	Rx -	5	Rx -
6	Tx +	1	Tx +
7	Tx -	2	Tx -

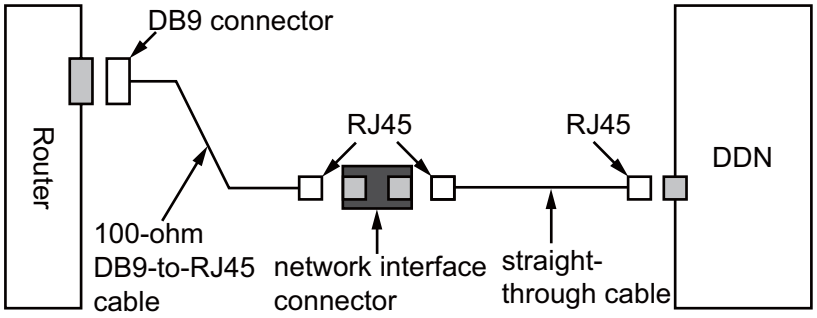
Straight-Through Cable

NOTE

A 100-ohm DB9-to-RJ45 cable is 3 m long by default. If the default length is not enough for cable connection, you can use a straight-through cable as an extension cable.

When using a straight-through cable to prolong a 100-ohm DB9-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface connector and the other RJ45 connector to the remote device, as shown in **Figure 4-24**.

Figure 4-24 Connection of a straight-through cable



Connection

A 100-ohm DB9-to-RJ45 cable is connected as follows:

- The DB9 connector is connected to a router.
- The RJ45 connector is connected to a network device.

Ordering Information

NOTE

If 100-ohm DB9-to-RJ45 cables need to be prolonged, configure one network interface connector and one straight-through cable for each 100-ohm DB9-to-RJ45 cable.

Table 4-40 provides the 100-ohm DB9-to-RJ45 cable ordering information.

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Table 4-40 100-ohm DB9-to-RJ45 cable ordering information

Part Number	Description	Remarks
04120277	Trunk Cable, 3m, 100ohm, 1T1, 0.53mm, D9M, CC4P0.5P430U(S), MP8-IV, LSZH	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

4.1.10 E3/T3 Cable

Description

An E3/T3 cable connects a 1E3/CE3/T3/CT3 interface card to a remote device. The cable connects to the interface card through the SMB75 connector and connects to the remote device through the BNC connector.

Each 1E3/CE3/T3/CT3 interface card needs to be connected to a remote device using two E3/T3 cables.

Structure and Pin Assignments

Figure 4-25 shows the structure of an E3/T3 cable.

Figure 4-25 Structure of an E3/T3 cable

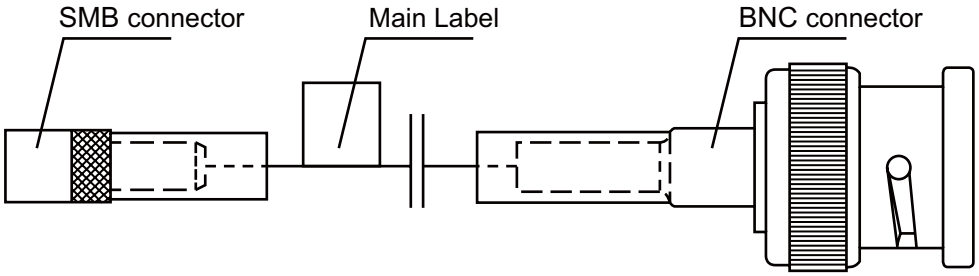

Table 4-41 lists the pin assignments of an E3/T3 cable.

Table 4-41 Pin assignments of an E3/T3 cable

SMB75		BNC	
Pin	**Signal**	**Pin**	**Signal**
Core wire	Signal wire	Core wire	Signal wire

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SMB75		BNC	
Pin	**Signal**	**Pin**	**Signal**
Insulated wire	GND	Insulated wire	GND

Connection

- Connect the SMB75 connector of one E3/T3 cable to the Tx interface on the 1E3/CE3/T3/CT3 interface card, and the BNC connector to the Rx interface on the remote device.
- Connect the SMB75 connector of one E3/T3 cable to the Rx interface on the 1E3/CE3/T3/CT3 interface card, and the BNC connector to the Tx interface on the remote device.

Ordering Information

If the two devices to be connected are far from each other, you can use trunk cables to extend the E3/T3 cables. In this case, you also need to use a coaxial connector for each E3/T3 cable.

Table 4-42 provides the E3/T3 cable ordering information.

Table 4-42 E3/T3 cable ordering information

Part Number	Description	Remarks
04042685	Single Cable, SMB75SF-IV, SYV75-2/0.34(S), BNC75SM-III, 10m, 75 ohm Clock Cable, MD5500	Optional
04024299	Trunk Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/ Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

4.1.11 SA Cable

V.24 DTE Cable

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Description

> **NOTICE**
>
> Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 4-26 shows the structure of a V.24 DTE cable.

Figure 4-26 Structure of a V.24 DTE cable

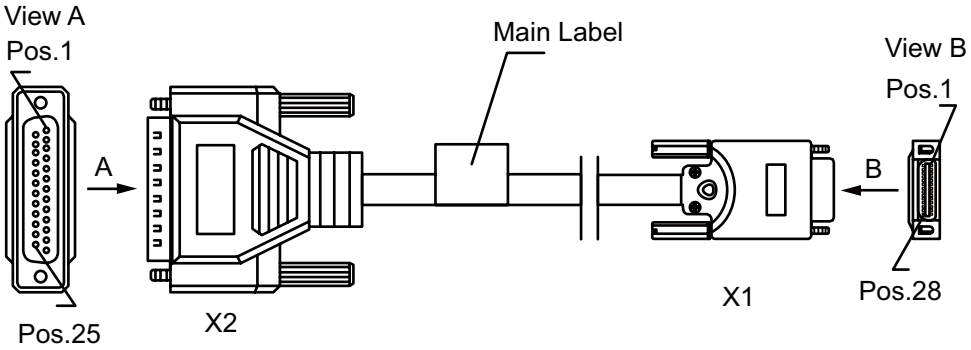

Table 4-43 lists the pin assignments of a V.24 DTE cable.

Table 4-43 Pin assignments of a V.24 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
1	TXD	→	2
19	RXD	←	3
13	RTS	→	4
23	CTS	←	5
27	DTR	→	20
25	DSR	←	6
11	DCD	←	8
22	LL	→	18
3	TXC	←	15
15	TXCE	→	24

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X1 (DB28)	Signal	Direction	X2 (DB25)
17	RXC	←	17
21	GND	←→	1
6	GND	←→	7
10	MODE_DCE		
7	MODE0		

Connection

A V.24 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 4-44 provides the V.24 DTE cable ordering information.

Table 4-44 V.24 DTE cable ordering information

Part Number	Description	Remarks
04043589	Single Cable, V.24 Serial Port Cable, 3m, D25M, CC(5P+8C)0.32P296U(S), D28M, DTE	Optional

V.24 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

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Structure and Pin Assignments

Figure 4-27 shows the structure of a V.24 DCE cable.

Figure 4-27 Structure of a V.24 DCE cable

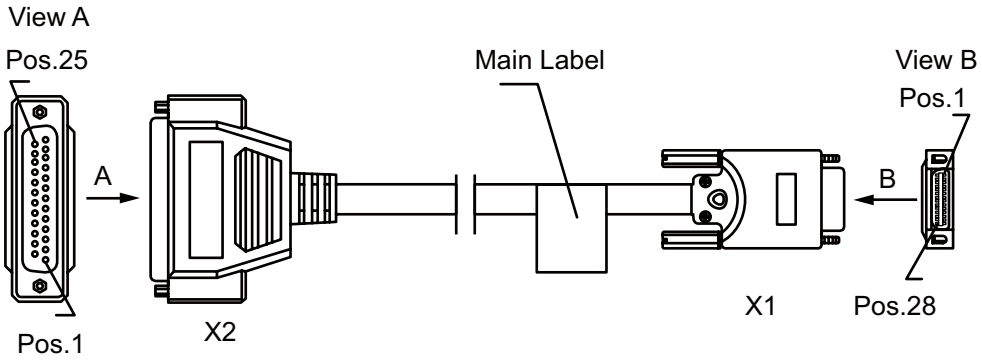

Table 4-45 lists the pin assignments of a V.24 DCE cable.

Table 4-45 Pin assignments of a V.24 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
19	RXD	←	2
1	TXD	→	3
23	CTS	←	4
13	RTS	→	5
25	DSR	←	20
27	DTR	→	6
11	DCD	←	8
22	LL	→	18
3	TXC	→	15
17	RXC	←	24
15	TXCE	→	17
21	GND	←→	1
6	GND	←→	7
7	MODE0		

Connection

A V.24 DCE cable is connected as follows:

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- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 4-46 provides the V.24 DCE cable ordering information.

Table 4-46 V.24 DCE cable ordering information

Part Number	Description	Remarks
04043590	Single Cable, V.24 Serial Port Cable, 3m, D25F, CC(5P+8C)0.32P296U(S), D28M, DCE	Optional

V.35 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 4-28 shows the structure of a V.35 DTE cable.

Figure 4-28 Structure of a V.35 DTE cable

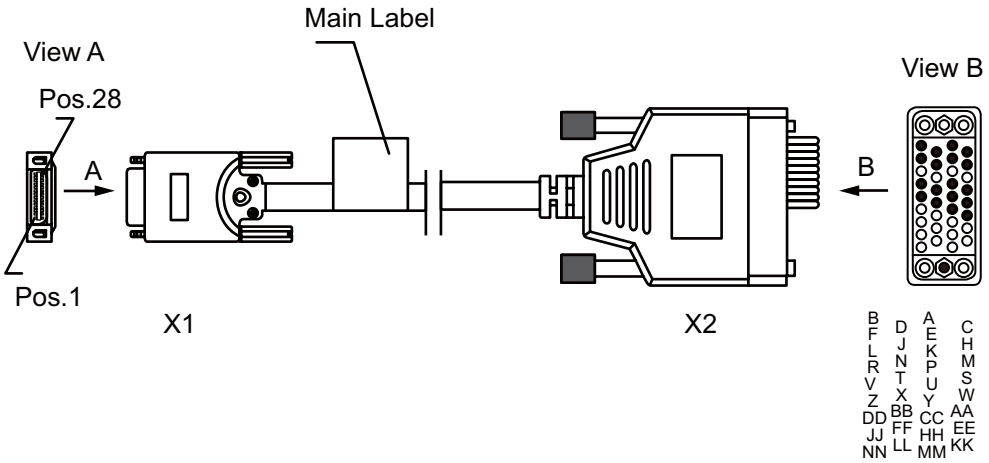

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Table 4-47 lists the pin assignments of a V.35 DTE cable.

Table 4-47 Pin assignments of a V.35 DTE cable

X1 (DB28)	Signal	Direction	X2
1	TXD+	→	P
2	TXD-	→	S
19	RXD+	←	R
20	RXD-	←	T
17	RXC+	←	V
18	RXC-	←	X
3	TXC+	←	Y
4	TXC-	←	AA
15	TXCE+	→	U
16	TXCE-	→	W
11	DCD+	←	F
22	LL	→	J
13	RTS+	→	C
23	CTS+	←	D
27	DTR+	→	H
25	DSR+	←	E
21	GND	←→	B
6	GND	←→	A
10	MODE_DCE		
7	MODE0		
8	MODE1		

Connection

A V.35 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).

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- If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 4-48 provides the V.35 DTE cable ordering information.

Table 4-48 V.35 DTE cable ordering information

Part Number	Description	Remarks
04043591	Single Cable, V.35 Serial Port Cable, 3m, D28M, CC(5P+8C)0.32P296U(S), D34M +D34PS, DTE	Optional

V.35 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 4-29 shows the structure of a V.35 DCE cable.

Figure 4-29 Structure of a V.35 DCE cable

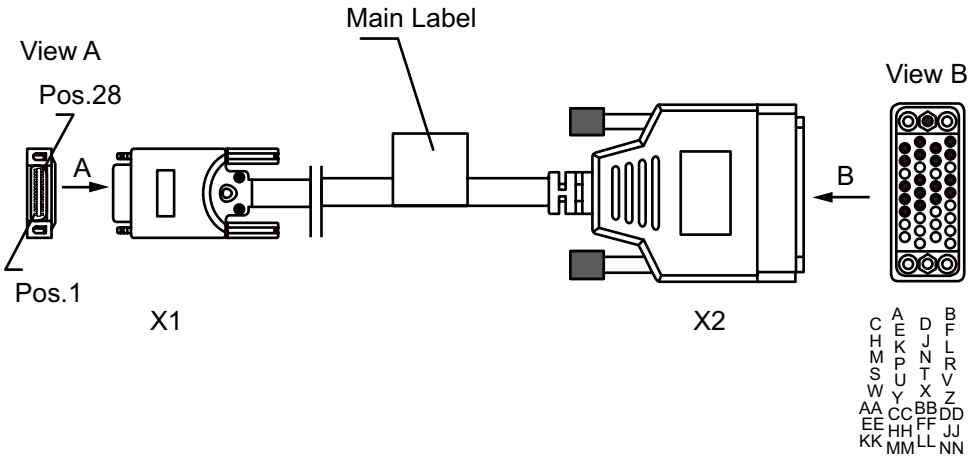

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Table 4-49 lists the pin assignments of a V.35 DCE cable.

Table 4-49 Pin assignments of a V.35 DCE cable

X1 (DB28)	Signal	Direction	X2
19	RXD+	←	P
20	RXD-	←	S
1	TXD+	→	R
2	TXD-	→	T
15	TXCE+	→	V
16	TXCE-	→	X
3	TXC+	→	Y
4	TXC-	→	AA
17	RXC+	←	U
18	RXC-	←	W
11	DCD+	→	F
22	LL	←	J
23	CTS+	←	C
13	RTS+	→	D
25	DSR+	←	H
27	DTR+	→	E
21	GND	←→	B
6	GND	←→	A
7	MODE0		
8	MODE1		

Connection

A V.35 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

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Ordering Information

Table 4-50 provides the V.35 DCE cable ordering information.

Table 4-50 V.35 DCE cable ordering information

Part Number	Description	Remarks
04043592	Single Cable, V.35 Serial Port Cable, 3m, D28M, CC(5P+8C)0.32P296U(S), D34F +D34PS, DCE	Optional

X.21 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 4-30 shows the structure of an X.21 DTE cable.

Figure 4-30 Structure of an X.21 DTE cable

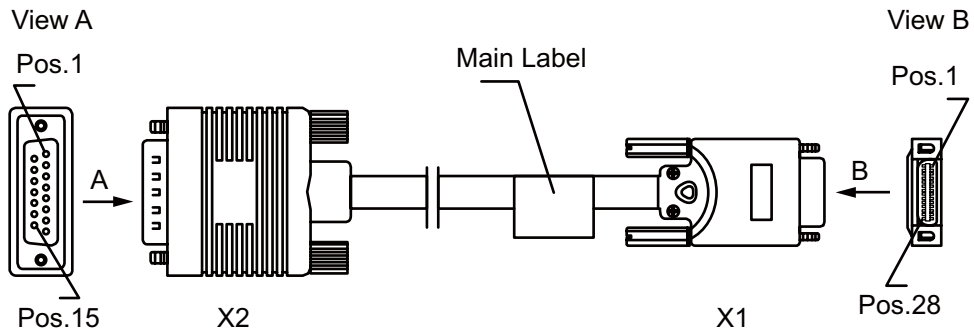

Table 4-51 lists the pin assignments of an X.21 DTE cable.

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Table 4-51 Pin assignments of an X.21 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB15)
13	RTS+	→	3
14	RTS-	→	10
23	CTS+	←	5
24	CTS-	←	12
19	RXD+	←	4
20	RXD-	←	11
1	TXD+	→	2
2	TXD-	→	9
17	RXC+	←	6
18	RXC-	←	13
21	GND	←→	1
6	GND	←→	8
10	MODE_DCE		
9	MODE2		

Connection

An X.21 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB15) depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 4-52 provides the X.21 DTE cable ordering information.

Table 4-52 X.21 DTE cable ordering information

Part Number	Description	Remarks
04043593	Single Cable, X.21 Serial Port Cable, 3m, D15M, CC(5P+8C)0.32P296U(S), D28M, DTE	Optional

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X.21 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 4-31 shows the structure of an X.21 DCE cable.

Figure 4-31 Structure of an X.21 DCE cable

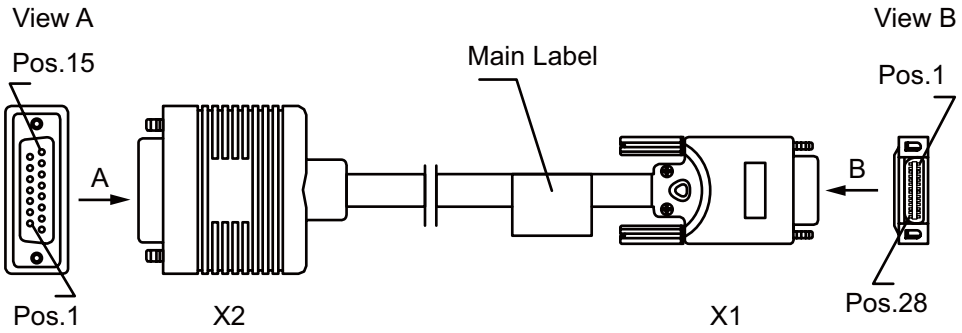

Table 4-53 lists the pin assignments of an X.21 DCE cable.

