



Huawei
AR500&AR510&AR531&AR550&1500&AR2500
Industrial Switch Routers

Hardware Description

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About This Document

Intended Audience




This document describes hardware components of the AR500&AR510&AR530&AR550&AR1500&AR2500 series industrial switching routers, including the chassis, cards, cables, and optical modules. You can find useful information about AR500&AR510&AR530&AR550&AR1500&AR2500 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
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Symbol	Description
	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.
	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.

Declaration

- This manual is only a reference for you to configure your devices. The contents in the manual, such as web pages, command line syntax, and command outputs, are based on the device conditions in the lab. The manual provides instructions for general scenarios, but do not cover all usage scenarios of all product models. The contents in the manual may be different from your actual device situations due to the differences in software versions, models, and configuration files. The manual will not list every possible difference. You should configure your devices according to actual situations.
- The specifications provided in this manual are tested in lab environment (for example, the tested device has been installed with a certain type of boards or only one protocol is run on the device). Results may differ from the listed specifications when you attempt to obtain the maximum values with multiple functions enabled on the device.
- In this document, public IP addresses may be used in feature introduction and configuration examples and are for reference only unless otherwise specified.

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 10 (2019-03-06)

This issue has the following updates:

The following content is modified:

- [3.7.3 AR2504E-H](#)

The following content is added:

- [6.2.9 5-Pin M12 DC Power Terminal](#)

Issue 09 (2018-11-06)

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- [3.5.4 AR550C-2C6GE](#)
- [3.5.5 AR550C-2C6GE-2D](#)

Issue 08 (2018-09-12)

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- [4.4 24 W Integrated Power Adapter with an Adapter Cable](#)

Issue 07 (2018-07-30)

This issue has the following updates:

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- [3.1 Naming Conventions](#)

The following content is added:

- [3.2.4 AR502EG-Lj](#)

Issue 06 (2018-05-18)

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- [3.2.2 AR502EG-L](#)
- [3.2.6 AR502EGW-L](#)

Issue 05 (2018-03-23)

This issue has the following updates:

The following content is modified:

- [3.5.6 AR550E](#)
- [4.9 180 W PoE Midspan](#)
- [3.5.2 AR550-24FE-D-H](#)

Issue 04 (2018-01-05)

This issue has the following updates:

The following content is added:

- [4 Power Supplies](#)
- [4.2 Types of Power Supplies](#)
- [4.3 24 W Integrated Power Adapter](#)
- [4.4 24 W Integrated Power Adapter with an Adapter Cable](#)

- [4.8 100 W PoE Power Adapter](#)
- [4.5 60 W Industrial AC Power Module](#)
- [4.6 60 W DC Power Module](#)
- [4.7 60 W AC power module](#)
- [4.9 180 W PoE Midspan](#)
- [4.10 240 W AC PoE Power Module](#)

Issue 03 (2017-11-20)

This issue has the following updates:

The following content is added:

- [AR502EG-La](#)
- [AR502EG-L-PD](#)
- [AR503GW-Lo](#)
- [AR515CGW-L](#)

Issue 02 (2017-08-30)

This issue has the following updates:

The following content is modified:

- [3.5.1 AR550-8FE-D-H](#)

Issue 01 (2017-08-04)

This issue is the first official release.

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1 Using the Hardware Query Tool

Figure 1-1 shows the interface of the **Hardware Query Tool**. You can use this tool to query the power modules, fan modules, optical modules, and cards supported by each router model, as well as specifications of routers and modules. You can search router products or modules by part number, product model, or module type.

Figure 1-1 Web page of the Hardware Query Tool

The screenshot shows the Huawei Hardware Query Tool web page. At the top left is the Huawei logo. To the right are links for Chinese, Feedback, Online Help, Log In, and Back to Support. Below this is a navigation menu with buttons for Home, Packet Format, Hardware (highlighted in red), Alarm, Command, Log, and License. The main content area contains three search criteria: 'Product *' with a text input field and an 'All' button; 'Version *' with a dropdown menu; and 'Keyword' with a text input field. At the bottom of the form are two red buttons labeled 'Search' and 'Export'.

2 Version Requirements for Components

About This Chapter

- 2.1 Components Available in V200R010C10
- 2.2 Components Available in V200R010C00
- 2.3 Components Available in V200R009C00
- 2.4 Components Available in V200R008C50
- 2.5 Components Available in V200R008C30
- 2.6 Components Available in V200R008C20
- 2.7 Components Available in V200R008C00
- 2.8 Components Available in V200R007C02
- 2.9 Components Available in V200R007C01
- 2.10 Components Available in V200R007C00
- 2.11 Components Available in V200R006C17
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- 2.16 Components Available in V200R005C70
- 2.17 Components Available in V200R005C60
- 2.18 Components Available in V200R005C32
- 2.19 Components Available in V200R005C31
- 2.20 Components Available in V200R005C30

2.1 Components Available in V200R010C10

 **NOTE**

The components marked * are the new components added to V200R010C10.

Chassis

Table 2-1 describes the chassis models available in V200R010C10.

Table 2-1 Chassis models available in V200R010C10

Series	Chassis Model	Description
AR500	AR502EG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, RS485/RS422, RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EG-La	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, RS485/RS422, RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EG-Lj*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, RS485/RS422, RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EG-L-PD	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces RS232 and GE LAN interfaces.
AR500	AR502EGW-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, Wi-Fi antenna, LTE antenna interfaces, and two GE LAN interfaces.

Series	Chassis Model	Description
AR500	AR502CG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, CON/RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EGRb-L	Provides fixed interfaces, supports LTE uplink connection and RF access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, RF antenna (915 MHz) interfaces, and two GE LAN interfaces.
AR500	AR502EGRc-Lc	Provides fixed interfaces, supports LTE uplink connection and RF access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, RF antenna (433 MHz) interfaces, and two GE LAN interfaces.
AR500	AR502EGRz-L	Provides fixed interfaces, supports LTE uplink connection and ZigBee access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, ZigBee antenna (2.4 GHz) interfaces, and two GE LAN interfaces.
AR500	AR502EGRz-Lc	Provides fixed interfaces, supports LTE uplink connection and ZigBee access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, ZigBee antenna (2.4 GHz) interfaces, and two GE LAN interfaces.
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 supply. The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.

Series	Chassis Model	Description
AR500	AR503GW-Lo	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR500	AR503GW-LcM7	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EDGW-Lc	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EDGW-Lc3	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EQGW-L	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>

Series	Chassis Model	Description
AR500	AR503EW	Provides fixed interfaces, supports WLAN and PoE, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and Wi-Fi (802.11b/g/n/ac AP) antenna interfaces.
AR500	AR503EDGW-Lo	Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.
AR500	AR503HGW-L	Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.
AR500	AR503HGW-Lc	Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS positioning, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.
AR500	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.

Series	Chassis Model	Description
AR500	AR509G-Lc	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
AR500	AR509GW-L-D-H	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, and four GE LAN (PoE+) interfaces. Additionally, the router has Wi-Fi (802.11b/g/n/ac AP), and LTE antenna interfaces.
AR500	AR509CG-Lc	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CG-Lt	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CG-Lt-7	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CGW-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces, Wi-Fi antenna interfaces, and LTE antenna interfaces.

Series	Chassis Model	Description
AR510	AR511GW-LAV2M3	<p>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 supply.</p> <p>The fixed interfaces include two GE WAN interfaces, one audio interface, and two video interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR510	AR511GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface and one GE WAN interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>The fixed interfaces include one GE WAN interface, one audio interface, and two video interfaces. Additionally, the router has LTE FDD, Wi-Fi (802.11a/b/g/n AP), GPS, and Digital Television Terrestrial Multimedia Broadcasting (DTMB) antenna interfaces.</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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. Additionally, the router has Wi-Fi (802.11a/b/g/n AP) antenna interfaces.</p>

Series	Chassis Model	Description
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Additionally, the router has FDD LTE, TDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR510	AR515GW-LM9-D	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE WAN interfaces, four GE LAN interfaces, as well as SATA, HDMI, VGA, RS485/RS422, and DB37 interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.</p>
AR510	AR515CGW-L	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include six FE LAN interfaces, SATA interface, VGA interface, and RS485/RS422 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR530	AR531-2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply.</p> <p>The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>
AR530	AR531-F2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply.</p> <p>The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>

Series	Chassis Model	Description
AR530	AR531GPe-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.
AR550	AR550-8FE-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include eight FE electrical interfaces and four GE combo interfaces.
AR550	AR550-24FE-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include 24 FE electrical interfaces and 4 GE combo interfaces.
AR550	AR550C-2C6GE	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include six GE electrical LAN interfaces, two GE combo WAN interfaces, two 2.5GE optical WAN interfaces, DI/DO interfaces, an RS485 interface, and a PoE power socket.
AR550	AR550C-4GE	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE electrical LAN interfaces, two 2.5GE optical WAN interfaces, and a DI/DO interface.
AR550	AR550C-2C6GE-2D	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include six GE electrical LAN interfaces, two GE combo LAN interfaces, two 2.5GE optical LAN interfaces, DI/DO interfaces, an RS485 interface, and a PoE power socket.