Table 4-53 Pin assignments of an X.21 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB15)
13	RTS+	→	5
14	RTS-	→	12
23	CTS+	←	3
24	CTS-	←	10
19	RXD+	←	2
20	RXD-	←	9
1	TXD+	→	4
2	TXD-	→	11
15	RXC+	→	6

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X1 (DB28)	Signal	Direction	X2 (DB15)
16	RXC-	→	13
21	GND	→	1
6	GND	←→	8
9	MODE_DCE		

Connection

An X.21 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB15) depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 4-54 provides the X.21 DCE cable ordering information.

Table 4-54 X.21 DCE cable ordering information

Part Number	Description	Remarks
04043594	Single Cable, X.21 Serial Port Cable, 3m, D15F, CC(5P+8C)0.32P296U(S), D28M, DCE	Optional

RS449 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 4-32 shows the structure of an RS449 DTE cable.

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Figure 4-32 Structure of an RS449 DTE cable

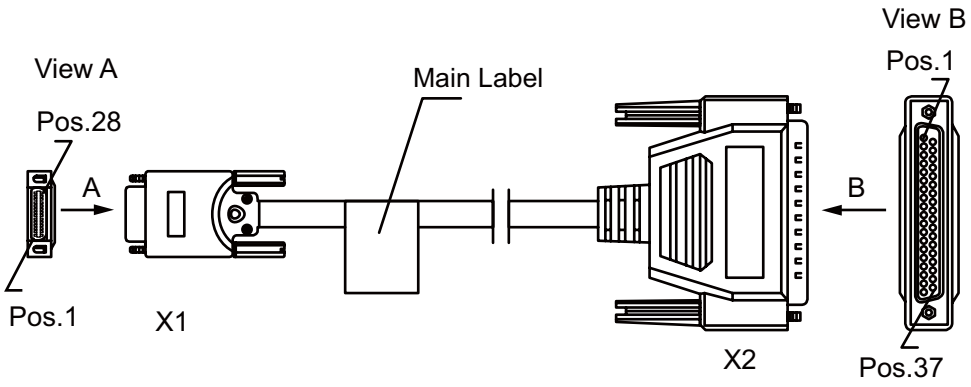

Table 4-55 lists the pin assignments of an RS449 DTE cable.

Table 4-55 Pin assignments of an RS449 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB37)
27	DTR+	→	12
28	DTR-	→	30
25	DSR+	←	11
26	DSR-	←	29
13	RTS+	→	7
14	RTS-	→	25
23	CTS+	←	9
24	CTS-	←	27
11	DCD+	→	13
12	DCD-	→	31
19	RXD+	←	6
20	RXD-	←	24
1	TXD+	→	4
2	TXD-	→	22
15	TXCE+	→	17
16	TXCE-	→	35
17	RXC+	←	8
18	RXC-	←	26

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X1 (DB28)	Signal	Direction	X2 (DB37)
3	TXC+	→	5
4	TXC-	→	23
22	LL	←	10
21	GND	←→	1
6	GND	←→	19
8	MODE_DCE		
10	MODE1		

Connection

An RS449 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB37) depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 4-56 provides the RS449 DTE cable ordering information.

Table 4-56 RS449 DTE cable ordering information

Part Number	Description	Remarks
04043595	Single Cable, RS449 Serial Port Cable, 3m, D28M, 100CC13P0.32P296U(S), D37M-I, DTE	Optional

RS449 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

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Structure and Pin Assignments

Figure 4-33 shows the structure of an RS449 DCE cable.

Figure 4-33 Structure of an RS449 DCE cable

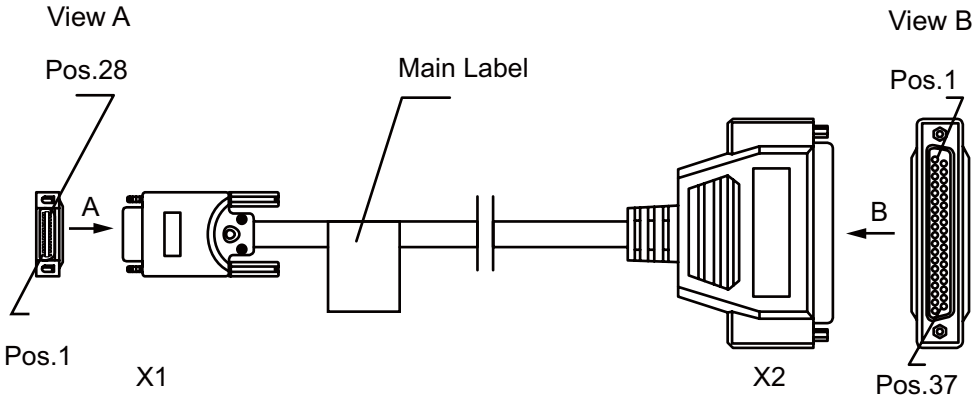

Table 4-57 lists the pin assignments of an RS449 DCE cable.

Table 4-57 Pin assignments of an RS449 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB37)
27	DTR+	→	11
28	DTR-	→	29
25	DSR+	←	12
26	DSR-	←	30
13	RTS+	→	9
14	RTS-	→	27
23	CTS+	←	7
24	CTS-	←	25
11	DCD+	→	13
12	DCD-	→	31
19	RXD+	←	4
20	RXD-	←	22
1	TXD+	←	6
2	TXD-	←	24
15	TXCE+	→	8
16	TXCE-	→	26

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X1 (DB28)	Signal	Direction	X2 (DB37)
17	RXC+	←	17
18	RXC-	←	35
3	TXC+	→	5
4	TXC-	→	23
22	LL	→	10
21	GND	←→	1
6	GND	←→	19
8	MODE_DCE		

Connection

An RS449 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB37) depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 4-58 provides the RS449 DCE cable ordering information.

Table 4-58 RS449 DCE cable ordering information

Part Number	Description	Remarks
04043596	Single Cable, RS449 Serial Port Cable, 3m, D28M, 100CC13P0.32P296U(S), D37F-I, DCE	Optional

RS530 DTE Cable

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Description

> **NOTICE**
>
> Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 4-34 shows the structure of an RS530 DTE cable.

Figure 4-34 Structure of an RS530 DTE cable

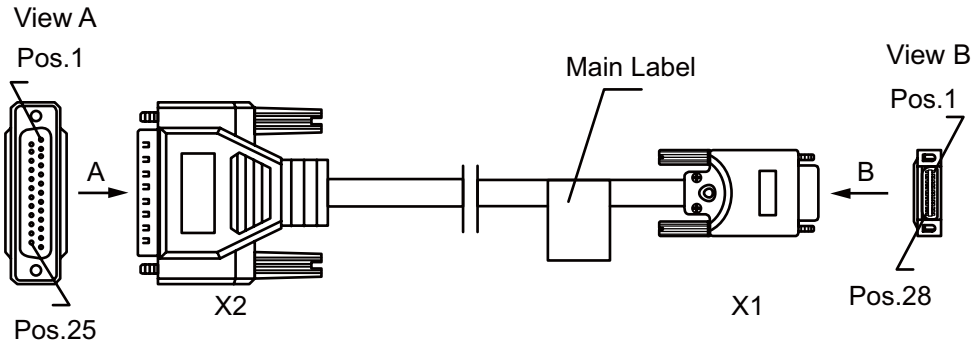

Table 4-59 lists the pin assignments of an RS530 DTE cable.

Table 4-59 Pin assignments of an RS530 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
27	DTR+	→	20
28	DTR-	→	23
25	DSR+	←	6
26	DSR-	←	22
13	RTS+	→	4
14	RTS-	→	19
23	CTS+	←	5
24	CTS-	←	13
11	DCD+	←	8
12	DCD-	←	10

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X1 (DB28)	Signal	Direction	X2 (DB25)
19	RXD+	←	3
20	RXD-	←	16
1	TXD+	→	2
2	TXD-	→	14
15	TXCE+	→	24
16	TXCE-	→	11
17	RXC+	←	17
18	RXC-	←	9
3	TXC+	←	15
4	TXC-	←	12
22	LL	→	18
21	GND	←→	1
6	GND	←→	7
10	MODE_DCE		
7	MODE0		
9	MODE2		

Connection

An RS530 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 4-60 provides the RS530 DTE cable ordering information.

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Table 4-60 RS530 DTE cable ordering information

Part Number	Description	Remarks
04043597	Single Cable, RS530 Serial Port Cable, 3m, D25M, 100CC13P0.32P296U(S), D28M, DTE	Optional

RS530 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 4-35 shows the structure of an RS530 DCE cable.

Figure 4-35 Structure of an RS530 DCE cable

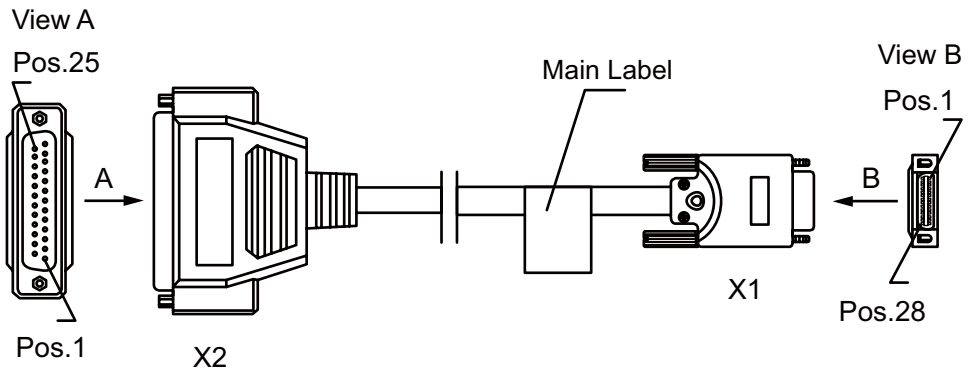

Table 4-61 lists the pin assignments of an RS530 DCE cable.

Table 4-61 Pin assignments of an RS530 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
27	DTR+	→	20
28	DTR-	→	23

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X1 (DB28)	Signal	Direction	X2 (DB25)
25	DSR+	←	6
26	DSR-	←	22
13	RTS+	→	4
14	RTS-	→	19
23	CTS+	←	5
24	CTS-	←	13
11	DCD+	→	8
12	DCD-	→	10
19	RXD+	←	3
20	RXD-	←	16
1	TXD+	→	2
2	TXD-	→	14
15	TXCE+	→	24
16	TXCE-	→	11
17	RXC+	←	17
18	RXC-	←	9
3	TXC+	→	15
4	TXC-	→	12
22	LL	←	18
21	GND	←→	1
6	GND	←→	7
7	MODE0		
9	MODE2		

Connection

An RS530 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
  - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
  - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

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Ordering Information

Table 4-62 provides the RS530 DCE cable ordering information.

Table 4-62 RS530 DCE cable ordering information

Part Number	Description	Remarks
04043770	Single Cable, RS530 Serial Port Cable, 3m, D25F, 100CC13P0.32P296U(S), D28M, DCE	Optional

4.1.12 8AS Cable

Description

An 8AS interface card can be used in four scenarios, where different cables are required. Table 4-63 describes the scenarios and applicable cables.

Table 4-63 Types and application scenarios of 8AS cables

Cable Type	Application Scenario	Description
Straight-through cable	Financial dumb terminal	The pin assignments at both ends of the cable are the same.
Adapter cable plus straight-through cable	Telecommunications terminal	An adapter cable has an RJ45 male plug at one end and an RJ45 female socket at the other end. The cable converts the wire sequences on a dumb terminal to the standard wire sequences for telecommunications devices. The RJ45 male socket of the adapter cable is connected to a straight-through cable, which is connected to a terminal.
Adapter cable plus asynchronous serial cable	Common network device	An asynchronous serial cable has an RJ45 connector at one end and a DB25/DB9 connector at the other end.
Self-made cable	Serial port server	The wire sequences of twisted pairs in the two RJ45 connectors are determined by the type of signals transmitted from the connected terminal.

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Straight-Through Cable: Connecting to a Financial Dumb Terminal

Figure 4-36 shows the structure of a straight-through cable.

Figure 4-36 Structure of a straight-through cable

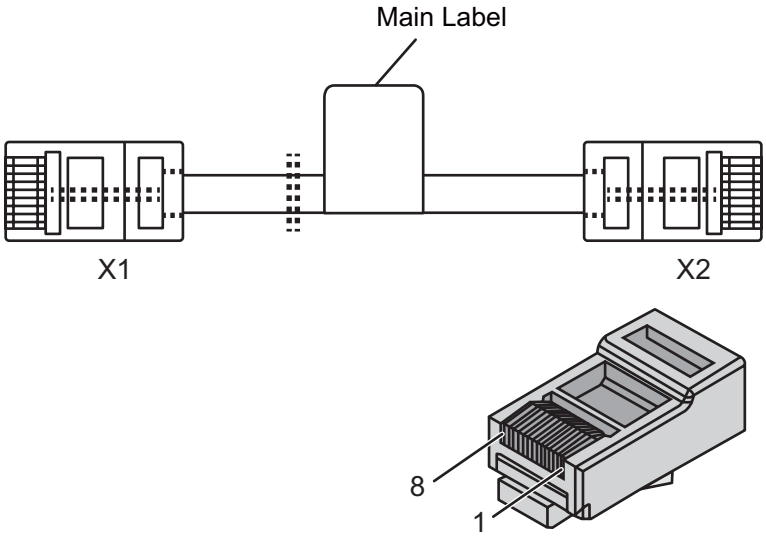

Table 4-64 lists the pin assignments of a straight-through cable.

Table 4-64 Pin assignments of a straight-through cable

X1 (RJ45)	Signal	Direction	X2 (RJ45)
1	DCD	←	1
2	DTR	→	2
3	DSR	←	3
4	GND	-	4
5	RXD	←	5
6	TXD	→	6
7	CTS	←	7
8	RTS	→	8

Adapter Cable plus Straight-Through Cable: Connecting to a Telecommunications Terminal

Figure 4-37 shows the structure of an adapter cable.

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Figure 4-37 Structure of an adapter cable

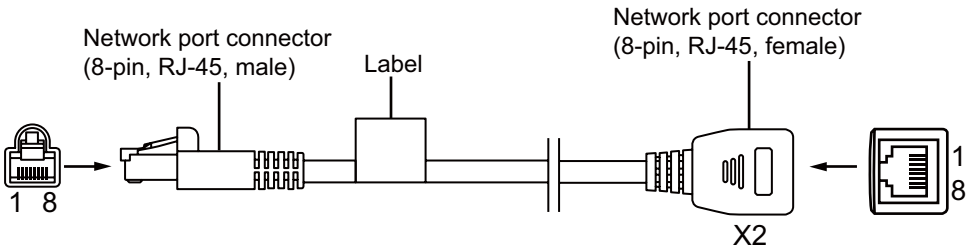

Table 4-65 lists the pin assignments of an adapter cable.

Table 4-65 Pin assignments of an adapter cable

X1 (Male)	Signal	Direction	X2 (Female)
1	DCD	←	Blue
2	DTR	→	Orange
3	DSR	←	White and brown
4	GND	-	White and blue
5	RXD	←	Green
6	TXD	→	White and green
7	CTS	←	Brown
8	RTS	→	White and orange

Figure 4-38 shows the structure of a straight-through cable.

Figure 4-38 Structure of a straight-through cable

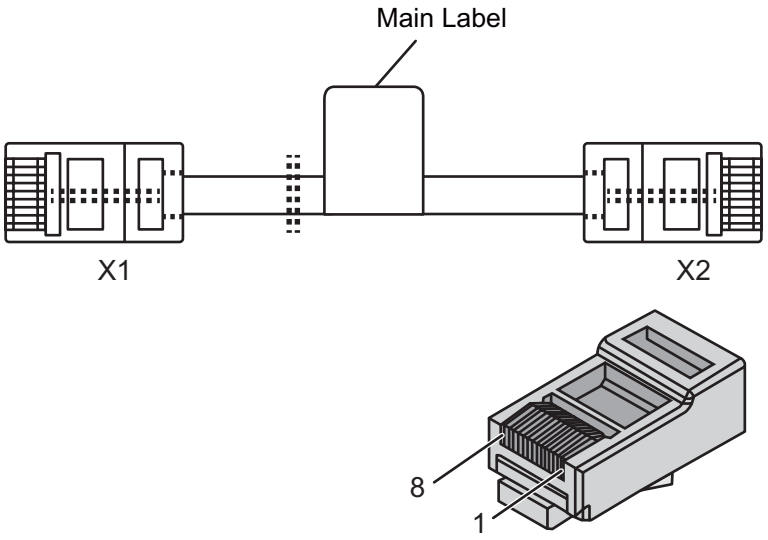

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Table 4-66 lists the pin assignments of a straight-through cable.

Table 4-66 Pin assignments of a straight-through cable

X1 (RJ45)	Signal	Direction	X2 (RJ45)
1	DCD	←	1
2	DTR	→	2
3	DSR	←	3
4	GND	-	4
5	RXD	←	5
6	TXD	→	6
7	CTS	←	7
8	RTS	→	8

Adapter Cable plus Asynchronous Serial Cable: Connecting to a Common Network Device

Figure 4-39 shows the structure of an adapter cable.