Series	Chassis Model	Description
AR550	AR550E	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include eight GE optical interfaces, eight GE electrical interfaces, two 2.5GE optical interfaces, two 10GE optical interfaces, DI interfaces and PoE power socket.
AR2500	AR2504-H	Provides fixed interfaces and supports two AC/DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces and four GE combo interfaces.
AR2500	AR2504E-H	Provides fixed interfaces and supports two AC/DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces, and two 10GE optical interfaces.
AR2500	AR2504-D-H	Provides fixed interfaces and supports two DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces and four GE combo interfaces.
AR1500	AR1504-24S	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 24 FE optical interfaces and 4 GE combo interfaces.
AR1500	AR1504-16S8T	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 16 FE optical interfaces, 8 FE electrical interfaces, and 4 GE combo interfaces.
AR1500	AR1504-8S16T	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 8 FE optical interfaces, 16 FE electrical interfaces, and 4 GE combo interfaces.

Series	Chassis Model	Description
AR1500	AR1504-24T	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 24 FE electrical interfaces and 4 GE combo interfaces.

Cards

Table 2-2 describes the cards available in V200R010C10.

Table 2-2 Cards available in V200R010C10

Card Type	Card Name	Description
Ethernet LAN interface card	8ES2G	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)
	8ES2GS	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)
WAN interface card	8AS	8-Port Async Serial Port Interface Card
	1LTE-L-H	FDD/HSPA+ industrial data card

2.2 Components Available in V200R010C00

NOTE

The components marked * are the new components added to V200R010C00.

Chassis

Table 2-3 describes the chassis models available in V200R010C00.

Table 2-3 Chassis models available in V200R010C00

Series	Chassis Model	Description
AR500	AR502EG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, RS485/RS422, RS232, DI/DO interfaces, and two GE LAN interfaces.

Series	Chassis Model	Description
AR500	AR502EG-La	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, RS485/RS422, RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EG-L-PD	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces RS232 and GE LAN interfaces.
AR500	AR502EGW-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, Wi-Fi antenna, LTE antenna interfaces, and two GE LAN interfaces.
AR500	AR502CG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, CON/RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EGRb-L	Provides fixed interfaces, supports LTE uplink connection and RF access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, RF antenna (915 MHz) interfaces, and two GE LAN interfaces.
AR500	AR502EGRc-Lc	Provides fixed interfaces, supports LTE uplink connection and RF access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, RF antenna (433 MHz) interfaces, and two GE LAN interfaces.
AR500	AR502EGRz-L	Provides fixed interfaces, supports LTE uplink connection and ZigBee access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, ZigBee antenna (2.4 GHz) interfaces, and two GE LAN interfaces.

Series	Chassis Model	Description
AR500	AR502EGRz-Lc	<p>Provides fixed interfaces, supports LTE uplink connection and ZigBee access, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, ZigBee antenna (2.4 GHz) interfaces, and two GE LAN interfaces.</p>
AR500	AR503GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR500	AR503GW-Lo	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR500	AR503GW-LcM7	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EDGW-Lc	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>

Series	Chassis Model	Description
AR500	AR503EDGW-Lc3	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EQGW-L	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EW	<p>Provides fixed interfaces, supports WLAN and PoE, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces and Wi-Fi (802.11b/g/n/ac AP) antenna interfaces.</p>
AR500	AR503EDGW-Lo	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503HGW-L	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.</p>

Series	Chassis Model	Description
AR500	AR503HGW-Lc	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.</p>
AR500	AR509G-L-D-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.</p>
AR500	AR509G-Lc	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.</p>
AR500	AR509GW-L-D-H	<p>Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, and four GE LAN (PoE+) interfaces. Additionally, the router has Wi-Fi (802.11b/g/n/ac AP), and LTE antenna interfaces.</p>
AR500	AR509CG-Lc	<p>Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.</p>
AR500	AR509CG-Lt	<p>Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.</p>

Series	Chassis Model	Description
AR500	AR509CG-Lt-7	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CGW-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces, Wi-Fi antenna 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 supply. The fixed interfaces include two GE WAN interfaces, one audio interface, and two video interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.
AR510	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 supply. The fixed interfaces include one SATA interface and one GE WAN interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.
AR510	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 supply. The fixed interfaces include one GE WAN interface, one audio interface, and two video interfaces. Additionally, the router has LTE FDD, Wi-Fi (802.11a/b/g/n AP), GPS, and Digital Television Terrestrial Multimedia Broadcasting (DTMB) antenna interfaces.

Series	Chassis Model	Description
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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. Additionally, the router has Wi-Fi (802.11a/b/g/n AP) antenna interfaces.</p>
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Additionally, the router has FDD LTE, TDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR510	AR515GW-LM9-D	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE WAN interfaces, four GE LAN interfaces, as well as SATA, HDMI, VGA, RS485/RS422, and DB37 interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.</p>
AR510	AR515CGW-L	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include six FE LAN interfaces, SATA interface, VGA interface, and RS485/RS422 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>

Series	Chassis Model	Description
AR530	AR531-2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply. The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.
AR530	AR531-F2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply. The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.
AR530	AR531GPe-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.
AR550	AR550-8FE-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include eight FE electrical interfaces and four GE combo interfaces.
AR550	AR550-24FE-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include 24 FE electrical interfaces and 4 GE combo interfaces.
AR550	AR550C-2C6GE	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include six GE electrical LAN interfaces, two GE combo WAN interfaces, two 2.5GE optical WAN interfaces, DI/DO interfaces, an RS485 interface, and a PoE power socket.

Series	Chassis Model	Description
AR550	AR550C-4GE	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE electrical LAN interfaces, two 2.5GE optical WAN interfaces, and a DI/DO interface.
AR550	AR550C-2C6GE-2D	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include six GE electrical LAN interfaces, two GE combo LAN interfaces, two 2.5GE optical LAN interfaces, DI/DO interfaces, an RS485 interface, and a PoE power socket.
AR550	AR550E	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include eight GE optical interfaces, eight GE electrical interfaces, two 2.5GE optical interfaces, two 10GE optical interfaces, DI interfaces and PoE power socket.
AR2500	AR2504-H	Provides fixed interfaces and supports two AC/DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces and four GE combo interfaces.
AR2500	AR2504E-H	Provides fixed interfaces and supports two AC/DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces, and two 10GE optical interfaces.
AR2500	AR2504-D-H	Provides fixed interfaces and supports two DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces and four GE combo interfaces.
AR1500	AR1504-24S	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 24 FE optical interfaces and 4 GE combo interfaces.

Series	Chassis Model	Description
AR1500	AR1504-16S8T	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 16 FE optical interfaces, 8 FE electrical interfaces, and 4 GE combo interfaces.
AR1500	AR1504-8S16T	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 8 FE optical interfaces, 16 FE electrical interfaces, and 4 GE combo interfaces.
AR1500	AR1504-24T	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 24 FE electrical interfaces and 4 GE combo interfaces.

Cards

[Table 2-4](#) describes the cards available in V200R010C00.

Table 2-4 Cards available in V200R010C00

Card Type	Card Name	Description
Ethernet LAN interface card	8ES2G	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)
	8ES2GS	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)
WAN interface card	8AS	8-Port Async Serial Port Interface Card
	1LTE-L-H	FDD/HSPA+ industrial data card

2.3 Components Available in V200R009C00

NOTE

The components marked * are the new components added to V200R009C00.

Chassis

[Table 2-5](#) describes the chassis models available in V200R009C00.

Table 2-5 Chassis models available in V200R009C00

Series	Chassis Model	Description
AR500	AR502EG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, RS485/RS422, RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EG-La*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, RS485/RS422, RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EG-L-PD*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces RS232 and GE LAN interfaces.
AR500	AR502EGW-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, Wi-Fi antenna, LTE antenna interfaces, and two GE LAN interfaces.
AR500	AR502CG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, CON/RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EGRb-L	Provides fixed interfaces, supports LTE uplink connection and RF access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, RF antenna (915 MHz) interfaces, and two GE LAN interfaces.
AR500	AR502EGRc-Lc	Provides fixed interfaces, supports LTE uplink connection and RF access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, RF antenna (433 MHz) interfaces, and two GE LAN interfaces.

Series	Chassis Model	Description
AR500	AR502EGRz-L*	<p>Provides fixed interfaces, supports LTE uplink connection and ZigBee access, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, ZigBee antenna (2.4 GHz) interfaces, and two GE LAN interfaces.</p>
AR500	AR502EGRz-Lc*	<p>Provides fixed interfaces, supports LTE uplink connection and ZigBee access, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, ZigBee antenna (2.4 GHz) interfaces, and two GE LAN interfaces.</p>
AR500	AR503GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR500	AR503GW-Lo*	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR500	AR503GW-LcM7	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS/BDS antenna interfaces.</p>

Series	Chassis Model	Description
AR500	AR503EDGW-Lc	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EDGW-Lc3	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EQGW-L	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EW	<p>Provides fixed interfaces, supports WLAN and PoE, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces and Wi-Fi (802.11b/g/n/ac AP) antenna interfaces.</p>
AR500	AR503EDGW-Lo*	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>

Series	Chassis Model	Description
AR500	AR503HGW-L*	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.</p>
AR500	AR503HGW-Lc*	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include GE LAN interfaces. Additionally, the router has two FDD LTE, TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.</p>
AR500	AR509G-L-D-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.</p>
AR500	AR509G-Lc	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.</p>
AR500	AR509GW-L-D-H	<p>Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, and four GE LAN (PoE+) interfaces. Additionally, the router has Wi-Fi (802.11b/g/n/ac AP), and LTE antenna interfaces.</p>

Series	Chassis Model	Description
AR500	AR509CG-Lc	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CG-Lt	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CG-Lt-7	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CGW-L	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces, Wi-Fi antenna 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 supply. The fixed interfaces include two GE WAN interfaces, one audio interface, and two video interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.
AR510	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 supply. The fixed interfaces include one SATA interface and one GE WAN interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.

Series	Chassis Model	Description
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>The fixed interfaces include one GE WAN interface, one audio interface, and two video interfaces. Additionally, the router has LTE FDD, Wi-Fi (802.11a/b/g/n AP), GPS, and Digital Television Terrestrial Multimedia Broadcasting (DTMB) antenna interfaces.</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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. Additionally, the router has Wi-Fi (802.11a/b/g/n AP) antenna interfaces.</p>
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, two GE WAN interfaces, one audio interface, and two video interfaces. Additionally, the router has FDD LTE, TDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR510	AR515GW-LM9-D	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE WAN interfaces, four GE LAN interfaces, as well as SATA, HDMI, VGA, RS485/RS422, and DB37 interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.</p>

Series	Chassis Model	Description
AR530	AR531-2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply. The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.
AR530	AR531-F2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply. The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.
AR530	AR531GPe-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.
AR550	AR550-8FE-D-H*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include eight FE electrical interfaces and four GE combo interfaces.
AR550	AR550-24FE-D-H*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include 24 FE electrical interfaces and 4 GE combo interfaces.
AR550	AR550C-2C6GE	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include six GE electrical LAN interfaces, two GE combo WAN interfaces, two 2.5GE optical WAN interfaces, DI/DO interfaces, an RS485 interface, and a PoE power socket.

Series	Chassis Model	Description
AR550	AR550C-4GE	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE electrical LAN interfaces, two 2.5GE optical WAN interfaces, and a DI/DO interface.
AR550	AR550C-2C6GE-2D*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include six GE electrical LAN interfaces, two GE combo LAN interfaces, two 2.5GE optical LAN interfaces, DI/DO interfaces, an RS485 interface, and a PoE power socket.
AR550	AR550E*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include eight GE optical interfaces, eight GE electrical interfaces, two 2.5GE optical interfaces, two 10GE optical interfaces, DI interfaces and PoE power socket.
AR2500	AR2504-H	Provides fixed interfaces and supports two AC/DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces and four GE combo interfaces.
AR2500	AR2504E-H	Provides fixed interfaces and supports two AC/DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces, and two 10GE optical interfaces.
AR2500	AR2504-D-H	Provides fixed interfaces and supports two DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces and four GE combo interfaces.
AR1500	AR1504-24S*	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 24 FE optical interfaces and 4 GE combo interfaces.

Series	Chassis Model	Description
AR1500	AR1504-16S8T*	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 16 FE optical interfaces, 8 FE electrical interfaces, and 4 GE combo interfaces.
AR1500	AR1504-8S16T*	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 8 FE optical interfaces, 16 FE electrical interfaces, and 4 GE combo interfaces.
AR1500	AR1504-24T*	Provides fixed interfaces and supports two DC power modules. The fixed interfaces include 24 FE electrical interfaces and 4 GE combo interfaces.

Cards

[Table 2-6](#) describes the cards available in V200R009C00.

Table 2-6 Cards available in V200R009C00

Card Type	Card Name	Description
Ethernet LAN interface card	8ES2G	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)
	8ES2GS	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)
WAN interface card	8AS	8-Port Async Serial Port Interface Card
	1LTE-L-H	FDD/HSPA+ industrial data card

2.4 Components Available in V200R008C50

NOTE

The components marked * are the new components added to V200R008C50.

Chassis

[Table 2-7](#) describes the chassis models available in V200R008C50.

Table 2-7 Chassis models available in V200R008C50

Series	Chassis Model	Description
AR500	AR502EG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, RS485/RS422, RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EGW-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, Wi-Fi antenna, LTE antenna interfaces, and two GE LAN interfaces.
AR500	AR502CG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include LTE antenna, CON/RS232, DI/DO interfaces, and two GE LAN interfaces.
AR500	AR502EGRb-L*	Provides fixed interfaces, supports LTE uplink connection and radio frequency (RF) access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, RF antenna (915 MHz) interfaces, and two GE LAN interfaces.
AR500	AR502EGRc-Lc*	Provides fixed interfaces, supports LTE uplink connection and RF access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include RS485/RS422, RS232, DI/DO, LTE antenna, RF antenna (433 MHz) interfaces, and two GE LAN interfaces.
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 supply. The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.

Series	Chassis Model	Description
AR500	AR503GW-LcM7	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, one GE WAN interface, and one RS232 interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EDGW-Lc	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has FDD/TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EDGW-Lc3*	<p>Provides fixed interfaces, supports LTE uplink connection, dual-band WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has FDD/TDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EQGW-L	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, PoE, and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS/BDS antenna interfaces.</p>
AR500	AR503EW	<p>Provides fixed interfaces, supports WLAN and PoE, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. Additionally, the router has Wi-Fi (802.11b/g/n/ac AP) antenna interfaces.</p>

Series	Chassis Model	Description
AR500	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, and four GE LAN (PoE+) interfaces. Additionally, the router has LTE antenna interfaces.
AR500	AR509G-Lc	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, and four GE LAN (PoE+) interfaces. Additionally, the router has LTE antenna interfaces.
AR500	AR509GW-L-D-H*	Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n/ac (acting as an AP) and LTE.
AR500	AR509CG-Lc	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces. Additionally, the router has LTE antenna interfaces.
AR500	AR509CG-Lt	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces. Additionally, the router has LTE antenna interfaces.
AR500	AR509CG-Lt-7*	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces. Additionally, the router has LTE antenna interfaces.

Series	Chassis Model	Description
AR500	AR509CGW-L*	<p>Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include Wi-Fi antenna, LTE antenna interfaces, and four GE LAN interfaces.</p>
AR510	AR511GW-LAV2M3	<p>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 supply.</p> <p>The fixed interfaces include two GE WAN interfaces, one audio interface, and two video interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR510	AR511GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one SATA interface, and one GE WAN interface. Additionally, the router has FDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>The fixed interfaces include one GE WAN interface, one audio interface, and two video interfaces. Additionally, the router has LTE FDD, Wi-Fi (802.11a/b/g/n AP), GPS, and Digital Television Terrestrial Multimedia Broadcasting (DTMB) antenna interfaces.</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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. Additionally, the router has Wi-Fi (802.11a/b/g/n AP) antenna interfaces.</p>

Series	Chassis Model	Description
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>The fixed interfaces include two GE WAN interfaces, one audio interface, and two video interfaces. Additionally, the router has FDD/TDD LTE, Wi-Fi (802.11a/b/g/n AP), and GPS antenna interfaces.</p>
AR510	AR515GW-LM9-D	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, and external SATA hard disk, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE WAN interfaces, four GE LAN interfaces, as well as SATA, HDMI, VGA, RS485/RS422, and DB37 interfaces. Additionally, the router has FDD LTE, Wi-Fi (802.11b/g/n/ac AP), and GPS antenna interfaces.</p>
AR530	AR531-2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply.</p> <p>The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>
AR530	AR531-F2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply.</p> <p>The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>
AR530	AR531GPe-U-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply.</p> <p>The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.</p>

Series	Chassis Model	Description
AR550	AR550C-2C6GE	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply and supports the PoE function. The fixed interfaces include six GE electrical LAN interfaces, two GE combo WAN interfaces, two 2.5GE optical WAN interfaces, DI/DO interfaces, an RS485 interface, and a PoE power socket.
AR550	AR550C-4GE	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE electrical LAN interfaces, two 2.5GE optical WAN interfaces, and DI/DO interfaces.
AR2500	AR2504-H	Has fixed interfaces, fan modules, and supports two AC/DC power modules. It has two wide service interface card (WSIC) slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four FE electrical interfaces and four GE combo interfaces.
AR2500	AR2504E-H	Has fixed interfaces, fan modules, and supports two AC/DC power modules. It has two WSIC slots, in which different types of cards can be installed to increase the number of interfaces. The fixed interfaces include four FE electrical interfaces, four GE combo interfaces, and two 10GE optical interfaces.
AR2500	AR2504-D-H*	Has fixed interfaces, fan modules, and supports two DC power modules. It has two WSIC slots, in which various interface cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces.

Cards

Table 2-8 describes the cards available in V200R008C50.

Table 2-8 Cards available in V200R008C50

Card Type	Card Name	Description
Ethernet LAN interface card	8ES2G	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)

Card Type	Card Name	Description
	8ES2GS	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)
WAN interface card	8AS	8-port async serial port interface card
	1LTE-L-H	FDD/HSPA+ industrial data card

2.5 Components Available in V200R008C30

NOTE

The components marked* are the new components added to V200R008C30.

Chassis

[Table 2-9](#) describes the chassis models available in V200R008C30.

Table 2-9 Chassis models available in V200R008C30

Series	Chassis Model	Description
AR500	AR502EG-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include RS232, DI/DO, RS485/RS422, LTE antenna interfaces, and two GE LAN interfaces.
AR500	AR502EGW-L	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include RS232, DI/DO, RS485/RS422, Wi-Fi antenna, LTE antenna interfaces, and two GE LAN interfaces.
AR500	AR502CG-L*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include CON/RS232, DI/DO, LTE antenna interface, and two GE LAN interfaces.