Figure 4-39 Structure of an adapter cable

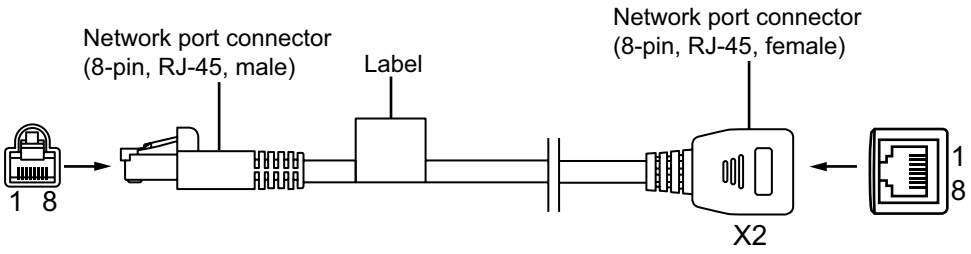

Table 4-67 lists the pin assignments of an adapter cable.

Table 4-67 Pin assignments of an adapter cable

X1 (Male)	Signal	Direction	X2 (Female)
1	DCD	←	Blue
2	DTR	→	Orange
3	DSR	←	White and brown
4	GND	-	White and blue

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X1 (Male)	Signal	Direction	X2 (Female)
5	RXD	←	Green
6	TXD	→	White and green
7	CTS	←	Brown
8	RTS	→	White and orange

Figure 4-40 shows the structure of an asynchronous serial cable.

Figure 4-40 Structure of an asynchronous serial cable

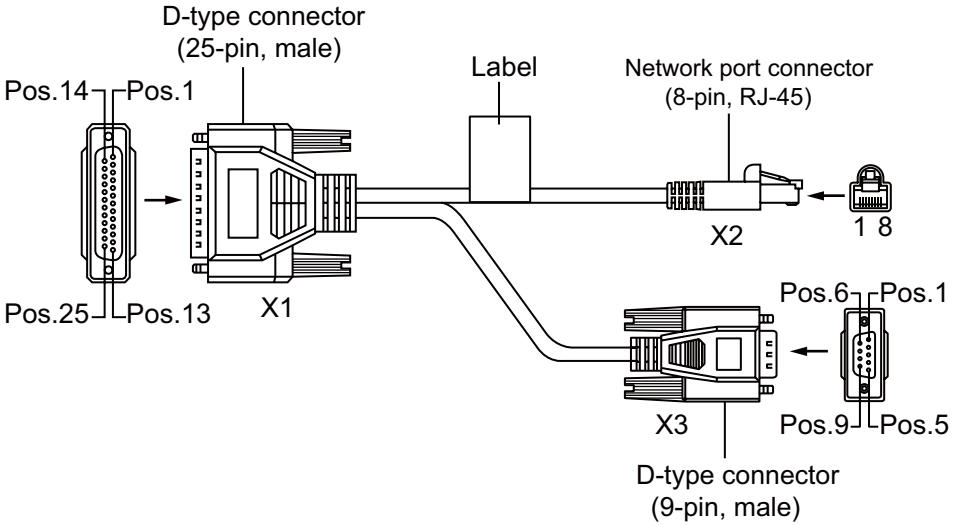

Table 4-68 lists the pin assignments of an asynchronous serial cable.

Table 4-68 Pin assignments of an asynchronous serial cable

X2 (RJ45)	Signal	Direction	X1 (DB25)	X3 (DB9)
1	RTS	→	4	7
2	DTR	→	20	4
3	TXD	→	2	3
4	DCD	←	8	1
5	GND	-	7	5
6	RXD	←	3	2
7	DSR	←	6	6
8	CTS	←	5	8

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Self-made Cable: Connecting to a Serial Port Server

Figure 4-41 shows the structure of a self-made cable.

Figure 4-41 Structure of a self-made cable

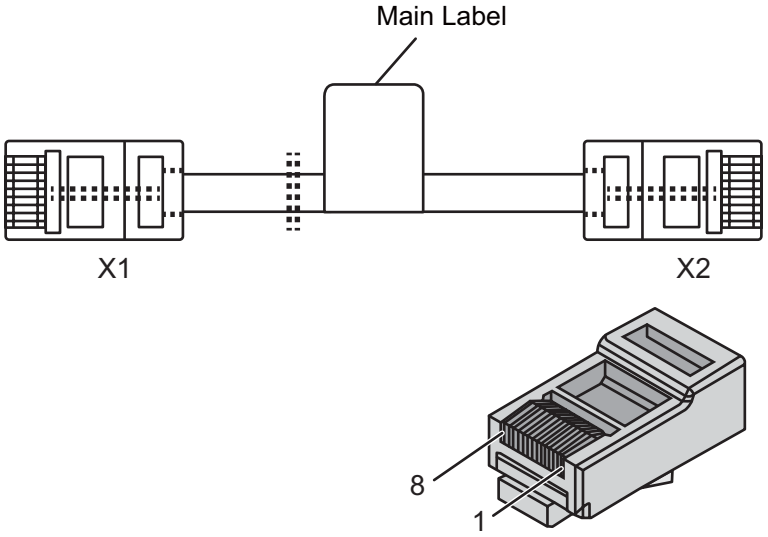

Table 4-69 lists the pin assignments of a self-made cable.

Table 4-69 Pin assignments of a self-made cable

X1 (8AS)	Signal	Direction	X2 (console)
1	DCD	←	4
2	DTR	→	7
3	DSR	←	2
4	GND	-	5
5	RXD	←	3
6	TXD	→	6
7	CTS	←	1
8	RTS	→	8

Figure 4-42 shows the pin connections of a self-made cable.

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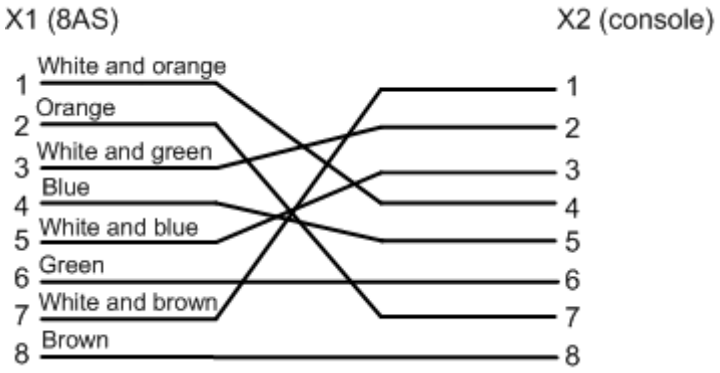
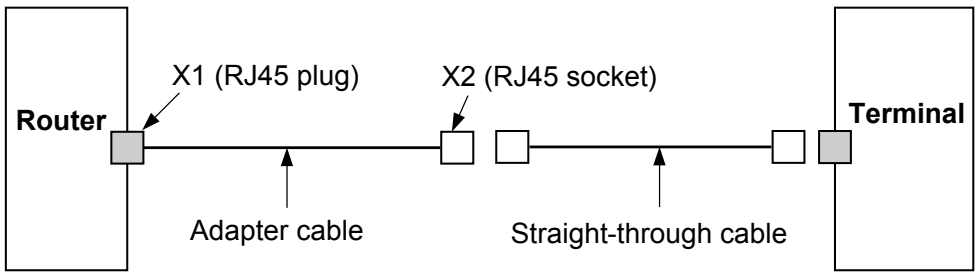
Figure 4-42 Pin connections of a self-made cable



Connection

- Financial dumb terminal connection: Connect one end of a straight-through cable to the 8AS interface card and the other end of the cable to the dumb terminal.
- Telecommunications terminal connection: Connect the X1 end (RJ45 male plug) of an adapter cable to the 8AS interface card and the other end to a straight-through cable. Then connect the other end of the straight-through cable to the telecommunications terminal. See **Figure 4-43**.

  Figure 4-43 Adapter cable and straight-through cable connection in a telecommunications scenario



- Common network device connection: Connect the RJ45 connector of an asynchronous serial cable to the 8AS interface card, and the DB9 or DB25 connector to a network device.
- Serial port server connection: Connect the X1 end (RJ45) of a self-made cable to the 8AS interface card, and the X2 end (RJ45) to the serial port server.

Ordering Information

Table 4-70 provides the 8AS cable ordering information.

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Table 4-70 8AS cable ordering information

Cable Type	Part Number	Description	Remarks
Straight-through cable	04070006	Signal Cable, Shielded Straight Through Cable, 3m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
Adapter cable	04042329	Single Cable, MP8(S)-III, CC8C0.32P296U(S), MP8-II, 0.12m, Transit Cable	Optional
Asynchronous serial cable	04021299	Single Cable, Auxiliary Port Cable, 3m, D25M, 2*CC4P0.32P296U(S), DB9M+MP8-VI, QuidwayR2501, W2215	Optional

4.1.13 G.SHDSL Cable

Description

A G.SHDSL cable connects a G.SHDSL interface to a DSLAM directly to provide broadband network access service for users. One G.SHDSL interface can connect to four telephone lines through a G.SHDSL cable.

Structure and Pin Assignments

Figure 4-44 shows the structure of a G.SHDSL cable.

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Figure 4-44 Structure of a G.SHDSL cable

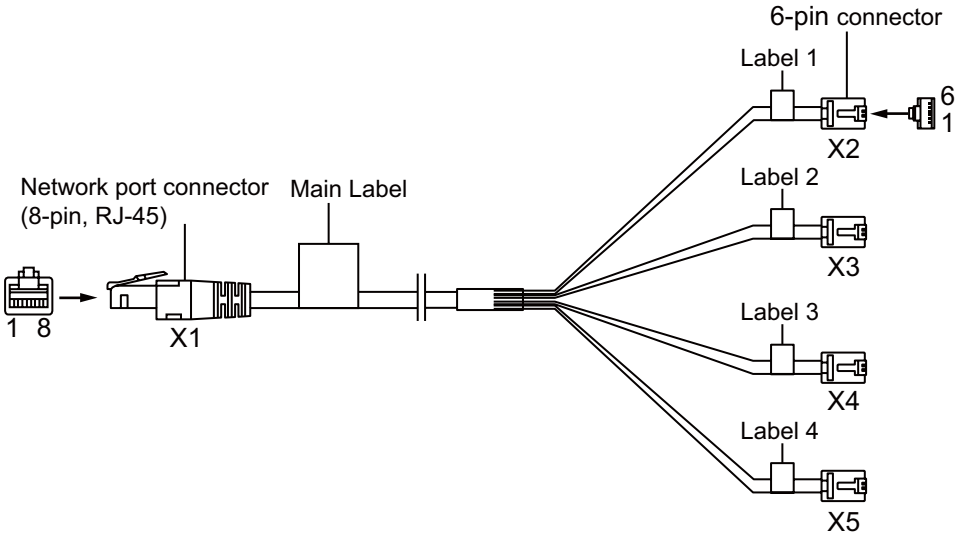

Table 4-71 lists the pin assignments of a G.SHDSL cable.

Table 4-71 Pin assignments of a G.SHDSL cable

X1 (RJ45)	Signal	X2/X3/X4/X5 (RJ11)
1	LINE1 A	2.3
2	LINE1 B	2.4
3	LINE2 A	3.3
6	LINE2 B	3.4
4	LINE0 A	4.3
5	LINE0 B	4.4
7	LINE3 A	5.3
8	LINE3 B	5.4

NOTE

As shown in Table 4-71, a G.SHDSL cable uses the standard pin assignments. It has four ports, each of which has two wires (A/B). The two wires in a port can be assigned in any sequence, but the wire pairs must be assigned in certain sequence.

Connection

A G.SHDSL cable is connected as follows:

- The RJ45 connector is connected to the G.SHDSL interface of a router.

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- The RJ11 connectors are connected to network devices, usually DSLAMs.

Ordering Information

Table 4-72 provides the G.SHDSL cable ordering information.

Table 4-72 G.SHDSL cable ordering information

Part Number	Description	Remarks
04070136	Signal Cable, G.SHDSL, 3m, MP8-I, CC4P0.5GY, 4*MP6	Mandatory

4.1.14 ISDN Cable

Standard ISDN S/T Cable

Description

A 1BST interface card works in terminal equipment (TE) mode and supports only data services, but not voice services. The 1BST interface card uses a standard ISDN S/T cable (straight-through cable).

Structure and Pin Assignments

Figure 4-45 shows the structure of a standard ISDN S/T cable.

Figure 4-45 Structure of a standard ISDN S/T cable

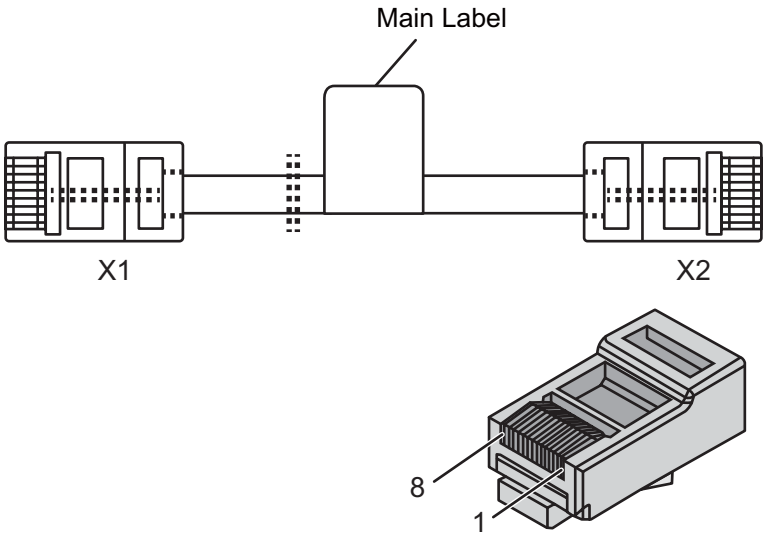

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Table 4-73 shows the pin assignments of a standard ISDN S/T cable.

Table 4-73 Pin assignments of a standard ISDN S/T cable

X1 (RJ45)	Signal	X2 (RJ45)
1	-	1
2	-	2
3	Tx+	3
4	Rx+	4
5	Rx-	5
6	Tx-	6
7	-	7
8	-	8

Connection

A standard ISDN S/T cable is connected as follows:

- One RJ45 connector is connected to the ISDN interface on a 1BST interface card.
- The other RJ45 connector is connected to a network device.

Ordering Information

Table 4-74 provides the standard ISDN S/T cable ordering information.

Table 4-74 ISDN S/T cable ordering information

Part Number	Description	Remarks
04070050	Signal Cable, Shielded Straight Through Cable, 2.0m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional

Crossover ISDN S/T Cable

Description

A 2BST interface card works in network termination (NT) mode and supports only voice services, but not data services. The 2BST interface card uses a crossover ISDN S/T cable (adapter cable). A straight-through cable can be used as an extension cable for the crossover ISDN S/T cable.

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Structure and Pin Assignments

Figure 4-46 shows the structure of a crossover ISDN S/T cable.

Figure 4-46 Structure of a crossover ISDN S/T cable

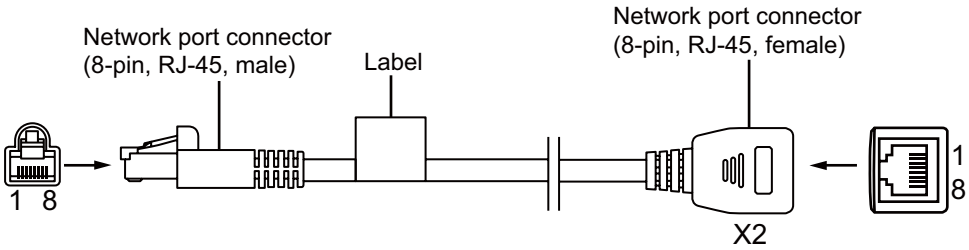

Table 4-75 shows the pin assignments of a crossover ISDN S/T cable.

Table 4-75 Pin assignments of a crossover ISDN S/T cable

X1 (TE)	Signal	X2 (NT)
1	-	1
2	-	2
3	Tx+	4
4	Rx+	3
5	Rx-	6
6	Tx-	5
7	-	7
8	-	8

NOTE

In a crossover ISDN S/T cable, pins 4 and 5 are used to transmit signals, and pins 3 and 6 are used to receive signals.

Connection

A crossover ISDN S/T cable is connected as follows:

- The RJ45 male plug is connected to the ISDN interface on a 2BST interface card.
- The other RJ45 female socket is connected to a network device.

Ordering Information

Table 4-76 provides the crossover ISDN S/T cable ordering information.

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Table 4-76 Crossover ISDN S/T cable ordering information

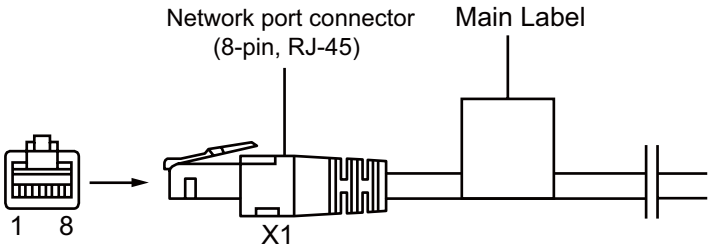
Part Number	Description	Remarks
04070137	Signal Cable, ISDN-NT, 3m, MP8-IV, CC4P0.5P430U(S), MP8(S)-III	Standard configuration

4.1.15 Serial Cable (RS232/485)

Appearance and Structure

Figure 4-47 shows the structure of a serial cable.

Figure 4-47 Structure of a serial cable (RS232/485)



Pin Assignments

The X1 end of a serial cable is an RJ45 connector, and the other end is an RJ45 or another type of connector. Connect the serial cable according to the pin assignments of the X1 end, as listed in Table 4-77.

Table 4-77 Pin assignment of a serial cable (RS232/485)

X1	Signal Type
1	RXD+
2	Vacant
3	● RS232: TXD ● RS485: TXD+
4	Vacant
5	Ground
6	● RS232: RXD ● RS485: TXD-
7	Vacant

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X1	Signal Type
8	RXD-

Connection

A serial cable (RS232/485) has an 8-pin RJ45 connector at one end and an RJ45 or another type of connector at the other end. It is connected as follows:

- The 8-pin RJ45 connector is connected to a serial port of the router.
- The other end is connected to a serial port terminal.

4.1.16 E&M Trunk Cable

Description

An E&M trunk cable has an RJ45 connector at one end, and the other end needs to have a connector made onsite according to the device connection requirements.

Structure and Pin Assignments

Figure 4-48 shows the structure of an E&M trunk cable.

Figure 4-48 Structure of an E&M trunk cable

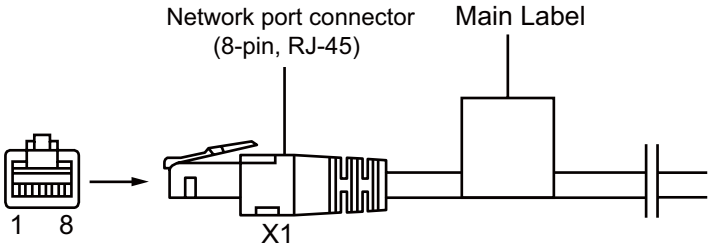

Table 4-78 lists the pin assignments of an E&M trunk cable.

Table 4-78 Pin assignments of an E&M trunk cable

X1 (RJ45)	Wire Color	Pin Assignment	Pin Description
1	White and orange	SB	Isolated signal power output
2	Orange	E	Used by the PBX to receive control signals

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X1 (RJ45)	Wire Color	Pin Assignment	Pin Description
3	White and green	R1	● Two-wire mode: not connected ● Four-wire mode: Ring transmission line
4	Blue	R	● Two-wire mode: Ring line ● Four-wire mode: Ring receiving line
5	White and blue	T	● Two-wire mode: Tip line ● Four-wire mode: Tip receiving line
6	Green	T1	● Two-wire mode: not connected ● Four-wire mode: Tip transmission line
7	White and brown	M	Used by the PBX to send control signals
8	Brown	SG	Isolated signal ground

Figure 4-49 shows the E&M trunk cable connection between the local and remote devices.

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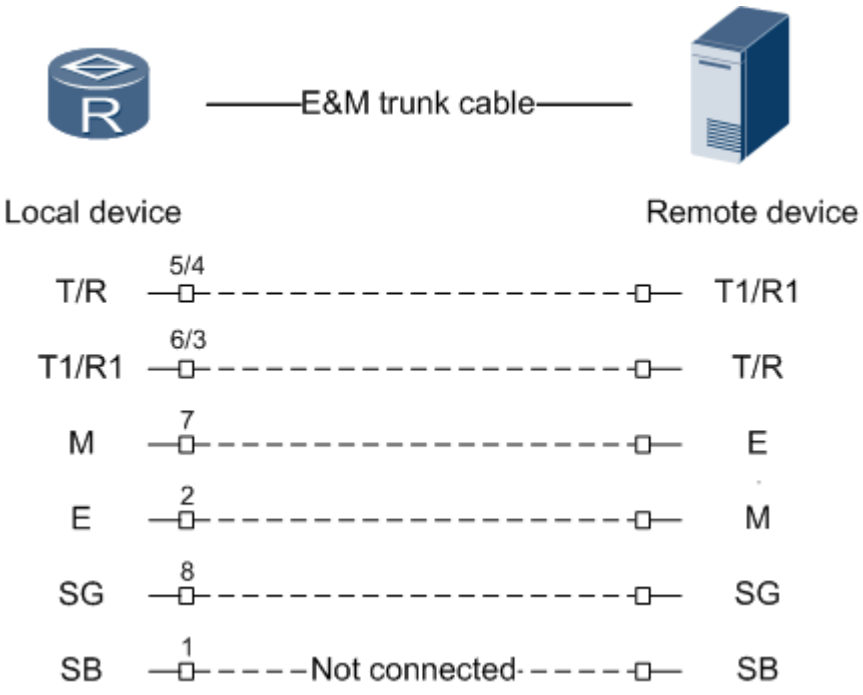
Figure 4-49 E&M trunk cable connection



NOTE

An E&M trunk cable can be a shielded or an unshielded cable.

- If a shielded network cable is used as the E&M trunk cable, the local and remote devices can be directly connected using this cable.
- If an unshielded network cable is used as the E&M trunk cable and does not need to be led outdoors, the local and remote devices can be directly connected using this cable.
- If an unshielded network cable is used as the E&M trunk cable and needs to be led outdoors, the local and remote devices must be connected using a cable management strip. For details on how to connect the devices through a cable management strip, see (Optional) Installing a Cable Management Strip and a Protective Unit.

Connection

An E&M trunk cable is connected as follows:

- The RJ45 connector is connected to the E&M interface of the local router.
- The other end is connected to the remote device through a network cable or cable management strip.

4.1.17 Antennas

LTE Antenna

Description

LTE antennas are classified into two types:

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- LTE whip antenna: connected to the primary and secondary LTE interfaces of a router. LTE whip antennas are recommended in desk mounting and wall mounting scenarios.
- LTE indoor remote antenna: connected to the primary LTE interface on a router through a self-contained 3 m feeder. LTE indoor remote antennas are recommended in cabinet/ rack mounting scenarios.

NOTE

- LTE whip antennas are delivered with a router.
- LTE indoor remote antennas are optional and need to be purchased separately if required.

Appearance and Structure

Figure 4-50 shows the appearance of an LTE whip antenna.

Figure 4-50 LTE whip antenna

Table 4-79 lists the technical specifications of an LTE whip antenna.

Table 4-79 Technical specifications of an LTE whip antenna

Item	Specification
Connector type	SMA-M

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Item	Specification
Frequency bands supported	698 MHz to 960 MHz/1710 MHz to 2690 MHz
Maximum gain	2 dBi/4.5 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Figure 4-51 shows the appearance of an LTE indoor remote antenna.

Figure 4-51 LTE indoor remote antenna

Table 4-80 lists the technical specifications of an LTE indoor remote antenna.

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Table 4-80 Technical specifications of an LTE indoor remote antenna

Item	Specification
Connector type	SMA-M
Cable length	3 m
Frequency bands supported	698 MHz to 960 MHz/1710 MHz to 2690 MHz
Maximum gain	1 dBi/0 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 4-81 provides the LTE antenna ordering information.

Table 4-81 LTE antenna ordering information

Antenna Type	Part Number	Description	Remarks
LTE whip antenna	27011207	Isotropic Antenna, 698MHz-960MHz/ 1420MHz-2690MHz, 2.1dBi(max) (698-960/2110-2170MHz)/ 4.6dBi(max) (1710-1990/2500-2690MHz), vertical, Omni, 5W, SMA-J, No Bracket	Mandatory
LTE indoor remote antenna	27011299	Isotropic Antenna, 698MHz-960MHz/ 1710MHz-2690MHz, 1.0dBi(698MHz-960MHz)&0dBi(1710MHz-2690MHz), Vertical, Omni, 10W, SMA-J, do not need bracket	Optional

3G Antenna

Description

3G antennas are classified into two types:

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- 3G whip antenna: directly installed on a router. 3G whip antennas are recommended in desk mounting and wall mounting scenarios.
- 3G indoor remote antenna: delivered with a 3 m feeder. 3G indoor remote antennas are recommended in cabinet/rack mounting scenarios.

NOTE

- 3G whip antennas are delivered with a router.
- 3G indoor remote antennas are optional and need to be purchased separately if required.

Appearance and Structure

Figure 4-52 shows the appearance of a 3G whip antenna.

Figure 4-52 3G whip antenna

Table 4-82 lists the technical specifications of a 3G whip antenna.

Table 4-82 Technical specifications of a 3G whip antenna

Item	Specification
Connector type	SMA-M
Frequency bands supported	824 MHz to 960 MHz/1710 MHz to 2170 MHz
Maximum gain	1 dBi/2 dBi
Standing wave	3
Polarization	Vertical

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Item	Specification
Direction	Omnidirectional

Figure 4-53 shows the appearance of a 3G indoor remote antenna.

Figure 4-53 3G indoor remote antenna

Table 4-83 lists the technical specifications of a 3G indoor remote antenna.

Table 4-83 Technical specifications of a 3G indoor remote antenna

Item	Specification
Connector type	SMA-M
Cable length	3 m
Frequency bands supported	824 MHz to 960 MHz/1710 MHz to 2170 MHz

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Item	Specification
Maximum gain	1 dBi/2.5 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 4-84 provides the 3G antenna ordering information.

Table 4-84 3G antenna ordering information

Antenna Type	Part Number	Description	Remarks
3G whip antenna	27010809	Isotropic Antenna, 824-960/1710-2170MHz, 1dBi/2dBi, Vertical, Omni, 5W, 0r, SMA-Male, Do not need Bracket	Mandatory
3G indoor remote antenna	27010824	Isotropic Antenna, 824-960/1710-2170MHz, >=1.0dBi(824-960MHz)&>=2.5 dBi(1710-2170MHz), Vertical, Omni, 10W, 0r, SMA-Male, do not need bracket	Optional

Wi-Fi Antenna

Description

Wi-Fi antennas are classified into two types:

- Wi-Fi rod antenna: applicable to the AR1200 series routers that support the Wi-Fi function.
- Wi-Fi whip antenna: applicable to the AR120/AR150/AR160/AR200 series routers that support the Wi-Fi function.

Appearance and Structure

Figure 4-54 shows the appearance of a Wi-Fi rod antenna.

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Figure 4-54 Wi-Fi rod antenna

Table 4-85 lists the technical specifications of a Wi-Fi rod antenna.

Table 4-85 Technical specifications of a Wi-Fi rod antenna

Item	Specification
Connector type	RP-SMA-M
Frequency bands supported	2400 MHz to 2500 MHz
Maximum gain	2 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Figure 4-55 shows the appearance of a Wi-Fi whip antenna.

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Figure 4-55 Wi-Fi whip antenna

Table 4-86 lists the technical specifications of a Wi-Fi whip antenna.

Table 4-86 Technical specifications of a Wi-Fi whip antenna

Item	Specification
Connector type	RP-SMA-M
Frequency bands supported	2400 MHz to 2500 MHz/5150 MHz to 5850 MHz
Maximum gain	2.15 dBi/3 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 4-87 lists the Wi-Fi antenna ordering information.

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Table 4-87 Wi-Fi antenna ordering information

Antenna Type	Part Number	Description	Remarks
Wi-Fi rod antenna	27010805	Isotropic Antenna, 2400-2500MHz, >2dBi, Vertical, Omni, 5W, RP-SMA-J, Do not need Bracket	Mandatory
Wi-Fi whip antenna	27010806	Isotropic Antenna, 2400-2500/5150-5850MHz, >2.15dBi/3dBi, Vertical, Omni, 5W-0r-RP-SMA-J, without Bracket	Mandatory

Bluetooth Antenna

Description

Bluetooth antennas are classified into two types:

- Bluetooth whip antenna: applicable to the Bluetooth-capable AR169-P-M9 router
- Bluetooth remote sucker antenna: applicable to the Bluetooth-capable AR161FW-P-M5, AR169W-P-M9, and AR169RW-P-M9 routers

Appearance and Structure

Figure 4-56 shows the appearance of a Bluetooth whip antenna.

Figure 4-56 Bluetooth whip antenna

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Table 4-88 lists the technical specifications of a Bluetooth whip antenna.

Table 4-88 Technical specifications of a Bluetooth whip antenna

Item	Specification
Connector type	SMA-J
Frequency bands supported	2400 MHz to 2500 MHz/5150 MHz to 5850 MHz
Maximum gain	2.15 dBi/3 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Figure 4-57 shows the appearance of a Bluetooth remote sucker antenna.

Figure 4-57 Bluetooth remote sucker antenna

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Table 4-89 lists the technical specifications of a Bluetooth remote sucker antenna.

Table 4-89 Technical specifications of a Bluetooth remote sucker antenna

Item	Specification
Connector type	SMA-J
Cable length	3 m
Frequency bands supported	2400 MHz to 2500 MHz
Maximum gain	3 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 4-90 provides the Bluetooth antenna ordering information.

Table 4-90 Bluetooth antenna ordering information

Antenna Type	Part Number	Description	Remarks
Bluetooth whip antenna	27010806	Isotropic Antenna, 2400-2500/5150-5850MHz, >2.15dBi/3dBi, Vertical, Omni, 5W-0r-RP-SMA-J, without Bracket	Mandatory

ZigBee Antenna

Appearance and Structure

Figure 4-58 shows a the appearance of a ZigBee antenna.

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Figure 4-58 ZigBee antenna

Table 4-91 lists the technical specifications of a ZigBee antenna.

Table 4-91 Technical specifications of a ZigBee antenna

Item	Specification
Connector type	SMA-J
Frequency bands supported	2400 MHz to 2500 MHz/5150 MHz to 5850 MHz
Maximum gain	2.15 dBi/3 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 4-92 provides the ZigBee antenna ordering information.

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Table 4-92 ZigBee antenna ordering information

Antenna Type	Part Number	Description	Remarks
ZigBee antenna	27010806	Isotropic Antenna, 2400-2500/5150-5850MHz, >2.15dBi/3dBi, Vertical, Omni, 5W-0r-RP-SMA-J, without Bracket	Mandatory

4.1.18 Voice Cables

32FXS Cable

Description

A 32FXS cable connects a 32FXS interface card to analog telephones. The DB68 connector of the cable is connected to the 32FXS interface card, and the bare wires at the other end must be cramped with RJ11 connectors before they can be connected to telephones.

Structure and Pin Assignments

Figure 4-59 shows the structure of a 32FXS cable.

Figure 4-59 Structure of a 32FXS cable

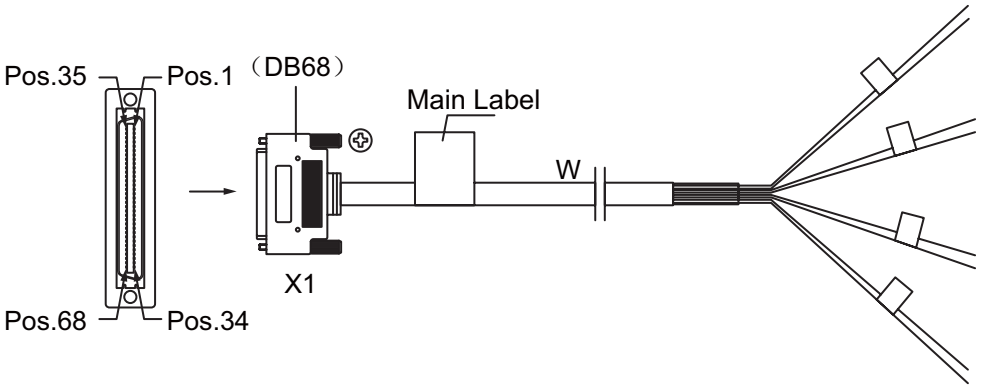

Table 4-93 lists the pin assignments of a 32FXS cable.

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Table 4-93 Pin assignments of a 32FXS cable

X1 (DB68)	Bundle Strap Color	Wire Color	Signal	Port
36	Blue	Blue	Tip(+)	1
35		White	Ring(-)	
38		Orange	Tip(+)	2
37		White	Ring(-)	
40		Green	Tip(+)	3
39		White	Ring(-)	
42		Brown	Tip(+)	4
41		White	Ring(-)	
44		Gray	Tip(+)	5
43		White	Ring(-)	
46		Blue	Tip(+)	6
45		Red	Ring(-)	
48		Orange	Tip(+)	7
47		Red	Ring(-)	
50		Green	Tip(+)	8
49		Red	Ring(-)	
2		Brown	Tip(+)	9
1		Red	Ring(-)	
4		Gray	Tip(+)	10
3		Red	Ring(-)	
6		Blue	Tip(+)	11
5		Black	Ring(-)	
8		Orange	Tip(+)	12
7		Black	Ring(-)	
10		Green	Tip(+)	13
9		Black	Ring(-)	
12		Brown	Tip(+)	14
11		Black	Ring(-)	
14		Gray	Tip(+)	15

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X1 (DB68)	Bundle Strap Color	Wire Color	Signal	Port
13		Black	Ring(-)	
16		Blue	Tip(+)	16
15		Yellow	Ring(-)	
54	Orange	Blue	Tip(+)	17
53		White	Ring(-)	
56		Orange	Tip(+)	18
55		White	Ring(-)	
58		Green	Tip(+)	19
57		White	Ring(-)	
60		Brown	Tip(+)	20
59		White	Ring(-)	
62		Gray	Tip(+)	21
61		White	Ring(-)	
64		Blue	Tip(+)	22
63		Red	Ring(-)	
66		Orange	Tip(+)	23
65		Red	Ring(-)	
68		Green	Tip(+)	24
67		Red	Ring(-)	
20		Brown	Tip(+)	25
19		Red	Ring(-)	
22		Gray	Tip(+)	26
21		Red	Ring(-)	
24		Blue	Tip(+)	27
23		Black	Ring(-)	
26		Orange	Tip(+)	28
25		Black	Ring(-)	
28		Green	Tip(+)	29
27		Black	Ring(-)	

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X1 (DB68)	Bundle Strap Color	Wire Color	Signal	Port
30		Brown	Tip(+)	30
29		Black	Ring(-)	
32		Gray	Tip(+)	31
31		Black	Ring(-)	
34		Blue	Tip(+)	32
33		Yellow	Ring(-)	

Connection

A 32FXS cable is connected as follows:

- The DB68 connector is connected to the 32FXS interface card.
- The RJ11 connectors at the other end are connected to analog telephones.