Series	Chassis Model	Description
AR500	AR503GW-LM7	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n AP.</p>
AR500	AR503GW-LcM7	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n AP.</p>
AR500	AR503EDGW-Lc	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, PoE functions and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include two FDD/TDD LTE antenna interfaces, four GE LAN interfaces, and one GPS/BDS interface. The router can act as an 802.11b/g/n/ac AP.</p>
AR500	AR503EQGW-L*	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, PoE functions and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include FDD/TDD LTE antenna interfaces, four GE LAN interfaces, and one GPS/BDS interface. The router can act as an 802.11b/g/n/ac AP.</p>
AR500	AR503EW*	<p>Provides fixed interfaces, supports WLAN access, PoE functions, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE LAN interfaces. The router can act as an 802.11b/g/n/ac AP.</p>

Series	Chassis Model	Description
AR500	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
AR500	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.
AR500	AR509CG-Lc	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CG-Lt	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN 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 supply. 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 FDD LTE and 802.11a/b/g/n AP.
AR510	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 supply. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n AP.

Series	Chassis Model	Description
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>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 FDD LTE, 802.11a/b/g/n AP, and DTMB.</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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.</p>
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>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 FDD LTE, TDD, and 802.11a/b/g/n AP.</p>
AR510	AR515GW-LM9-D	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE WAN interfaces, four GE LAN interfaces, as well as SATA, HDMI, VGA, GPS, RS485/RS422, and DB37 interfaces. Besides, the router has antenna interfaces and supports FDD LTE and 802.11b/g/n/ac AP.</p>

Series	Chassis Model	Description
AR530	AR531-2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device.</p> <p>The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>
AR530	AR531-F2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device.</p> <p>The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>
AR530	AR531GPe-U-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device.</p> <p>The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.</p>
AR550	AR550C-2C6GE	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device and supports the PoE function.</p> <p>The fixed interfaces include six GE electrical LAN interfaces, two GE combo WAN interfaces, two 2.5GE optical WAN interfaces, a DI/DO interface, an RS485 interface, and a PoE power socket.</p>
AR550	AR550C-4GE*	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device.</p> <p>The fixed interfaces include four GE electrical LAN interfaces, two 2.5GE optical WAN interfaces, and a DI/DO interface.</p>

Series	Chassis Model	Description
AR2500	AR2504-H	Has fixed interfaces, fan modules, and supports two AC/DC power modules. It has two wide service interface card (WSIC) slots, in which various interface cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces.
AR2500	AR2504E-H	Has fixed interfaces, fan modules, and supports two AC/DC power modules. It has two WSIC slots, in which various interface cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces, and two 10GE optical interfaces.

Cards

Table 2-10 describes the cards available in V200R008C30.

Table 2-10 Cards available in V200R008C30

Card Type	Card Name	Description
Ethernet LAN interface card	8ES2G	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)
	8ES2GS	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)
WAN interface card	8AS	8-port async serial port interface card
	1LTE-L-H	FDD/HSPA+ industrial data card

2.6 Components Available in V200R008C20

NOTE

The components marked * are the new components added to V200R008C20.

Chassis

Table 2-11 describes the chassis models available in V200R008C20.

Table 2-11 Chassis models available in V200R008C20

Series	Chassis Model	Description
AR500	AR502EG-L*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include RS232, DI/DO, RS485/RS422, LTE antenna interfaces, and two GE LAN interfaces.
AR500	AR502EGW-L*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include RS232, DI/DO, RS485/RS422, Wi-Fi antenna, LTE antenna interfaces, and two GE LAN interfaces.
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 supply. 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 FDD LTE and 802.11a/b/g/n AP.
AR500	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 supply. 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 FDD LTE and 802.11a/b/g/n AP.
AR500	AR503EDGW-Lc*	Provides fixed interfaces, supports LTE uplink connection, WLAN access, PoE functions and GPS/BDS positioning, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include two FDD/TDD LTE antenna interfaces, four GE LAN interfaces, and one GPS/BDS interface. The router can act as an 802.11b/g/n/ac AP.

Series	Chassis Model	Description
AR500	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
AR500	AR509CG-Lc*	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN interfaces and LTE antenna interfaces.
AR500	AR509CG-Lt*	Provides fixed interfaces, supports LTE uplink connection, and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include four GE LAN 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 supply. 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 FDD LTE and 802.11a/b/g/n AP.
AR510	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 supply. The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n AP.

Series	Chassis Model	Description
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>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 FDD LTE, 802.11a/b/g/n AP, and DTMB.</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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.</p>
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>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 FDD LTE, TDD, and 802.11a/b/g/n AP.</p>
AR510	AR515GW-LM9-D*	<p>Provides fixed interfaces, supports LTE uplink connection, WLAN access, and external mSATA hard disk, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include four GE WAN interfaces, four GE LAN interfaces, as well as SATA, HDMI, VGA, GPS, RS485/RS422, and DB37 interfaces. Besides, the router has antenna interfaces and supports FDD LTE and 802.11b/g/n/ac AP.</p>

Series	Chassis Model	Description
AR530	AR531-2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device.</p> <p>The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>
AR530	AR531-F2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device.</p> <p>The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>
AR530	AR531GPe-U-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device.</p> <p>The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.</p>
AR550	AR550C-2C6GE*	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device and supports the PoE function.</p> <p>The fixed interfaces include six GE electrical LAN interfaces, two GE combo WAN interfaces, two 2.5GE optical WAN interfaces, a DI/DO interface, an RS485 interface, and a PoE power socket.</p>
AR2500	AR2504-H	<p>Has fixed interfaces, fan modules, and supports two AC/DC power modules. It has two WSIC slots, in which various interface cards can be installed to increase the number of interfaces.</p> <p>The fixed interfaces include four GE electrical interfaces, four GE combo interfaces.</p>

Series	Chassis Model	Description
AR2500	AR2504E-H	Has fixed interfaces, fan modules, and supports two AC/DC power modules. It has two WSIC slots, in which various interface cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces, and two 10GE optical interfaces.
AR2500	AR2504-D-H*	Has fixed interfaces, fan modules, and supports two DC power modules. It has two WSIC slots, in which various interface cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces.

Cards

[Table 2-12](#) describes the cards available in V200R008C20.

Table 2-12 Cards available in V200R008C20

Card Type	Card Name	Description
Ethernet LAN interface cards	8ES2G	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)
	8ES2GS	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)
WAN interface cards	8AS	8-port async serial port interface card
	1LTE-L-H*	FDD/HSPA+ industrial data card

2.7 Components Available in V200R008C00

NOTE

The components marked * are the new components added to V200R008C00.

Chassis

[Table 2-13](#) describes the chassis models available in V200R008C00.

Table 2-13 Chassis models available in V200R008C00

Series	Chassis Model	Description
AR2500	AR2504-H*	Has fixed interfaces, built-fans, and supports two AC/DC power modules. It has two WSIC slots, in which various interface cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces.
	AR2504E-H*	Has fixed interfaces, built-fans, and supports two AC/DC power modules. It has two WSIC slots, in which various interface cards can be installed to increase the number of interfaces. The fixed interfaces include four GE electrical interfaces, four GE combo interfaces, and two 10GE optical interfaces.

Cards

Table 2-14 describes the cards available in V200R008C00.

Table 2-14 Cards available in V200R008C00

Card Type	Card Name	Description
Ethernet LAN interface card	8ES2G*	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)
	8ES2GS*	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)
WAN interface card	8AS*	8-Port Async Serial Port Interface Card

2.8 Components Available in V200R007C02

NOTE

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

Chassis

Table 2-15 describes the chassis models available in V200R007C02.

Table 2-15 Chassis models available in V200R007C02

Series	Chassis Model	Description
AR500	AR503GW-LM7	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR500	AR509G-L-D-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.</p>
AR500	AR503GW-LcM7	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR500	AR509GW-L-D-H*	<p>Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces. Besides, the router has antenna interfaces and supports 802.11b/g/n/ac (acting as an AP) and LTE.</p>
AR510	AR511GW-LAV2M3	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>

Series	Chassis Model	Description
AR510	AR511GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, one SATA interface, and one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>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 FDD LTE, 802.11a/b/g/n (acting as an AP), and Digital Television Terrestrial Multimedia Broadcasting (DTMB).</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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.</p>
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).</p>

2.9 Components Available in V200R007C01

Chassis

Table 2-16 describes the chassis models available in V200R007C01.

Table 2-16 Chassis models available in V200R007C01

Series	Chassis Model	Description
AR500	AR503GW-LM7	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR500	AR509G-L-D-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.</p>
AR500	AR503GW-LcM7	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-LAV2M3	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>

Series	Chassis Model	Description
AR510	AR511GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, one SATA interface, and one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>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 FDD LTE, 802.11a/b/g/n (acting as an AP), and Digital Television Terrestrial Multimedia Broadcasting (DTMB).</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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.</p>
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).</p>

2.10 Components Available in V200R007C00

NOTE

- The components marked * are the new components added to V200R007C00.
- The components marked ^ are updated in V200R007C00.

Chassis

Table 2-17 describes the chassis models available in V200R007C00.

Table 2-17 Chassis models available in V200R007C00

Series	Chassis Model	Description
AR500	AR502G-L-D-H [^]	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include RS232, DI/DO, RS485/RS422, GE electrical, and LTE antenna interfaces.
AR500	AR502GR-L-D-H [*]	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include RS232, DI/DO, RS485/RS422, GE electrical, ZigBee/sub-GHz, and LTE antenna interfaces.
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 supply. 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 FDD LTE and 802.11a/b/g/n (acting as an 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.

Series	Chassis Model	Description
AR500	AR503GW-LcM7	<p>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.</p> <p>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 FDD LTE and 802.11a/b/g/n AP.</p>
AR510	AR511GW-LAV2M3	<p>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.</p> <p>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 FDD LTE and 802.11a/b/g/n AP.</p>
AR510	AR511GW-LM7	<p>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.</p> <p>The fixed interfaces include one GPS interface, one SATA interface, one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n AP.</p>
AR510	AR511GW-L-B3	<p>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.</p> <p>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 FDD LTE, 802.11a/b/g/n AP, and DTMB.</p>

Series	Chassis Model	Description
AR510	AR513W-V3M8	<p>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.</p> <p>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.</p>
AR510	AR513GW-LcV1*	<p>Provides fixed interfaces, supports LTE uplink connection and WLAN access, and does not support interface expansion. It is powered by an external DC power source.</p> <p>The fixed interfaces include one HDMI interface, two GE WAN interfaces, and eight FE LAN interfaces. Besides, the router has antenna interfaces and can function as an 802.11b/g/n AP.</p>
AR510	AR513W-V1*	<p>Provides fixed interfaces, supports WLAN access, and does not support interface expansion. It is powered by an external DC power source.</p> <p>The fixed interfaces include one HDMI interface, two GE WAN interfaces, and eight FE LAN interfaces. Besides, the router has antenna interfaces and supports FDD LTE and 802.11b/g/n AP.</p>
AR510	AR511CGW-LAV2M3	<p>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.</p> <p>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 FDD LTE, TDD LTE, and 802.11a/b/g/n (acting as an AP).</p>
AR530	AR531-2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device.</p> <p>The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>

Series	Chassis Model	Description
AR530	AR531-F2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.

2.11 Components Available in V200R006C17

 **NOTE**

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

Chassis

[Table 2-18](#) describes the chassis models available in V200R006C17.

Table 2-18 Chassis models available in V200R006C17

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 supply. 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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).
AR500	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.

Series	Chassis Model	Description
AR500	AR509G-Lc*	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.</p>
AR500	AR503GW-LcM7	<p>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 supply.</p> <p>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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-LAV2M3	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, one SATA interface, and one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n (acting as an AP).</p>

Series	Chassis Model	Description
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>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 FDD LTE, 802.11a/b/g/n (acting as an AP), and Digital Television Terrestrial Multimedia Broadcasting (DTMB).</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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.</p>
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).</p>

2.12 Components Available in V200R006C16

NOTE

The components marked ^ are updated in V200R006C16.

Chassis

[Table 2-19](#) describes the chassis models available in V200R006C16.

Table 2-19 Chassis models available in V200R006C16

Series	Chassis Model	Description
AR500	AR503GW-LM7	<p>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 supply.</p> <p>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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR500	AR509G-L-D-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply.</p> <p>The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.</p>
AR500	AR503GW-LcM7 [^]	<p>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 supply.</p> <p>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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-LAV2M3	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>

Series	Chassis Model	Description
AR510	AR511GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, one SATA interface, and one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>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 FDD LTE, 802.11a/b/g/n (acting as an AP), and Digital Television Terrestrial Multimedia Broadcasting (DTMB).</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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.</p>
AR510	AR511CGW-LAV2M3	<p>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 supply.</p> <p>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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).</p>

2.13 Components Available in V200R006C15

 **NOTE**

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

Chassis

Table 2-20 describes the chassis models available in V200R006C15.

Table 2-20 Chassis models available in V200R006C15

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 supply. 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 FDD LTE and 802.11a/b/g/n (acting as an AP).
AR500	AR509G-L-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. The fixed interfaces include one GE WAN interface, one VDSL2 WAN interface, four GE LAN (PoE+) interfaces, and LTE antenna interfaces.
AR500	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 supply. 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 FDD LTE and 802.11a/b/g/n (acting as an 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 supply. 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 FDD LTE and 802.11a/b/g/n (acting as an AP).

Series	Chassis Model	Description
AR510	AR511GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, one SATA interface, and one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-L-B3	<p>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 supply.</p> <p>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 FDD LTE, 802.11a/b/g/n (acting as an AP), and Digital Television Terrestrial Multimedia Broadcasting (DTMB).</p>
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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.</p>
AR510	AR511CGW-LAV2M3*	<p>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 supply.</p> <p>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 FDD/TDD LTE and 802.11a/b/g/n (acting as an AP).</p>

2.14 Components Available in V200R006C10

 **NOTE**

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

Chassis

Table 2-21 describes the chassis models available in V200R006C10.

Table 2-21 Chassis models available in V200R006C10

Series	Chassis Model	Description
AR500	AR509G-L-D-H*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply. 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 supply. 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 FDD LTE and 802.11a/b/g/n (acting as an AP).
AR510	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 supply. The fixed interfaces include one GPS interface, one SATA interface, and one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n (acting as an AP).
AR510	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 supply. 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 FDD LTE, 802.11a/b/g/n (acting as an AP), and Digital Television Terrestrial Multimedia Broadcasting (DTMB).

Series	Chassis Model	Description
AR510	AR513W-V3M8	<p>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 supply.</p> <p>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.</p>

2.15 Components Available in V200R005C80

NOTE

The components marked * are the new components added to V200R005C80.

Chassis

[Table 2-22](#) describes the chassis models available in V200R005C80.

Table 2-22 Chassis models available in V200R005C80

Series	Chassis Model	Description
AR500	AR502G-L-D-H*	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device.</p> <p>The fixed interfaces include RS232, DI/DO, RS485/RS422, GE electrical, and 3G/LTE antenna interfaces.</p>
AR530	AR531-2C-H	<p>Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device.</p> <p>The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.</p>

Series	Chassis Model	Description
	AR531-F2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.
	AR531GPe-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.
	AR531GR-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, 3G and ZigBee/sub-GHz antenna interfaces.
	AR531G-U-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, and 3G antenna interfaces.

Power Modules

[Table 2-23](#) describes the power modules available in V200R005C80.

Table 2-23 Power modules available in V200R005C80

Power Module Type	Power Module Model	Description
AC power module	PAC-60WB	60 W AC power module
	OPTN25-12A *	25 W open frame power supply

2.16 Components Available in V200R005C70

 **NOTE**

The components marked * are the new components added to V200R005C70.

Chassis

Table 2-24 describes the chassis models available in V200R005C70.

Table 2-24 Chassis models available in V200R005C70

Series	Chassis Model	Description
AR530	AR531-2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.
	AR531-F2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.
	AR531GPe-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.
	AR531GR-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, 3G and ZigBee/sub-GHz antenna interfaces.

Series	Chassis Model	Description
	AR531G-U-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, and 3G antenna interfaces.
AR550	AR550-8FE-D-H*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include eight FE electrical interfaces and four GE combo interfaces.
	AR550-24FE-D-H*	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include 24 FE electrical interfaces and 4 GE combo interfaces.

2.17 Components Available in V200R005C60

Chassis

[Table 2-25](#) describes the chassis models available in V200R005C60.

Table 2-25 Chassis models available in V200R005C60

Series	Chassis Model	Description
AR530	AR531-2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include two FE combo interfaces, six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.
	AR531-F2C-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include two FE combo interfaces, six FE optical interfaces, two GE optical interfaces, two RS485 interfaces, and two DI interfaces.

Series	Chassis Model	Description
	AR531GPe-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, a power line communication (PLC) interface, and 3G antenna interfaces.
	AR531GR-U-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external single-phase or three-phase AC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, 3G and ZigBee/sub-GHz antenna interfaces.
	AR531G-U-D-H	Provides fixed interfaces and does not support interface expansion. It is powered by an external DC power supply device. The fixed interfaces include six FE electrical interfaces, two GE optical interfaces, two RS485 interfaces, two DI interfaces, and 3G antenna interfaces.

2.18 Components Available in V200R005C32

 **NOTE**

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

Chassis

Table 2-26 describes the chassis models available in V200R005C32.

Table 2-26 Chassis models available in V200R005C32

Series	Chassis Model	Description
AR510	AR511GW-LAV2M3	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-LM7	<p>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 supply.</p> <p>The fixed interfaces include one GPS interface, one SATA interface, and one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n (acting as an AP).</p>
AR510	AR511GW-L-B3*	<p>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 supply.</p> <p>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 FDD LTE, 802.11a/b/g/n (acting as an AP), and Digital Television Terrestrial Multimedia Broadcasting (DTMB).</p>
AR510	AR513W-V3M8*	<p>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 supply.</p> <p>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.</p>

2.19 Components Available in V200R005C31

 **NOTE**

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

Chassis

Table 2-27 describes the chassis models available in V200R005C31.

Table 2-27 Chassis models available in V200R005C31

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 supply. 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 FDD LTE and 802.11a/b/g/n (acting as an AP).
AR510	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 supply. The fixed interfaces include one GPS interface, one SATA interface, and one GE WAN interface. Besides, the router has antenna interfaces and supports FDD LTE and 802.11a/b/g/n (acting as an AP).

2.20 Components Available in V200R005C30

 **NOTE**

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

Chassis

Table 2-28 describes the chassis model available in V200R005C30.