Ordering Information

A 32FXS cable is delivered without RJ11 connectors. RJ11 connectors need to be made onsite.

Table 4-94 provides the 32FXS cable ordering information.

Table 4-94 32FXS cable ordering information

Part Number	Description	Remarks
04140090	Subscriber Cable, 32-Channel, 5m, 0.4mm, 64 cores, D68M-V, CC32P0.4P430U(S)-I	Optional

16FXS Cable

Description

A 16FXS cable connects a 16FXS interface card to analog telephones. The DB68 connector of the cable is connected to the 16FXS interface card, and the bare wires at the other end must be cramped with RJ11 connectors before they can be connected to telephones.

Structure and Pin Assignments

Figure 4-60 shows the structure of a 16FXS cable.

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Figure 4-60 Structure of a 16FXS cable

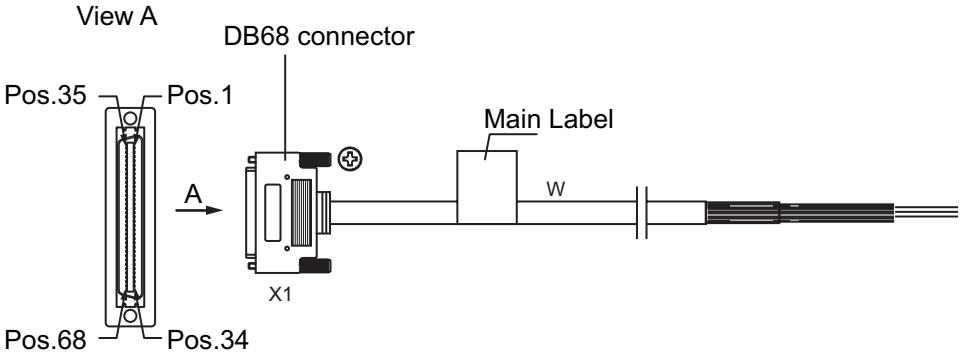

Table 4-95 lists the pin assignments of a 16FXS cable.

Table 4-95 Pin assignments of a 16FXS cable

X1 (DB68)	Wire Color	Signal	Port
36	Blue	Tip(+)	1
35	White	Ring(-)	
38	Orange	Tip(+)	2
37	White	Ring(-)	
40	Green	Tip(+)	3
39	White	Ring(-)	
42	Brown	Tip(+)	4
41	White	Ring(-)	
44	Gray	Tip(+)	5
43	White	Ring(-)	
46	Blue	Tip(+)	6
45	Red	Ring(-)	
48	Orange	Tip(+)	7
47	Red	Ring(-)	
50	Green	Tip(+)	8
49	Red	Ring(-)	
2	Brown	Tip(+)	9
1	Red	Ring(-)	
4	Gray	Tip(+)	10

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X1 (DB68)	Wire Color	Signal	Port
3	Red	Ring(-)	
6	Blue	Tip(+)	11
5	Black	Ring(-)	
8	Orange	Tip(+)	12
7	Black	Ring(-)	
10	Green	Tip(+)	13
9	Black	Ring(-)	
12	Brown	Tip(+)	14
11	Black	Ring(-)	
14	Gray	Tip(+)	15
13	Black	Ring(-)	
16	Blue	Tip(+)	16
15	Yellow	Ring(-)	

Connection

A 16FXS cable is connected as follows:

- The DB68 connector is connected to the 16FXS interface card.
- The RJ11 connectors at the other end are connected to analog telephones.

Ordering Information

A 16FXS cable is delivered without RJ11 connectors. RJ11 connectors need to be made onsite.

Table 4-96 provides the 16FXS cable ordering information.

Table 4-96 16FXS cable ordering information

Part Number	Description	Remarks
04140129	Subscriber Cable, 16-Channel, 5m, 0.4mm, 32 Cores, D68M-V,CC16P0.4P430U	Optional

Standard Telephone Cable

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Description

A standard telephone cable is applicable to the interfaces listed in **Table 4-97**.

Table 4-97 Interfaces supporting a standard telephone cable

Cable	Interface Type
Standard telephone cable	FXS interface
	FXO interface
	ADSL interface
	VDSL2 interface

Structure and Pin Assignments

Figure 4-61 shows the structure of a standard telephone cable.

Figure 4-61 Structure of a standard telephone cable

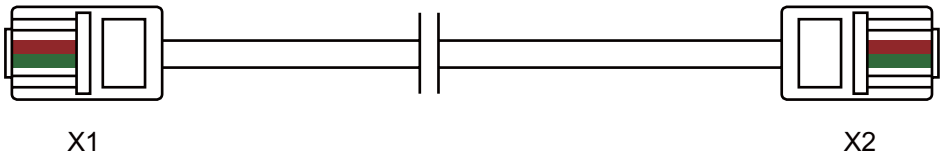

Table 4-98 lists the pin assignments of a standard telephone cable.

Table 4-98 Pin assignments of a standard telephone cable

X1 (RJ11)	Signal	Direction	X2 (RJ11)
1	-	-	1
2	-	-	2
3	Tip(+)	←→	3
4	Ring(-)	←→	4
5	-	-	5
6	-	-	6

Connection

A standard telephone cable is connected as follows:

- The RJ11 connector on one end is connected to a router.

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- The RJ11 connector on the other end is connected to an analog telephone or fax machine.

Ordering Information

Table 4-99 provides the standard telephone cable ordering information.

Table 4-99 Standard telephone cable ordering information

Part Number	Description	Remarks
04026507	Single Cable, Phone Connection Line, 2.125m, MP6-II, 28UL20251, 2CW,MP6-II, W4773	Optional

4.2 Cables for Mobile Internet Gateways

4.2.1 Power Cable (AR511GW-LAV2M3/AR511GW-L-B3)

Description

A power cable receives power from two inputs: one input directly from a power source on the vehicle (constant power supply) and the other input from the ACC circuit (switch controlled power supply).

Structure and Pin Assignments

Figure 4-62 shows the structure of a power cable.

Figure 4-62 Structure of a power cable

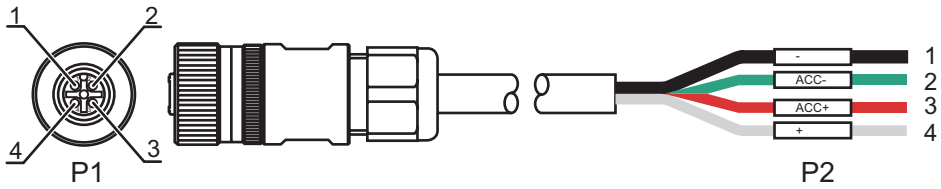

Table 4-100 lists the pin assignments of a power cable.

Table 4-100 Pin assignments of a power cable

Connector P1	Connector P2	Wire Color
1	-	Black
2	ACC-	Green

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Connector P1	Connector P2	Wire Color
3	ACC+	Red
4	+	White

Connection

A power cable is connected as follows:

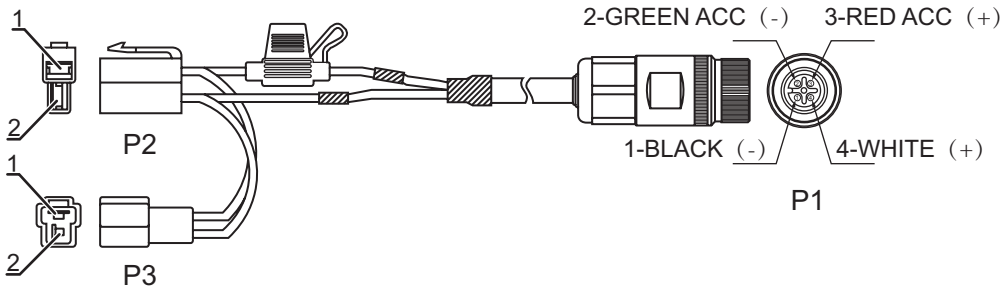
- The M12 connector at the P1 end is connected to the power jack on a router.
- The bare wires at P2 other end are connected to power sources on the vehicle.

4.2.2 Power Cable (AR511GW-LM7/AR503GW-LM7)

Appearance and Structure

Figure 4-63 shows the structure of a power cable.

Figure 4-63 Structure of a power cable



Pin Assignments

Table 4-101 lists the pin assignments of a power cable for the AR511GW-LM7.

Table 4-101 Pin assignments of a power cable for the AR511GW-LM7

Connector P1	Wire Color	Connector P2	Connector P3
1	Black	2	2
2	Green		
3	Red	1	1
4	White		

Table 4-102 lists the pin assignments of a power cable for the AR503GW-LM7.

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Table 4-102 Pin assignments of a power cable for the AR503GW-LM7

Connector P1	Wire Color	Connector P2	Connector P3
1	Black	2	2
2	Green	-	-
3	Red	1	1
4	White	-	-

Connection

A power cable is connected as follows:

- The M12 connector at the P1 end is connected to the power jack on a router.
- The other end is connected to a vehicle-mounted power source using connector P2 or P3, depending on the connector type of the vehicle-mounted power source.

4.2.3 Audio Cable

Description

An audio cable supports one audio input and two audio outputs.

Structure and Pin Assignments

Figure 4-64 shows the structure of an audio cable.

Figure 4-64 Structure of an audio cable

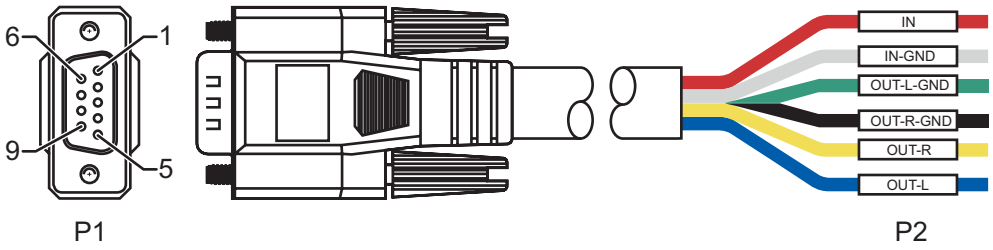

Table 4-103 lists pin assignments of an audio cable.

Table 4-103 Pin assignments of an audio cable

Connector P1	Connector P2	Wire Color
4	IN-GND	White
5	IN	Red

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Connector P1	Connector P2	Wire Color
8	OUT-L-GND	Green
	OUT-R-GND	Black
6	OUT-L	Blue
7	OUT-R	Yellow

Connection

An audio cable is connected as follows:

- The D-SUB 9M connector at the P1 end is connected to the audio interface on a router.
- The bare wires at the P2 end are connected to audio input and output devices.

4.2.4 Video Cable

Description

A video cable connects a router to a video terminal. The cable connects to the router through the DVI-I connector and connects to the video terminal through the BNC connector.

Structure and Pin Assignments

Figure 4-65 shows the structure of a video cable.

Figure 4-65 Structure of a video cable

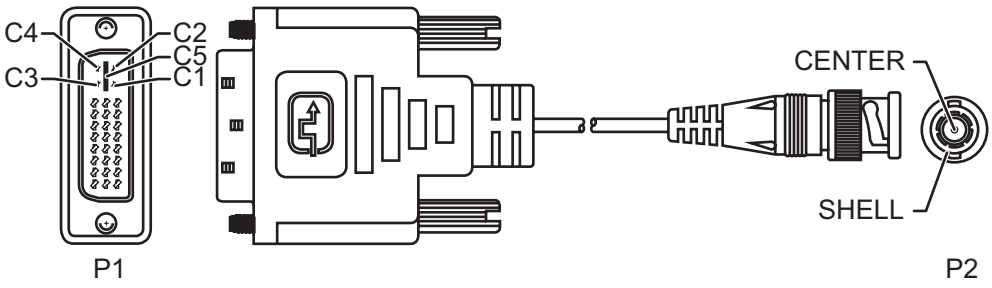

Table 4-104 lists pin assignments of a video cable.

Table 4-104 Pin assignments of a video cable

Connector P1	Connector P2
C4	CENTRE
C5	SHELL

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Connection

A video cable is connected as follows:

- The DVI-I connector at the P1 end is connected to the video interface on a router.
- The BNC connector at the P2 end is connected to a video terminal.

Ordering Information

Table 4-105 provides the video cable ordering information.

Table 4-105 Video cable ordering information

Part Number	Description	Remarks
02210787	Auxiliary Tool, AR511GW-LAV2M3-CVBS Video cable-DVI to BNC,NULL, AR511GW-LAV2M3 Vehicle-mounted Special Material	Mandatory

4.2.5 Wi-Fi Button Remote Antenna

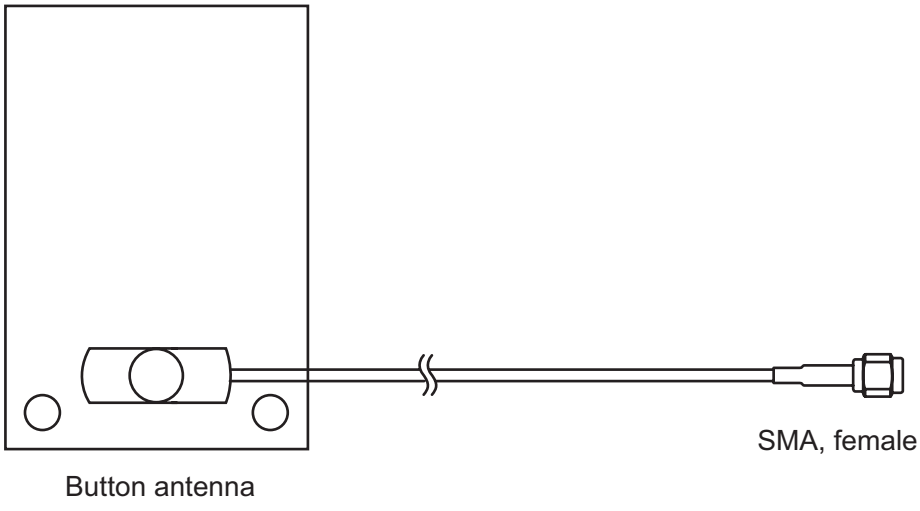
Description

A Wi-Fi button remote antenna consists of a Wi-Fi button antenna and a 0.5 m Wi-Fi feeder.

Appearance and Structure

Figure 4-66 shows the structure of a Wi-Fi button remote antenna.

Figure 4-66 Structure of a Wi-Fi button remote antenna



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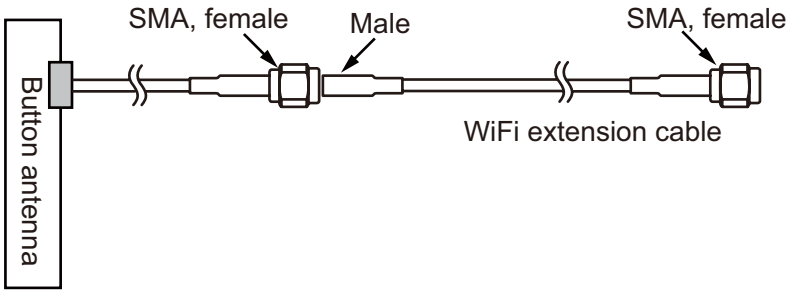
Wi-Fi Extension Cable

NOTE

Each Wi-Fi button remote antenna has a 0.5 m feeder by default. If the feeder is not long enough for antenna connection, use a Wi-Fi extension cable to prolong the feeder.

When using a Wi-Fi extension cable, connect its SMA female connector to the router and its male connector to the SMA female connector of the Wi-Fi button antenna, as shown in **Figure 4-67**.

Figure 4-67 Connection of a Wi-Fi extension cable



Connection

A Wi-Fi button remote antenna is connected as follows:

- The SMA female connector of the antenna is connected to a Wi-Fi antenna interface of a router.
- The other end (Wi-Fi button antenna) is installed on the ceiling.

4.2.6 Wi-Fi Strip-shaped Antenna

Description

A Wi-Fi strip-shaped antenna has a 1.0 m RF cable.

Appearance and Structure

Figure 4-68 shows the structure of a Wi-Fi strip-shaped antenna.

Figure 4-68 Structure of a Wi-Fi strip-shaped antenna

Connection

A Wi-Fi strip-shaped remote antenna is connected as follows:

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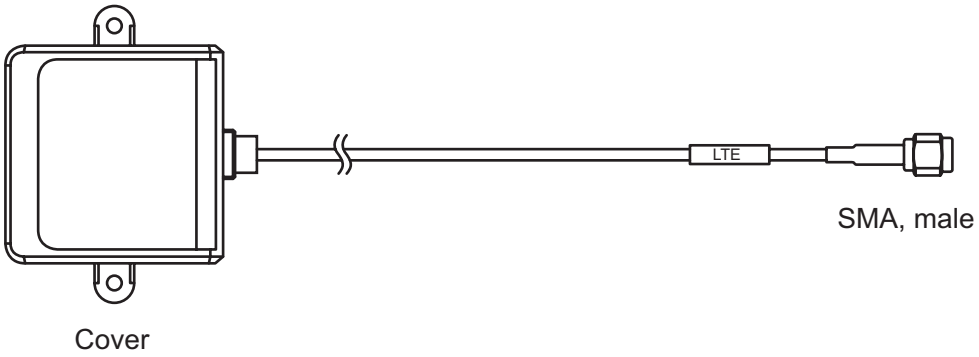
- The SMA female connector of the antenna is connected to a Wi-Fi antenna interface of a router.
- The other end (strip-shaped antenna) is attached to a plane or a side of the router.

4.2.7 Primary LTE Remote Antenna (AR510 Series)

Appearance and Structure

Figure 4-69 shows the structure of a primary LTE remote antenna.

Figure 4-69 Structure of a primary LTE remote antenna



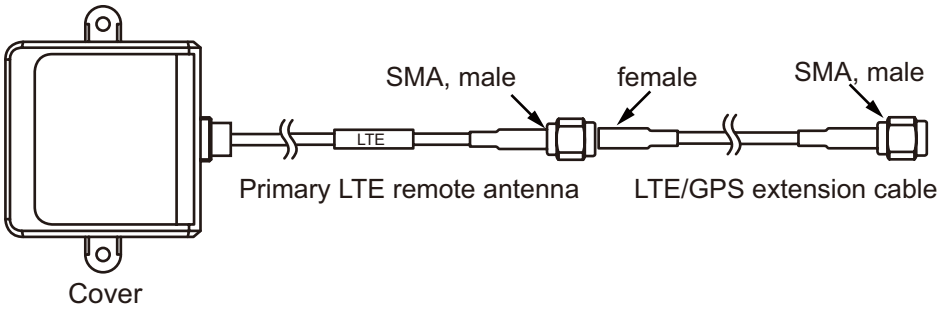
LTE/GPS Extension Cable

NOTE

A primary LTE remote antenna is 3 m long by default. If the default length is not enough for antenna connection, use a LTE/GPS extension cable to prolong the antenna.

When using a LTE/GPS extension cable, connect its SMA male connector to the router and its female connector to the SMA male connector of the primary LTE remote antenna, as shown in Figure 4-70.

Figure 4-70 Connection of a LTE/GPS extension cable



Connection

A primary LTE remote antenna is connected as follows:

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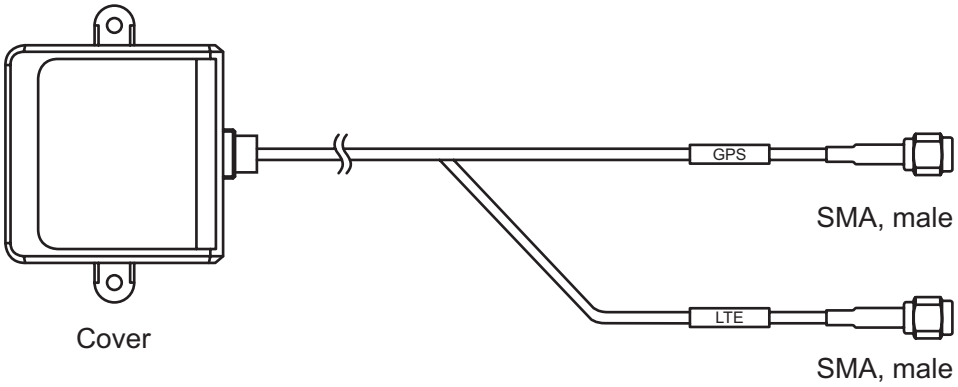
- The SMA male connector of the antenna is connected to the LTE MAIN interface on a router.
- The other end (cover) of the antenna is attached to a plastic horizontal plane.

4.2.8 GPS+LTE Remote Diversity Antenna (AR510 Series)

Appearance and Structure

Figure 4-71 shows the structure of a GPS+LTE remote diversity antenna.

Figure 4-71 Structure of a GPS+LTE remote diversity antenna



LTE/GPS Extension Cable

NOTE

- A GPS+LTE remote diversity antenna is 3 m long by default. If the default length is not enough for antenna connection, use a LTE/GPS extension cable to prolong the antenna.
- If GPS+LTE remote diversity antennas need to be prolonged, configure two LTE/GPS extension cables for each GPS+LTE remote diversity antenna.

Figure 4-72 shows the connection of LTE/GPS extension cables.

- The SMA male connector of one extension cable is connected to the GPS interface of a router, and the female connector is connected to SMA male connector of the GPS antenna.
- The SMA male connector of the other extension cable is connected to the LTE DIV interface of the router, and the female connector is connected to SMA male connector of the LTE antenna.

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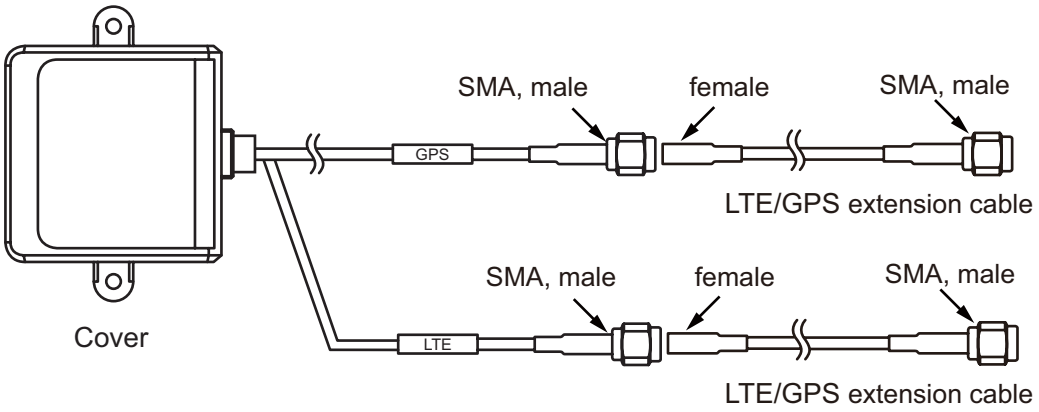
Figure 4-72 Connection of LTE/GPS extension cables



Connection

The GPS+LTE remote diversity antenna is connected as follows:

- The SMA male connectors at one end of the antenna are connected to the GPS and LTE DIV interfaces of a router respectively.
- The other end (cover) of the antenna is attached to a plastic horizontal plane.

Ordering Information

Table 4-106 provides the GPS+LTE remote diversity antenna ordering information.

Table 4-106 GPS+LTE remote diversity antenna ordering information

Part Number	Description	Remarks
02210792	Auxiliary Tool, AR511GW-LAV2M3-GPS +LTE Antenna, NULL, AR511GW-LAV2M3 Vehicle-mounted Special Material	Mandatory
02210791	Auxiliary Tool, AR511GW-LAV2M3-LTE/GPS cable, NULL,AR511GW-LAV2M3 Vehicle-mounted Special Material	Optional

4.2.9 Primary LTE Remote Antenna (AR500 Series)

Description

A primary LTE remote antenna has a 3.0 m feeder.

Appearance and Structure

Figure 4-73 shows the structure of a primary LTE remote antenna.

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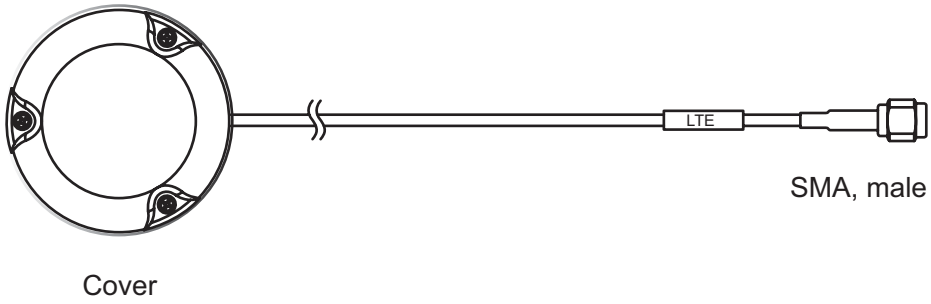
Figure 4-73 Structure of a primary LTE remote antenna



Connection

A primary LTE remote antenna is connected as follows:

- The SMA male connector of the antenna is connected to the LTE MAIN interface on a router.
- The other end (cover) of the antenna is attached to a plane.

4.2.10 GPS+LTE Remote Diversity Antenna (AR500 Series)

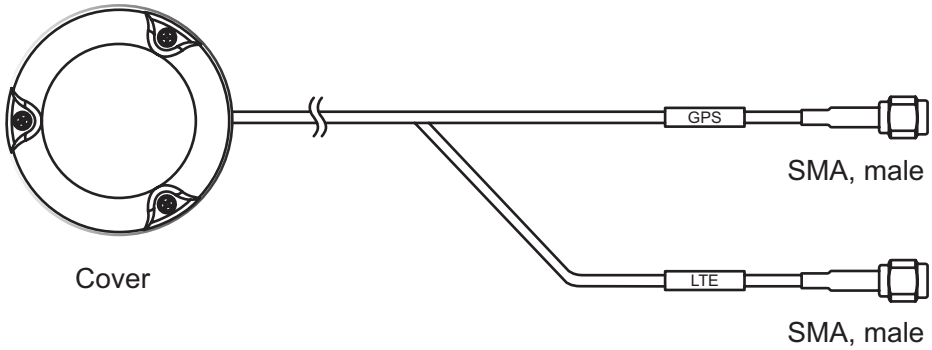
Description

A GPS+LTE LTE remote diversity antenna has a 3.0 m feeder.

Appearance and Structure

Figure 4-74 shows the structure of a GPS+LTE remote diversity antenna.

Figure 4-74 Structure of a GPS+LTE remote diversity antenna



Connection

A GPS+LTE remote diversity antenna is connected as follows:

- The SMA male connectors of the antenna are connected to the GPS and LTE DIV interfaces of a router respectively.

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- The other end (cover) of the antenna is attached to a plane.

4.2.11 GPS/BDS+LTE Remote Diversity Antenna

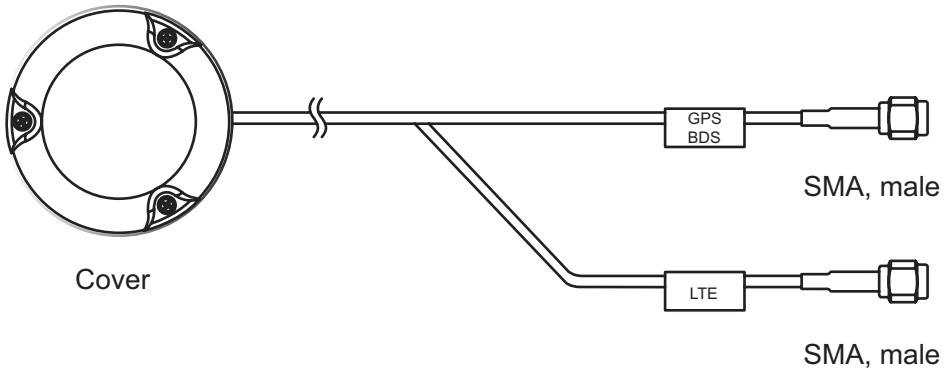
Description

A GPS/BDS+LTE remote diversity antenna has a 3.0 m feeder.

Appearance and Structure

Figure 4-75 shows the structure of a GPS/BDS+LTE remote diversity antenna.

Figure 4-75 Structure of a GPS/BDS+LTE remote diversity antenna



Connection

A GPS/BDS+LTE remote diversity antenna is connected as follows:

- The SMA male connectors at one end are connected to the GPS/BDS and LTE DIV interfaces of a router respectively.
- The other end (cover) of the antenna is attached to a plane.

4.2.12 DTMB Remote Antenna

Appearance and Structure

Figure 4-76 shows the structure of a Digital Terrestrial Multimedia Broadcasting (DTMB) remote antenna.

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Figure 4-76 Structure of a DTMB remote antenna

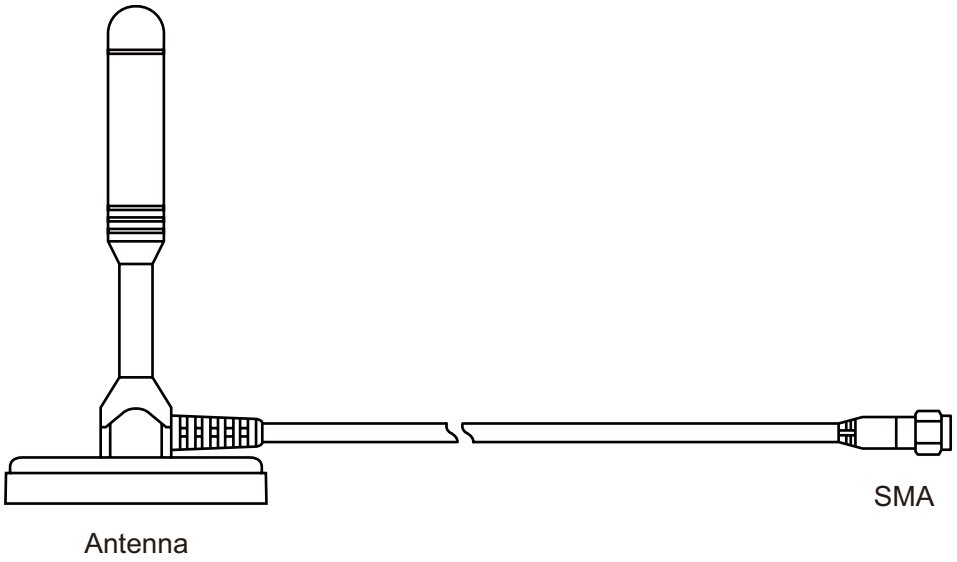

Table 4-107 lists the technical specifications of a DTMB remote antenna.

Table 4-107 Technical specifications of a DTMB remote antenna

Item	Specification
Connector type	SMA-J
Cable length	2 m
Frequency bands supported	470 MHz to 860 MHz
Maximum gain	2 dBi
Standing wave	< 2.5
Polarization	Vertical polarization
Direction	Omnidirectional

Connection

A DTMB remote antenna is connected as follows:

- The SMA connector of the feeder is connected to the DTMB interface on a router.
- The antenna is attached to a plastic horizontal plane.

4.2.13 60 W Open Frame Power Supply Cable

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Description

The type of 60 W open frame power supply cable is determined based on the standard in the country or region to which the cable is delivered. The power cable used in China has a C13 connector and is used as an example in this section.

Structure and Pin Assignments

Figure 4-77 shows the structure of a 60 W open frame power supply cable used in China.

Figure 4-77 Structure of a 60 W open frame power supply cable

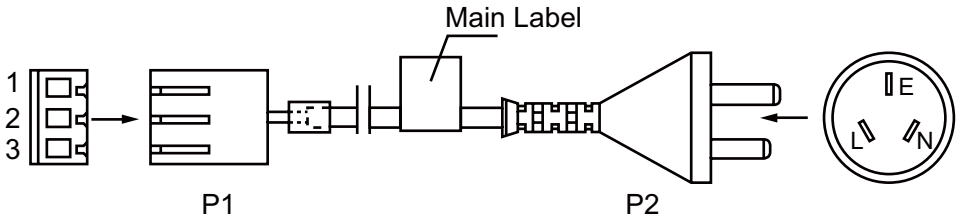

Table 4-108 lists the pin assignments of a 60 W power cable for open frame power supply.

Table 4-108 Pin assignments of a 60 W open frame power supply cable

Connector P1	Wire Color	Connector P2
1	Blue	N
3	Brown	L

Connection

A 60 W open frame power supply cable is connected as follows:

- The 3-pin connector at the P1 end is connected to a 60 W open frame power supply.
- The C13 connector at the P2 end is connected to an external AC power source.

Ordering Information

Table 4-109 provides ordering information of the 60 W open frame power supply cable.

Table 4-109 Ordering information of the 60 W open frame power supply cable

Part Number	Description	Remarks
04151261	Power Cable, 1.8m, 1.0mm^2, PISM, 227IEC53(RVV)1.0mm^2(3C), H3(3.96)-I	Mandatory

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4.2.14 Power Adapter Plate Cable

Description

A power adapter plate cable connects a router to a power adapter plate. Its 4-pin connector is connected to the 4-pin power jack on the router, and the cord end terminals are connected to a Phoenix terminal block, which is connected to a power adapter plate.

Structure and Pin Assignments

Figure 4-78 shows the structure of a power adapter plate cable.

Figure 4-78 Structure of a power adapter plate cable

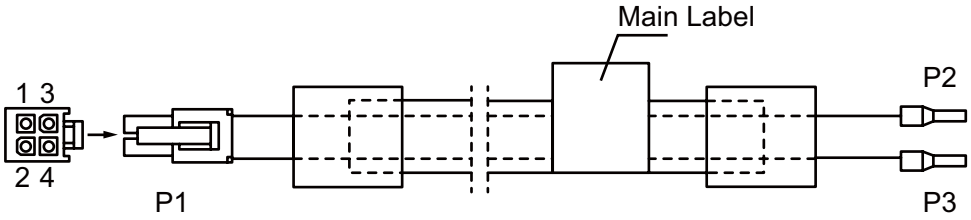

Table 4-110 lists the pin assignments of a power adapter plate cable.

Table 4-110 Pin assignments of a power adapter plate cable

Connector P1	Wire Color	Cord End Terminal	Remarks
1	Red	P2	12 V
3	Black	P3	GND

Connection

A power adapter plate cable is connected as follows:

- The 4-pin connector at the P1 end is connected to the power jack on a router.
- The cord end terminals (P2 and P3) are connected to a Phoenix terminal block, which is connected to a power adapter plate.

Ordering Information

Table 4-111 provides the power adapter plate cable ordering information.