Table 2-28 Chassis models available in V200R005C30

Series	Chassis Model	Description
AR510	AR511GW-LAV2M3*	<p>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 supply.</p> <p>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 FDD LTE and 802.11a/b/g/n (acting as an AP).</p>

3 Chassis

About This Chapter

Huawei AR routers are available in AR500, AR510, AR530, AR550, AR1500, and AR2500 series. Select the router models that suit your network requirements.

[3.1 Naming Conventions](#)

[3.2 AR500 Series](#)

[3.3 AR510 Series](#)

[3.4 AR530 Series](#)

[3.5 AR550 Series](#)

[3.6 AR1500 Series](#)

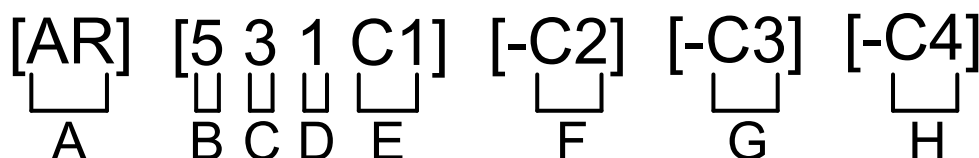
[3.7 AR2500 Series](#)

3.1 Naming Conventions

AR500&AR510&AR530&AR550 Series

Figure 3-1 shows naming conventions of the AR500&AR510&AR530&AR550 series routers. **Table 3-1** describes the meaning of each letter or digit.

Figure 3-1 AR500&AR510&AR530&AR550 series naming conventions



Example: AR531G-U-D-H
AR550-8FE-D-H

Table 3-1 AR500&AR510&AR530&AR550 series naming conventions

Field	Meaning	Description
A	Product name	AR
B	Code of IoT gateway	The code is 5.
C	Combines with B to indicate different router series using the same hardware platform	<ul style="list-style-type: none"> ● 50: general IoT access gateway series. ● 51: in-vehicle or media gateway series. ● 53: industrial switching router series mainly used in routing scenarios. ● 55: industrial switching router series mainly used in switching scenarios.
D	Type of major uplink interfaces	An integer ranging from 1 to 9, identifying a specific sub-series.
E	Type of auxiliary interfaces on the router (optional)	Zero or multiple letters, which are explained as follows: <ul style="list-style-type: none"> ● F: uplink GE combo interface. ● G: uplink wireless interface (2G/3G/4G). ● Pe: support for HiSilicon power line communication (PLC) and spread frequency shift keying (S-FSK) PLC. ● R: ZigBee or sub-GHz interface. ● Z: BPL interface. ● C: compact model developed based on a basic model (lower interface or feature performance). ● E: enhanced model developed based on a basic model (enhanced interface or feature performance). ● DG: support for dual wireless uplinks. ● W: support for Wi-Fi access.

Field	Meaning	Description
F	<p>(Optional) Supplementary information about interfaces</p> <p>NOTE This field contains zero, one, or multiple sub-fields that provide supplementary information or configurations of interfaces on the router. A sub-field starts with "-" and specifies supplementary interface descriptions or other possible configurations.</p>	<ul style="list-style-type: none"> ● U: complies with the WCDMA 3G standard. ● L: complies with FDD LTE, a European standard. ● Lc: complies with FDD/TDD LTE, applicable in China, and does not support CDMA2000. ● Lo: complies with FDD-LTE, applicable in Australia. ● Lt: complies with FDD/TDD LTE, applicable in China, and supports all mobile communications standards used in China. ● Lj: complies with FDD/TDD-LTE, applicable in Japan. ● La: complies with WCDMA/FDD-LTE, applicable in America. ● nC: provides combo interfaces. n indicates the number of combo interfaces. ● nFE: provides FE LAN electrical interfaces. n indicates the number of FE LAN interfaces. ● A: supports audio input/output. ● V (1 to n): supports video output. n indicates the number of video outputs. <ul style="list-style-type: none"> - 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 higher capability the platform has. The M3 series, M7 series, and M8 series are available now. <ul style="list-style-type: none"> - M3: supports an SD card. - M7: supports a mini Serial Advanced Technology

Field	Meaning	Description
		Attachment (mSATA) hard disk. - M8: supports a 3.5-inch hard disk. - M9: supports a SATA hard disk.
G	(Optional) Power supply information	<ul style="list-style-type: none"> ● D: product model using DC power supply. ● Blank: product model using AC power supply (default).
H	(Optional) Chassis type	H: industrial chassis.

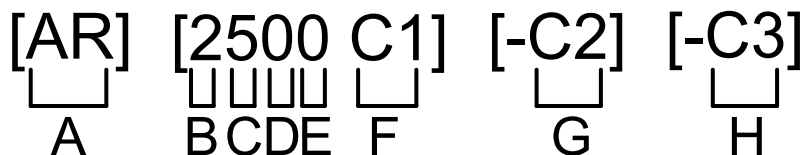
 **NOTE**

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

AR2500 Series

[Figure 3-2](#) shows naming conventions of the AR2500 series routers. [Table 3-2](#) describes the meaning of each letter or digit.

Figure 3-2 AR2500 series naming conventions



Example: AR2504-H

Table 3-2 AR2500 series naming conventions

Field	Meaning	Description
A	Product name	AR: application and access routers.
B	Hardware platform series	Currently, three router series are available: 1, 2 and 3. A larger value indicates higher performance.

Field	Meaning	Description
C	Hardware platform type	5: industrial router platform.
D	Maximum number of slots supported by the router	If this field is 0, the router is a cost-effective model with fixed uplink interfaces or reduced number of slots. Field E represents the number of fixed uplink interfaces or reduced number of slots.
E	Fixed uplink interfaces on the router	4: four SIC slots.
F	(Optional) Series of the router and other interface types supported by the router	<ul style="list-style-type: none"> ● C: C series. ● F: F series. ● E: E series.
G	(Optional) power supply information	<ul style="list-style-type: none"> ● D: product model using DC power supply. ● Blank: product model using AC power supply (default).
H	(Optional) Chassis type	H: industrial chassis.

3.2 AR500 Series

3.2.1 AR502CG-L

Version Mapping

[Table 3-3](#) lists the mapping between the AR502CG-L router and software versions.

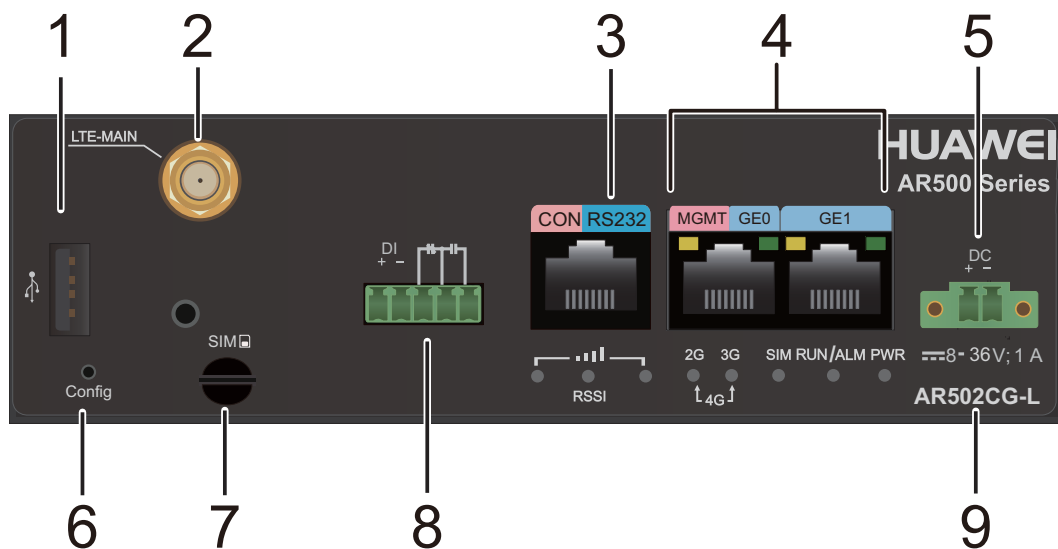
Table 3-3 Mapping between the AR502CG-L router and software versions

Device Model	Software Version
AR502CG-L	V200R008C30 and later versions

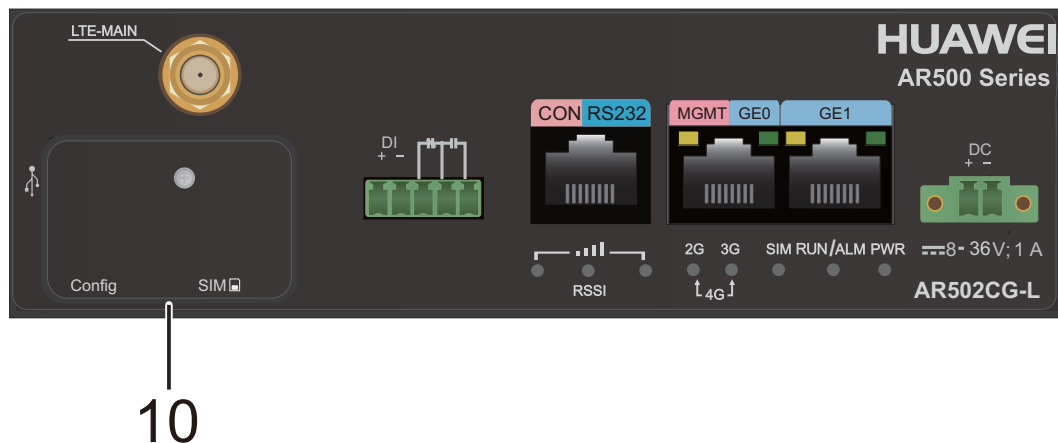
Appearance and Structure

[Figure 3-3](#) shows the appearance of the AR502CG-L router.