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Table 4-111 Power adapter plate cable ordering information

Part Number	Description	Remarks
04151253	Power Cable, 1.0m, 18AWG, H2X2(4.20), 18UL1015B+18UL1015R, T1.0^2Y	Mandatory

4.2.15 HDMI Video Cable

Description

An HDMI video cable connects a router to a video terminal. Both ends of the cable are HDMI connectors, which are connected to HDMI interfaces of the router and video terminal respectively.

Structure and Pin Assignments

Figure 4-79 shows the structure of an HDMI video cable.

Figure 4-79 Structure of an HDMI video cable

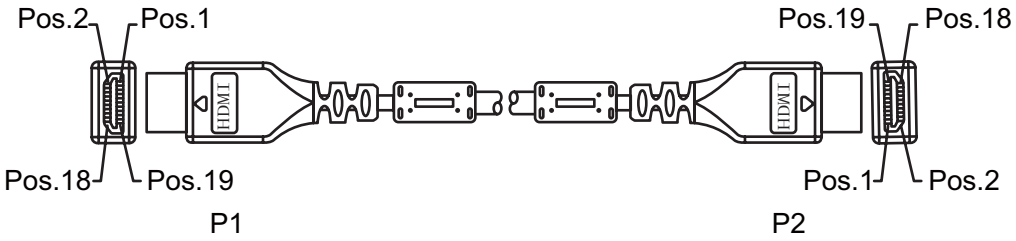

Table 4-112 lists pin assignments of an HDMI video cable.

Table 4-112 Pin assignments of an HDMI video cable

Connector P1	Connector P2	Wire Color	Remarks
1	1	Blue	Twisted pair
2	2	Ground	
3	3	White	
4	4	Brown	Twisted pair
5	5	Ground	
6	6	White	
7	7	Green	Twisted pair
8	8	Ground	

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Connector P1	Connector P2	Wire Color	Remarks
9	9	White	
10	10	Red	Twisted pair
11	11	Ground	
12	12	White	
13	13	White	-
14	14	Gray	-
15	15	Yellow	Twisted pair
16	16	Orange	
17	17	Purple	-
18	18	Red	-
19	19	Black	-

Connection

An HDMI video cable is connected as follows:

- The HDMI connector at the P1 end is connected to the HDMI video interface on a router.
- The HDMI connector at the P2 end is connected to the HDMI video interface on a video terminal, for example, an advertising screen.

4.2.16 VGA Video Cable

Description

A VGA video cable connects a router to a video terminal. Both ends of the cable are VGA connectors, which are connected to VGA interfaces of the router and video terminal respectively.

Structure and Pin Assignments

Figure 4-80 shows the structure of a VGA video cable.

Figure 4-80 Structure of a VGA video cable

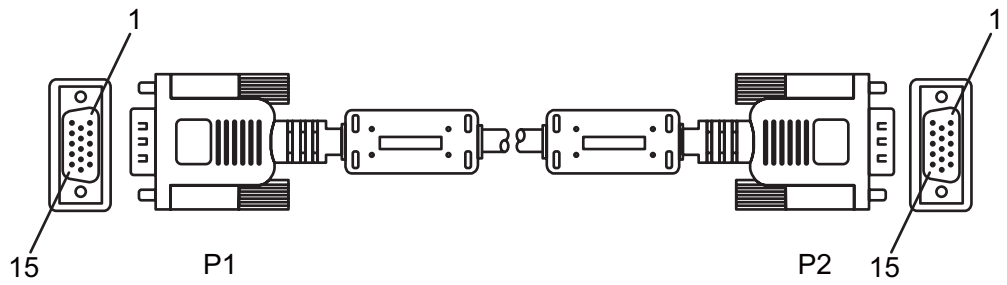

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Table 4-113 lists pin assignments of a VGA video cable.

Table 4-113 Pin assignments of a VGA video cable

Connector P1	Wire Color	Connector P2
1	Red coaxial wire	1
6	Red coaxially wound wire	6
2	Green coaxial wire	2
7	Green coaxially wound wire	7
3	Blue coaxial wire	3
8	Blue coaxially wound wire	8
4	Red	4
5	Orange	5
9	Purple	9
10	Gray	10
11	Brown	11
12	Yellow	12
13	Black	13
14	Blue	14
15	Green	15

Connection

A VGA video cable is connected as follows:

- The VGA connector at the P1 end is connected to the VGA video interface on a router.
- The VGA connector at the P2 end is connected to the VGA video interface on a video terminal, for example, an advertising screen.

4.2.17 3.5 mm Headset Cable

Description

A 3.5 mm headset cable provides one audio output.

Appearance and Structure

Figure 4-81 shows the structure of a 3.5 mm headset cable.

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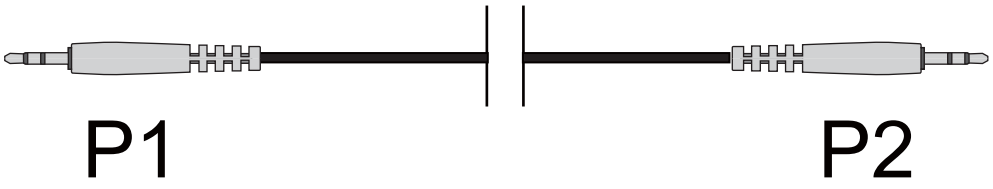
Figure 4-81 Structure of a 3.5 mm headset cable



Connection

A 3.5 mm headset cable is connected as follows:

- The P1 connector is connected to the audio interface on a router.
- The P2 connector is connected to an audio output device.

4.2.18 eSATA Power and Signal Cable

Description

An eSATA power and signal cable connects a router to an SATA hard disk. Its eSATA connector and 6-pin connector are connected to the eSATA interface and 6-pin SATA hard disk power jack on the router respectively, and its SAS connector is connected to the SAS interface of the SATA hard disk.

Structure and Pin Assignments

Figure 4-82 shows the structure of an eSATA power and signal cable.

Figure 4-82 Structure of an eSATA power and signal cable

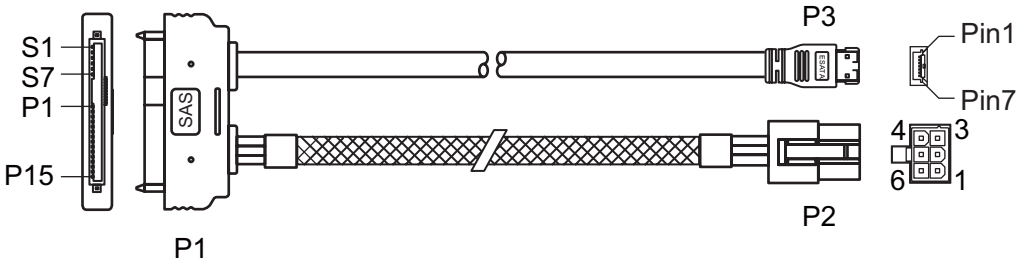


Table 4-114 lists the pin assignments of an eSATA power and signal cable.

Table 4-114 Pin assignments of an eSATA power and signal cable

Connector P1		Wire Color	Connector P2	Connector P3	Remarks
P1 to P15	4, 5, 6	Black	4	—	—

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Connector P1		Wire Color	Connector P2	Connector P3	Remarks
	7, 8, 9	Red	3		
	10, 11, 12	Black	6		
	13, 14, 15	Yellow	1		
S1 to S7	1	Ground wire	-	1	-
	2	Core wire		2	A pair
	3	Core wire		3	
	4	Ground wire		4	-
		Ground wire			
	5	Core wire		5	A pair
	6	Core wire		6	
	7	Ground wire		7	-

Connection

An eSATA power and signal cable is connected as follows:

- The SAS connector at the P1 end is connected to an SATA hard disk.
- The 6-pin connector at the P2 end is connected to the SATA power jack on a router.
- The eSATA connector at the P3 end is connected to the eSATA interface on the router.

Ordering Information

Table 4-115 provides the eSATA power and signal cable ordering information.

Table 4-115 eSATA power and signal cable ordering information

Part Number	Description	Remarks
04051111	High Speed Cable, HDD Power and Signal Cable, 0.6m, Slim SAS 22 STR, 2P*30AWG+4*UL1007 20AWG, eSATA7 STR+H2X3(4.20)	Mandatory

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5 Pluggable Modules for Interfaces

About This Chapter

5.1 Important Notes About Using Optical Modules Certified for Huawei Routers
5.2 Understanding Optical Modules
5.3 Understanding Copper Modules
5.4 Models and Parameters

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5.1 Important Notes About Using Optical Modules Certified for Huawei Routers

5.1.1 How to Identify Huawei-Certified Optical Modules

NOTICE

- Huawei routers must use Huawei-certified optical modules. Non-Huawei-certified optical modules cannot ensure transmission reliability and may affect service stability. Huawei is not responsible for any problem caused by the use of non-Huawei-certified optical modules and will not fix such problems.
- The methods provided here are only for reference. To confirm whether optical modules you use have been certified by Huawei,Please contact technical support personnel.

If the optical modules you use are delivered after July 1, 2013, use either of the following methods to determine whether they have been certified by Huawei.

Method 1: Check for "HUAWEI" on the Label

If an optical module has been certified by Huawei, its label contains "HAUWEI", as shown in Figure 5-1.

Figure 5-1 "HUAWEI" on the label of a Huawei-certified optical module

Method 2: Run the display transceiver Command

If an optical module meets the following conditions, it has been certified by Huawei. Otherwise, the optical module is not a Huawei-certified one.

- In the **display elabel** command output, the **Manufactured** field displays a date later than 2013-07-01.
- In the **display version** command output, the display version is V200R001C00 or later.
- In the **display transceiver** command output, the **Manufacturing Date** field displays a date later than 2013-07-01, and the **Vendor Name** field displays **HUAWEI**.

```
<Huawei> display transceiver
XGigabitEthernet2/0/0 transceiver information:
----------------------------------------------------------------
Common information:
  Transceiver Type               :XFP-STM64-LX-SM1310
  Connector Type                 :LC
  Wavelength(nm)                 :1310
  Transfer Distance(m)           :100000(9um)
  Digital Diagnostic Monitoring  :YES
  Vendor Name                 :HUAWEI
```


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```
  Vendor Part Number             :02315208
  Ordering Name                  :
------------------------------------------------------------
Manufacture information:
  Manu. Serial Number            :210231520810E4000803
  Manufacturing Date             :2013-09-11
  Vendor Name                 :HUAWEI
```

5.1.2 Risks of Using Non-Huawei-Certified Optical Modules

During certification of optical modules for Huawei routers, Huawei completes comprehensive functionality verification to ensure quality of optical modules. The verified items include optical module plug/unplug, transmit optical power, receive optical power, signal transmission quality, data reading, error tolerance, compatibility, electromagnetic compatibility (EMC), and environmental parameters.

Non-Huawei-certified optical modules may cause the following problems:

- Non-standard structure and size cause failures to install optical modules on adjacent optical interfaces.

  Structures or sizes of some non-Huawei-certified optical modules do not comply with the Multi-Source Agreement (MSA). When such an optical module is installed on an optical interface, the size of this optical module hinders optical module installation on adjacent optical interfaces.
- Data bus defects cause suspension of a router's data bus.

  Some non-Huawei-certified optical modules have defects in data bus designs. Using such an optical module on a router causes suspension of the connected data bus on the router. As a result, data on the suspended bus cannot be read.
- Improper edge connector size damages electronic devices of optical interfaces.

  If a non-Huawei-certified optical module with improper edge connector size is used on an optical interface, electronic devices of the optical interface will be damaged by short circuits.
- Non-standard temperature monitoring causes incorrect alarms.

  The temperature monitoring systems of some non-Huawei-certified optical modules do not comply with industry standards and report temperature values higher than the real temperature. When such optical modules are used on a router, the system will report incorrect temperature alarms.
- Improper register settings cause errors or failures in reading parameters or diagnostic information.

  Some non-Huawei-certified optical modules have improper A0 register values, which can cause errors or failures when the system attempts to read parameters or diagnostic information from a data bus.
- Some non-Huawei-certified optical modules are not designed in compliance with EMC standards and have low anti-interference capability. Additionally, they bring electromagnetic interference to nearby devices.
- The operating temperature ranges of non-Huawei-certified optical modules cannot meet service requirements. When they are used under relatively high temperature, the optical power decreases, resulting in service interruption.

5.2 Understanding Optical Modules

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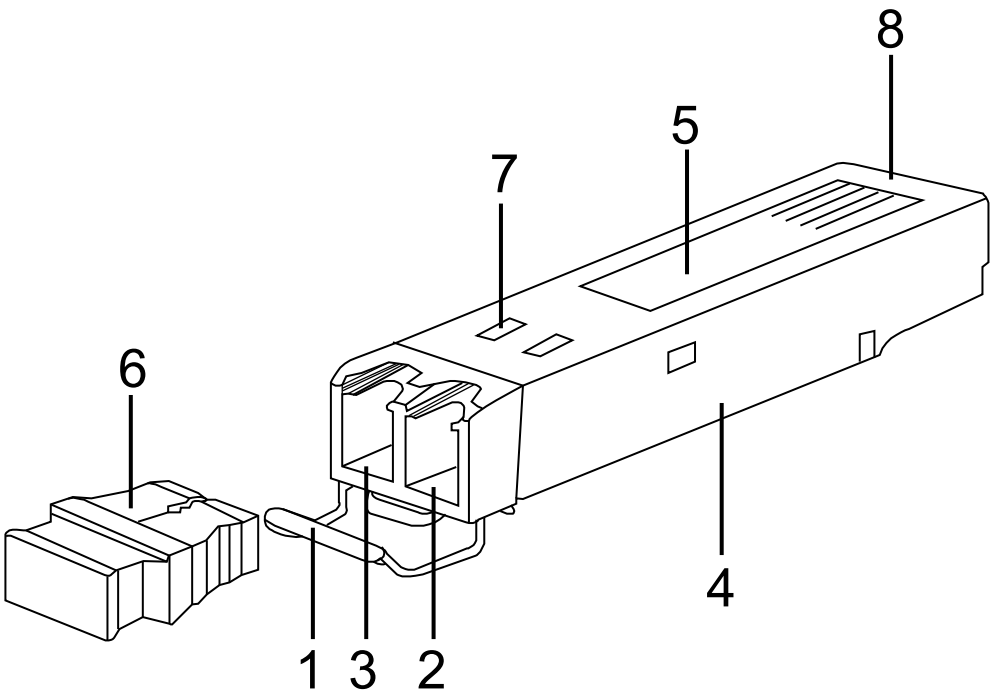
5.2.1 What Is an Optical Module

On an optical network, a sender needs to convert electrical signals into optical signals before sending them to a receiver, and the receiver needs to convert received optical signals into electrical signals. An optical module is a component that completes electrical/optical conversion on an optical network. **Figure 5-2** shows the structure of an optical module.

Figure 5-2 Structure of an optical module



1. Handle	2. Receiver	3. Transmitter
4. Shell	5. Label	6. Dust plug
7. Spring	8. Connector	-

5.2.2 Types of Optical Modules

Optical modules are available in various types to meet diversified requirements.

- **Classified by transmission rates**

  Depending on transmission rates, optical modules are classified into FE, GE, 10GE, and 40GE optical modules.

- **Classified by encapsulation types**

  The higher transmission rate an optical module provides, the more complex structure it has. Optical modules are encapsulated in different modes to provide different structures. Huawei routers support optical modules of the following encapsulation types: SFP, eSFP, SFP+, XFP, and QSFP+.

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- SFP: small form-factor pluggable. SFP optical modules support LC fiber connectors and are hot swappable.
- eSFP: enhanced small form-factor pluggable. An eSFP module is an SFP module that supports monitoring of voltage, temperature, bias current, transmit optical power, and receive optical power. Sometimes, eSFP is also called SFP.
- SFP+: small form-factor pluggable plus, SFP with a higher rate. SFP+ optical modules are more sensitive to electromagnetic interference (EMI) because they have a higher rate. To reduce EMI, SFP+ optical modules have more springs than SFP optical modules and the cages for SFP+ modules on a card are tighter.
- XFP: 10 Gigabit small form-factor pluggable. X is the Roman numeral 10, meaning that all XFP optical modules provide a 10 Gbit/s transmission rate. XFP optical modules support LC fiber connectors and are hot swappable. They are wider and longer than SFP+ optical modules.
- QSFP+: quad small form-factor pluggable. QSFP+ optical modules support MPO fiber connectors and are larger than SFP+ optical modules.

- **Classified by physical layer standards**

  Different physical layer standards are defined to allow data transmission in different modes. Therefore, different types of optical modules are produced to comply with these standards. The **Standard** column of **Table 5-1** lists the physical layer standards.

- **Classified by modes**

  Optical fibers are classified into single-mode and multimode fibers. Therefore, optical modules are also classified into single-mode and multimode modules to support different optical fibers.
  - Single-mode optical modules are used with single-mode fibers. Single-mode fibers support a wide band and large transmission capacity, and are used for long-distance transmission.
  - Multimode optical modules are used with multimode fibers. Multimode fibers have lower transmission performance than single-mode fibers because of modal dispersion, but their costs are also lower. They are used for small-capacity, short-distance transmission.

Table 5-1 provides optical module classification based on different factors.

Table 5-1 Optical module classification

Encapsulation Type	Rate	Standard	Description
SFP	FE	100BASE-FX (IEEE 802.3u)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 100 Mbit/s over a distance within 2 km.
eSFP	FE	100BASE-LX (IEEE 802.3ah)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 100 Mbit/s over a distance within 80 km.

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Encapsulation Type	Rate	Standard	Description
		100BASE-BX (IEEE 802.3ah)	Uses one single-mode fiber for bidirectional transmission at 100 Mbit/s over a distance within 15 km.
	GE	1000BASE-SX (IEEE 802.3z)	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 1 km.
		1000base-LX/LH (IEEE 802.3ah)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 40 km.
		1000base-ZX (IEEE 802.3)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 100 km.
		1000base-BX (IEEE 802.3ah)	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 40 km.
		CWDM (IEEE 802.3)	Coarse wavelength division multiplexing, which uses one single-mode fiber to transmit signals on multiple channels. It transmits data at 1 Gbit/s over a distance within 80 km.
		DWDM (IEEE 802.3)	Dense wavelength division multiplexing, which uses one single-mode fiber to transmit signals on multiple channels. It transmits data at 1 Gbit/s over a distance within 120 km.
SFP+	10GE	10Gbase-USR (IEEE 802.3)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 10 Gbit/s over a distance within 100 m.
		10Gbase-BX (IEEE 802.3)	Uses one single-mode fiber for bidirectional transmission at 10 Gbit/s over a distance within 10 km.
● SFP+ ● XFP	10GE	10GBASE-SR (IEEE 802.3ae)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 10 Gbit/s over a distance within 400 m.

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Encapsulation Type	Rate	Standard	Description
		10GBASE-LR (IEEE 802.3ae)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 10 km.
		10GBASE-ER (IEEE 802.3ae)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 40 km.
		10Gbase-ZR (IEEE 802.3)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 80 km.
QSFP+	40GE	40Gbase-SR4 (IEEE 802.3ba)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 40 Gbit/s over a distance within 400 m.
		40Gbase-LR4 (IEEE 802.3ba)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 40 Gbit/s over a distance within 10 km.

5.2.3 Parameter Description

Transmit optical power Output optical power of an optical module when it is working properly. When two optical modules are connected, the transmit optical power of one end must be within the range of receive optical power on the other end.

Receive optical power Average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). The upper limit of this parameter is the overload optical power and the lower limit is the maximum receiver sensitivity. When two optical modules are connected, the receive optical power on one end determines the range of transmit optical power on the other end.

Maximum receiver sensitivity Minimum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). When two optical modules are connected, the maximum receiver sensitivity on one end determines the minimum value of transmit optical power on the other end.

Overload optical power Maximum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). When two optical modules are connected, the overload optical power on one end determines the maximum transmit optical power on the other end.

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Extinction ratio	Minimum ratio of the average optical power with signals transmitted against the average optical power without signals transmitted in complete modulation mode. The extinction ratio indicates the capability of an optical module to identify signal 0 and signal 1. This parameter is a quality indicator for optical modules. Optical modules with a large extinction ratio may not have good quality. Qualified optical modules should have an extinction ratio complying with IEEE 802.3.
Fiber mode	Mode of optical fibers defined based on core diameters and features of optical fibers. Optical fibers are classified into single-mode and multimode fibers. Generally, multi-mode fibers have large core diameters and severe dispersion, so they transmit optical signals over short distances. Single-mode fibers have small dispersion and can transmit optical signals over long distances.
Modal bandwidth	Bandwidth measured at a point with transmit power several dB lower than that of the point with the peak center wavelength. Modal bandwidth reflects spectrum characteristics of multimode fibers. The higher modal bandwidth a multimode fiber has, the longer transmission distance the fiber supports.
Fiber diameter	Diameter of the core of a fiber. According to international standards for optical fibers, the diameter of a multimode fiber is 62.5 μm or 50 μm, and the diameter of a single-mode fiber is 9 μm. Select optical fibers with diameters supported by the optical modules.
Fiber class	Optical signals with different wavelengths have their best working windows in different optical fibers. To help efficiently adjust wavelengths or dispersion features of optical fibers and change their refractive indexes, the following fiber classes are defined: multimode fiber (G.651), common single-mode fiber (G.652), shifted dispersion fiber (G.653), and non-zero shifted dispersion fiber (G.655). G.651 and G. 652 are commonly used fiber classes. Optical fibers of higher classes support longer transmission distances. When selecting optical fibers for optical modules, determine the classes of fibers based on the required transmission distances.
Connector type	Type of the interface on an optical module to accommodate a fiber. Commonly used connector types are LC (applicable to all the SFP, SFP+, and XFP modules), SC, and MPO (applicable to 150 m QSFP+ and CXP modules). Select optical fibers with connectors supported by the optical modules.
Transmission distance	Maximum distance over which optical signals can transmit. Optical signals sent from different types of sources can transmit over different distances because they have different dispersion and attenuation. When connecting optical interfaces, select optical modules and fibers according to the longest signal transmission distance.
Interface rate	Maximum rate of electrical signals that an optical component can transmit without bit errors. The interface rates defined in Ethernet standards include 125 Mbit/s, 1.25 Gbit/s, 10.3125 Gbit/s, and 41.25 Gbit/s. When connecting optical interfaces, select optical modules and fibers based on the maximum signal transmission rate.
Center wavelength	Wavelength measured at the midpoint of the half-amplitude line in the transmit spectrum. Two connected optical modules must have the same center wavelength.

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MSA	Multi-Source Agreement, a non-profit organization jointly established by optical module manufacturers. This agreement defines the structure and dimensions of optical transceivers by referring to Optical Internetworking Forum (OIF) and International Telecommunication Union (ITU) standards.

5.2.4 How to View Optical Module Parameters

Viewing the Hardware Description

If you know the model or type of an optical module, you can view the section "Pluggable Modules for Interfaces" in the *Hardware Description* to look up parameters of the optical module, including the center wavelength, transmission distance, fiber types supported, receive optical power, and transmit optical power.

Using a Command

If an optical module is installed in a running router, you can run the **display transceiver** command to view parameters of the optical module, including the center wavelength, transmission distance, fiber types supported, receive optical power, and transmit optical power.

5.3 Understanding Copper Modules

Unlike optical modules, copper modules do not perform electrical-optical conversion. When two optical interfaces have copper modules installed, the interfaces can be connected using a copper cable. Currently, Huawei offers only GE copper modules with RJ45 interfaces. GE copper modules work with Category 5 network cables, comply with 1000BASE-T (IEEE 802.3ab), and support a maximum transmission distance of 100 m.

5.4 Models and Parameters

NOTE

- Figures of optical modules provided in this document are only for reference and may be different from the actually delivered optical modules.
- All the optical modules described in this document have been certified by Huawei.

5.4.1 SFP/eSFP Optical Module

Appearance

Figure 5-3 shows the appearance of the SFP/eSFP optical module.

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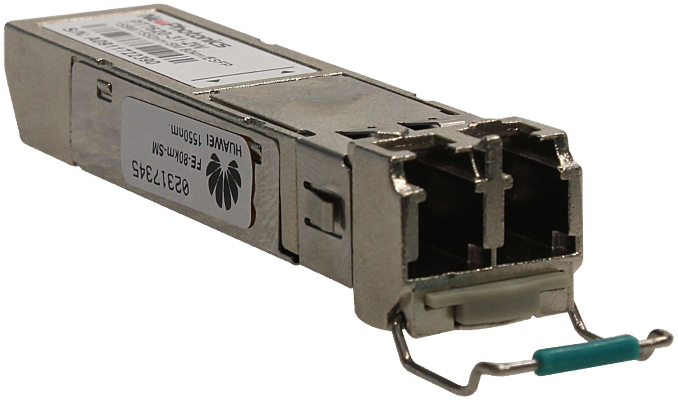
Figure 5-3 Appearance of the SFP/eSFP optical module



FE Optical Module

Table 5-2 and **Table 5-3** list the attributes of the FE optical module.

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Table 5-2 Attributes of FE optical modules

Model	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
SFP-FE-SX-MM1310 (SFP optical module)	≤ 2	100base-FX	• Fiber mode: multimode • Core diameter: 62.5 μm/ 50μm • Connector type: LC	0°C to 70°C
eSFP-FE-LX-SM1310	≤ 15	100base-LX	• Fiber mode: single-mode • Connector type: LC	
eSFP-FE-LH40-SM1310	≤ 40			
eSFP-FE-LH80-SM1550	≤ 80			
SFP-FE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	≤ 15	100base-BX		
SFP-FE-LX-SM1550-BIDI (Single-fiber bidirectional optical module)				

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Table 5-3 Optical parameters of FE optical modules

Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
SFP-FE-SX-MM1310 (SFP optical module)	1310	-19.0 to -14.0	≤ -30.0	-14.0	10
eSFP-FE-LX-SM1310		-15.0 to -8.0	≤ -31.0	-8.0	8.2
eSFP-FE-LH40-SM1310		-5.0 to 0	≤ -37.0	-10.0	10.5
eSFP-FE-LH80-SM1550	1550				
SFP-FE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	RX1550/TX1310	-15.0 to -8.0	≤ -32.0	-8.0	8.5
SFP-FE-LX-SM1550-BIDI (Single-fiber bidirectional optical module)	TX1550/RX1310				

GE Optical Module

Table 5-4 and **Table 5-5** list the attributes of the GE optical module.

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Table 5-4 Attributes of GE optical modules

Model	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
eSFP-GE-SX-MM850	≤ 0.5	1000base-SX	• Fiber mode: multimode • Pattern bandwidth: 400 MHz*km • Core diameter: 62.5 μm or 50 μm • Connector type: LC	0°C to 70°C
SFP-GE-LX-SM1310	≤ 10	1000base-LX/LH	• Fiber mode: single-mode • Connector type: LC	
S-SFP-GE-LH40-SM1310	≤ 40			
S-SFP-GE-LH40-SM1550				
S-SFP-GE-LH80-SM1550	≤ 80	1000base-ZX		
eSFP-GE-ZX100-SM1550	≤ 100			
SFP-GE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	≤ 10	1000base-BX		
SFP-GE-LX-SM1490-BIDI (Single-fiber bidirectional optical module)				
LE2MGSC40DE0 (Single-fiber bidirectional optical module)	≤ 40			
LE2MGSC40ED0 (Single-fiber bidirectional optical module)				

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Table 5-5 Optical parameters of GE optical modules

Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
eSFP-GE-SX-MM850	850	-9.5 to -2.5	≤ -17.0	0	9
SFP-GE-LX-SM1310	1310	-9.0 to -3.0	≤ -20.0	-3.0	9
S-SFP-GE-LH40-SM1310	1310	-5.0 to 0	≤ -23	-3.0	6
S-SFP-GE-LH40-SM1550	1550	-5.0 to 0	≤ -22	-3.0	8.5
S-SFP-GE-LH80-SM1550	1550	-2.0 to 5.0	≤ -23.0	-3.0	9
eSFP-GE-ZX100-SM1550	1550	0 to 5	≤ -30.0	-9.0	8
SFP-GE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	TX1310/ RX1490	-9.0 to -3.0	≤ -19.5	-3.0	6
SFP-GE-LX-SM1490-BIDI (Single-fiber bidirectional optical module)	RX1310/ TX1490	-9.0 to -3.0	≤ -19.5	-3.0	6
LE2MGSC40DE0 (Single-fiber bidirectional optical module)	TX1310/ RX1490	-2.0 to 3.0	≤ -23	-3.0	9
LE2MGSC40ED0 (Single-fiber bidirectional optical module)	RX1310/ TX1490	-2.0 to 3.0	≤ -23	-3.0	9

GE-CWDM Optical Module

Table 5-6 lists the attributes of a GE CWDM optical module.

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Table 5-6 Attributes of a CWDM optical module

Center Wavelength (nm), Model	1471, CWDM-SFPGE-1471	1491, CWDM-SFPGE-1491	1511, CWDM-SFPGE-1511
	1531, CWDM-SFPGE-1531	1591, CWDM-SFPGE-1591	—
Attributes and Parameters	Encapsulation type: eSFP		
	Transmission distance: ≤ 80 km		
	Fiber mode, connector type: single-mode, LC		
	Standard: CWDM		
	Operating temperature: 0°C to 70°C		
	• Transmit power: 0 dBm to 5.0 dBm • Receiver sensitivity: ≤ -28.0 dBm • Overload optical power: -9.0 dBm • Extinction ratio: 8.5 dB		

NOTE

There is no difference between a CWDM optical module and other common optical modules in appearance. Generally, CWDM and common optical modules are distinguished by the labels attached to them. When using CWDM and common optical modules, you can identify these optical modules by attaching labels on the optical fibers connected them.

GE-DWDM Optical Module

Table 5-7 lists the attributes of a GE DWDM optical module.

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Table 5-7 Attributes of a DWDM optical module

Center Wavelength (nm), Model	1557.36, DWDM-SFPGE-1557-36	1558.17, DWDM-SFPGE-1558-17	1558.98, DWDM-SFPGE-1558-98
	1559.79, DWDM-SFPGE-1559-79	1560.61, DWDM-SFPGE-1560-61	—
Attributes and Parameters	Encapsulation type: eSFP		
	Transmission distance: ≤ 120 km		
	Fiber mode, connector type: single-mode, LC		
	Standard: DWDM		
	Operating temperature: 0°C to 70°C		
	• Transmit power: 0 dBm to 4.0 dBm • Receiver sensitivity: ≤ -28.0 dBm • Overload optical power: -8.0 dBm • Extinction ratio: 8.2 dB		

GE Copper Transceiver Module

Table 5-8 lists the attributes of a GE copper transceiver module.

Table 5-8 Attributes of a GE copper transceiver module

Model	Transmission Distance (km)	Connector Type	Standard	Operating Temperature
SFP-1000BaseT	≤0.1	RJ45	1000Base-T	-40°C to +85°C

POS Optical Module

Table 5-9 and **Table 5-10** list the attributes of POS optical modules.

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Table 5-9 Attributes of POS optical modules

Model	Transmission Distance (km)	Fiber Type	Operating Temperature
eSFP-SM1310-155M-2.5G-15km	≤ 15	● Fiber mode: single-mode ● Connector type: LC	0°C to 70°C
eSFP-1310nm-L-16.1	≤ 40		
eSFP-1550nm-L-16.2	≤ 80		

Table 5-10 Optical parameters of POS optical modules

Model	Center Wavelength (nm)	Usage Scenario (Service Rate)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
eSFP-SM1310-155M-2.5G-15km	1310	622 Mbit/s	-15.0 to -8.0	≤ -31.0	-8.0	8.2
		155 Mbit/s	-15.0 to -8.0	≤ -31.0	-8.0	
eSFP-1310nm-L-16.1	1310	622 Mbit/s	-3.0 to 2.0	≤ -30.0	-8.0	8.5
		155 Mbit/s	-5.0 to 0	≤ -37.0	-10.0	
eSFP-1550nm-L-16.2	1550	622 Mbit/s	-3.0 to 2.0	≤ -30.0	-8.0	8.2
		155 Mbit/s	-5.0 to 0	≤ -37.0	-10.0	

GPON/EPON Optical Module

Table 5-11 and **Table 5-12** list the attributes of a GPON/EPON optical module.

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Table 5-11 Attributes of a GPON/EPON optical module

Model	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
SFP-GPON-ONU	≤ 20	1000base-PX20	● Fiber mode: single-mode ● Connector type: SC	0°C to 70°C

Table 5-12 Optical parameters of a GPON/EPON optical module

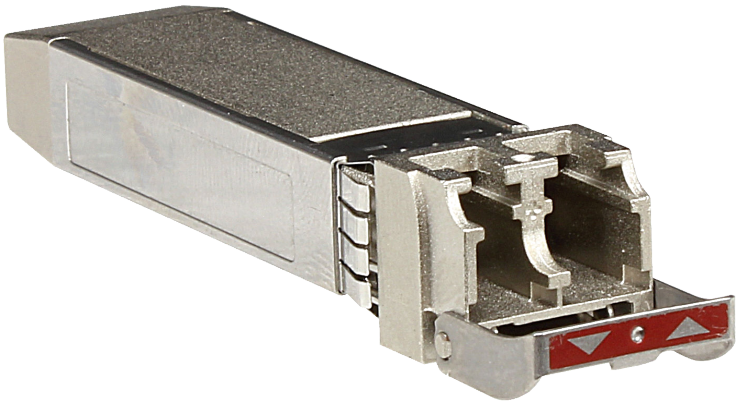
Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
SFP-GPON-ONU	Rx1490/ Tx1310	2.5 to 7	≤ -30	-6	9

5.4.2 SFP+ Module

Appearance

Figure 5-4 shows the appearance of an SFP+ optical module.

Figure 5-4 Appearance of an SFP+ optical module



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10GE Optical Module

Table 5-13 and Table 5-14 list the attributes of a 10GE optical module.

Table 5-13 Attributes of a 10GE optical module

Model	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
OSXD22N00	≤ 0.22	10Gbase-LRM	• Fiber mode: multi-mode (OM1, OM2, or OM3) • Connector type: LC	0°C to +70°C
OMXD30000	≤ 0.3	10Gbase-SR	• Fiber mode: multi-mode (OM3) • Connector type: LC	
OSX010000	≤ 10	10Gbase-LR	• Fiber mode: single-mode • Connector type: LC	
OSX040N01	≤ 40	10Gbase-ER		
		10Gbase-EW		

Table 5-14 Optical parameters of a 10GE optical module

Model	Center Wavelength (nm)	Transmit Optical Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
OSXD22N00	1310	-6.5 to 0.5	≤ -6.5	1.5	3.5
OMXD30000	850	-7.3 to -1.0	≤ -11.1	-1.0	3.0
OSX010000	1310	-8.2 to 0.5	≤ -12.6	0.5	3.5
OSX040N01	1550	-4.7 to 4.0	≤ -14.1	-1.0	3.0

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