Figure 3-3 AR502CG-L appearance
 SIM card cover removed:



SIM card cover installed:



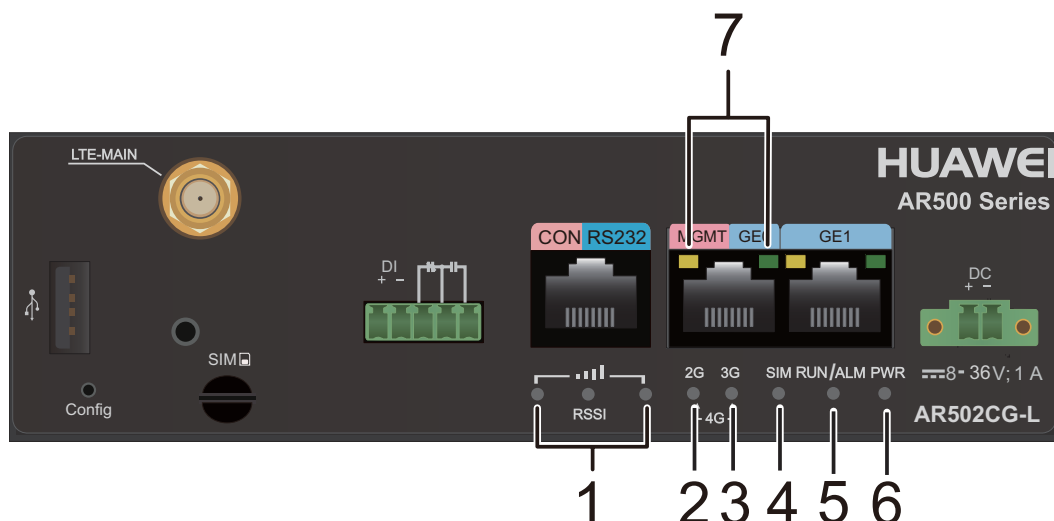
1	USB interface	2 WAN interface: LTE antenna interface NOTE <ul style="list-style-type: none"> • The router has a built-in antenna and can be configured with an external antenna (optional). The external antenna is connected to the LTE antenna interface. • You can choose the built-in or external antenna on the web management system.
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3	CON/RS232 interface	4	LAN interfaces: two GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● The GE LAN interface can be used as a WAN interface.
5	Power socket Applicable power modules: <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module. ● Self-provided power modules of customers: see Technical Specifications for the recommended power parameters 	6	Config button NOTE <p>The Config button is used to restore the factory settings and switch RS232 interfaces.</p> <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. <p>Restoring the factory settings will cause service interruption. Exercise caution when using this button.</p>
7	SIM card slot	8	DI/DO interface
9	Product model silkscreen	10	SIM card cover

Indicator Description

Figure 3-4 shows indicators on the AR502CG-L router.

Figure 3-4 Indicators on the AR502CG-L



Number	Indicator/ Button	Color	Description
1	RSSI NOTE There are three RSSI indicators arranged horizontally on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
2 and 3	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.
5	RUN/ALM	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Slow blinking green: The system is running properly. Fast blinking green: The system is loading or undergoing a USB-based deployment. Steady red: A system fault or USB-based deployment failure has occurred and requires manual intervention. Off: The system software is not running or is resetting.

Number	Indicator/ Button	Color	Description
6	PWR	Green	Steady on: The system power supply is normal. Off: The system power supply is abnormal or the router is not connected to a power source.
7	GE electrical interface indicators (GE0 to GE1)	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received.

Interface Description

CON/RS232 interface

The CON/RS232 interface can connect to an operation terminal for onsite configuration.

[Table 3-4](#) lists CON/RS232 interface attributes.

Table 3-4 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 3-5](#) lists GE electrical interface attributes.

Table 3-5 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-6](#) lists USB interface attributes.

Table 3-6 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

LTE antenna interface

LTE antenna interfaces of a router include a MAIN interface (for the primary antenna). The primary antenna transmits and receives LTE signals. [Table 3-7](#) lists LTE antenna interface attributes.

Table 3-7 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

DI/DO interface

A DI interface receives alarm input (9.6-60 V), and a DO interface sends output signals to instruct an external device to perform required actions. [Table 3-8](#) lists the DI/DO interface attributes.

Table 3-8 DI/DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	<ul style="list-style-type: none"> ● DI: 9.6-60 V DC power input ● DO: Boolean value (short circuit and open circuit)

Heat Dissipation

The AR502CG-L router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-9 lists technical specifications of the AR502CG-L router.

Table 3-9 AR502CG-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.38 kg (0.84 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
Recommended specifications for self-provided power modules	<ul style="list-style-type: none"> ● Rated output power: ≥ 8 W ● Operating temperature: -25°C to +70°C (-13°F to +158°F) ● Surge protection: 6 kV in both the differential mode and common mode, 1.2/50 us pulse
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: two GE electrical interfaces, which can be used as WAN interfaces WAN interfaces: one LTE antenna interface Industrial service interface: CON/RS232 interface and DI/DO interface

Item	Specification
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +60°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
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.)
Part number	50010363

3.2.2 AR502EG-L

Version Mapping

Table 3-10 describes the mapping between the AR502EG-L router and software versions.

Table 3-10 Mapping between the AR502EG-L router and software versions

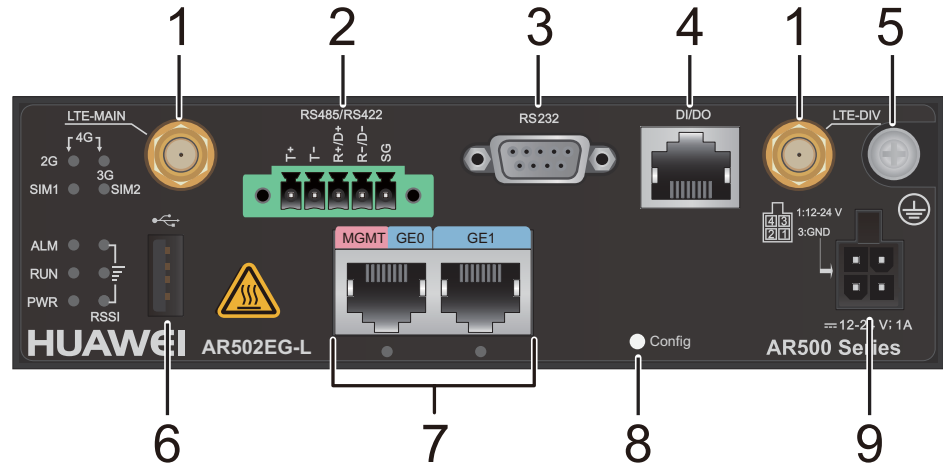
Device Model	Software Version
AR502EG-L	V200R008C20 and later versions

Appearance and Structure

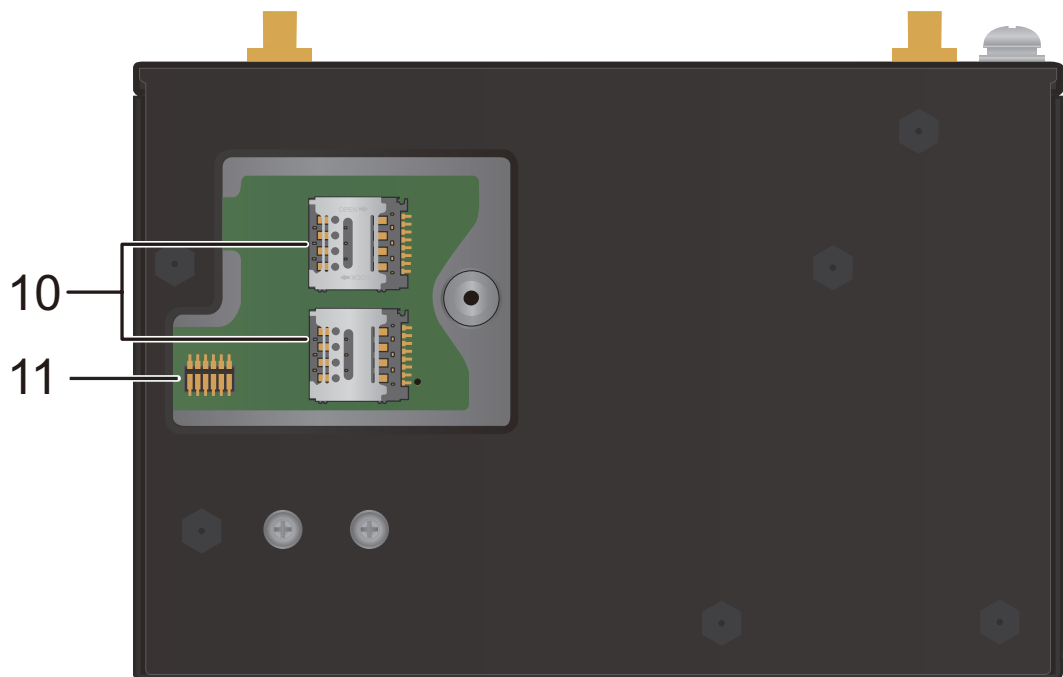
Figure 3-5 shows the appearance of the AR502EG-L router.

Figure 3-5 AR502EG-L appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



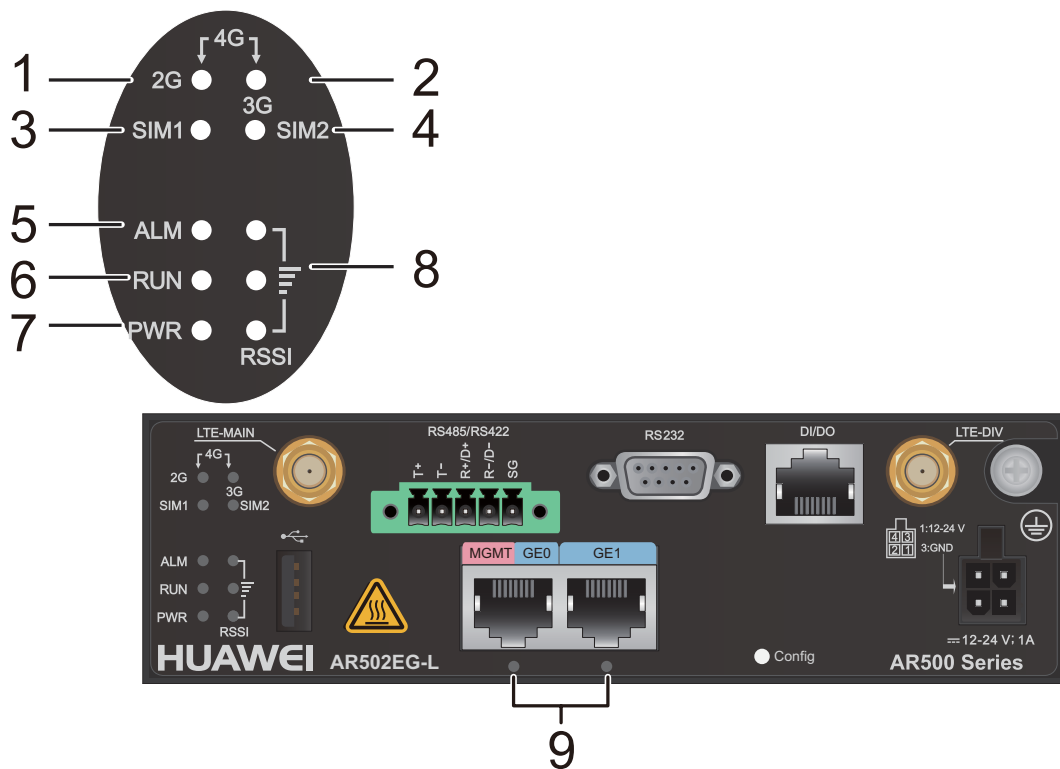
1	WAN interfaces: two LTE antenna interfaces	2	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
3	RS232 interface	4	DI/DO interface

5	<p>Ground point</p> <p>NOTE</p> <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>	6	<p>USB interface</p>
7	<p>LAN interfaces: two GE electrical interfaces</p> <p>NOTE</p> <p>GE0 is a management interface and is used to upgrade the router.</p>	8	<p>Config button</p> <p>NOTE</p> <p>The Config button is used to restore the factory settings and switch RS232 interfaces.</p> <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. <p>Restoring the factory settings will cause service interruption. Exercise caution when using this button.</p>
9	<p>Power socket</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation. 	10	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.
11	<p>DIP switch</p> <p>NOTE</p> <p>By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.</p>	-	-

Indicator Description

Figure 3-6 shows indicators on the AR502EG-L.

Figure 3-6 Indicators on the AR502EG-L



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady red: The system fails to be upgraded or configured using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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 restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	GE electrical interface indicators (GE0 to GE1)	Green	Steady on: A link has been established on the corresponding GE interface. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.

Interface Description

RS232 interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-11](#) lists RS232 interface attributes.

Table 3-11 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)

Attribute	Description
Cable type	6.7 RS232 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 3-12](#) lists GE electrical interface attributes.

Table 3-12 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-13](#) lists USB interface attributes.

Table 3-13 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-14](#) lists LTE antenna interface attributes.

Table 3-14 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

DI/DO interface

The DI/DO interfaces are used to detect voltage level signals or deliver instructions. [Table 3-15](#) lists DI/DO interface attributes.

Table 3-15 DI/DO interface attributes

Attribute	Description
Connector type	RJ45
Signal type	LVTTL voltage level, digital input/output
Cable type	6.2.7 RJ-45 Connector (DI/DO)

RS485/RS422 interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-16](#) lists RS485/RS422 interface attributes.

Table 3-16 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

Heat Dissipation

The AR502EG-L router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-17](#) lists technical specifications of the AR502EG-L router.

Table 3-17 AR502EG-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz

Item	Specification
Memory	512 MB, 256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: two GE electrical interfaces WAN interfaces: two LTE antenna interfaces Industrial service interfaces: RS485/RS422, RS232, and DI/DO interfaces
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
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.)
Part number	50010307 (256 MB) 50010435 (512 MB)

3.2.3 AR502EG-La

Version Mapping

Table 3-18 describes the mapping between the AR502EG-La router and software versions.

Table 3-18 Mapping between the AR502EG-La router and software versions

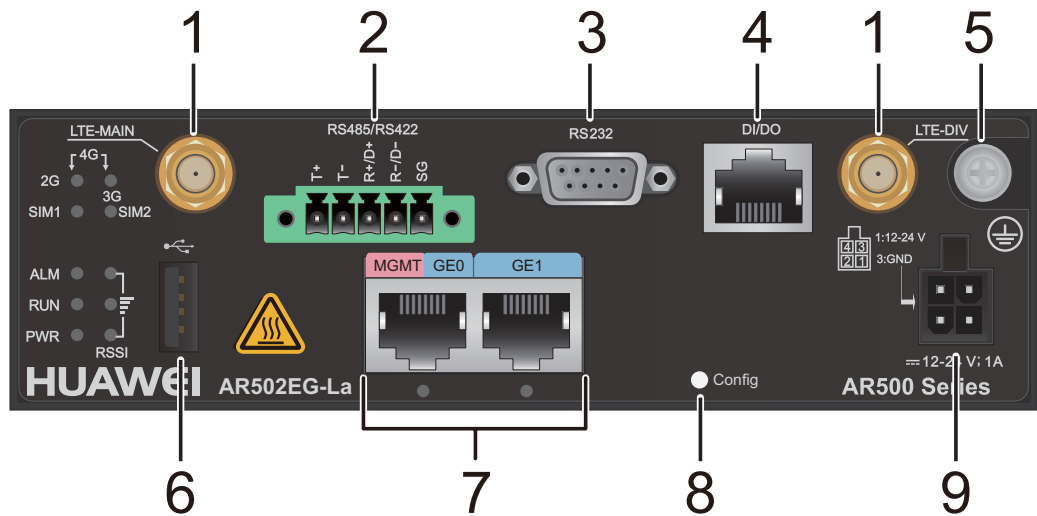
Device Model	Software Version
AR502EG-La	V200R009C00SPC301 and later versions

Appearance and Structure

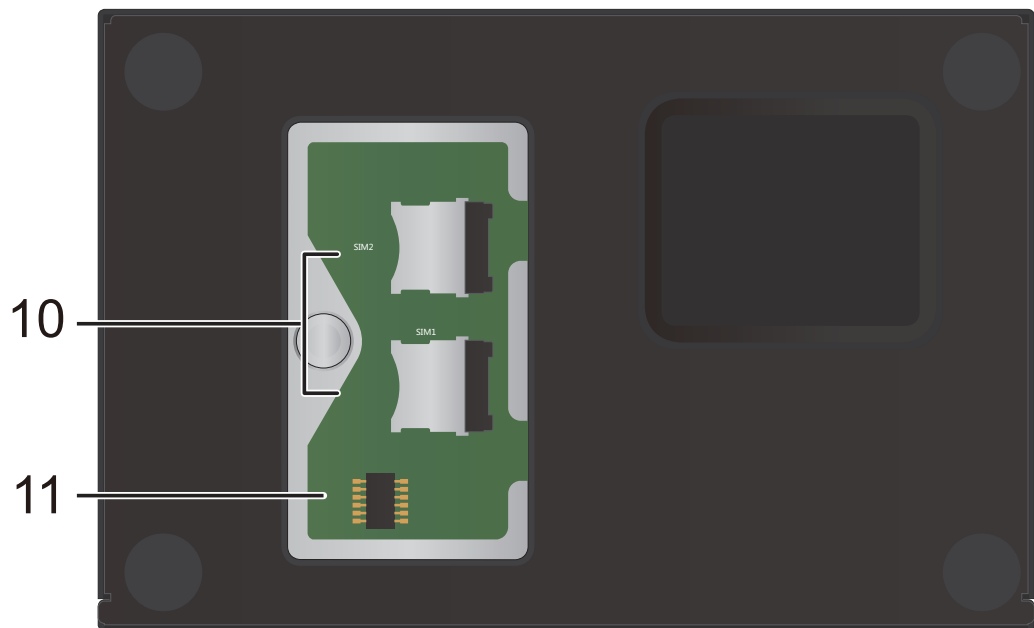
Figure 3-7 shows the appearance of the AR502EG-La router.

Figure 3-7 AR502EG-La appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



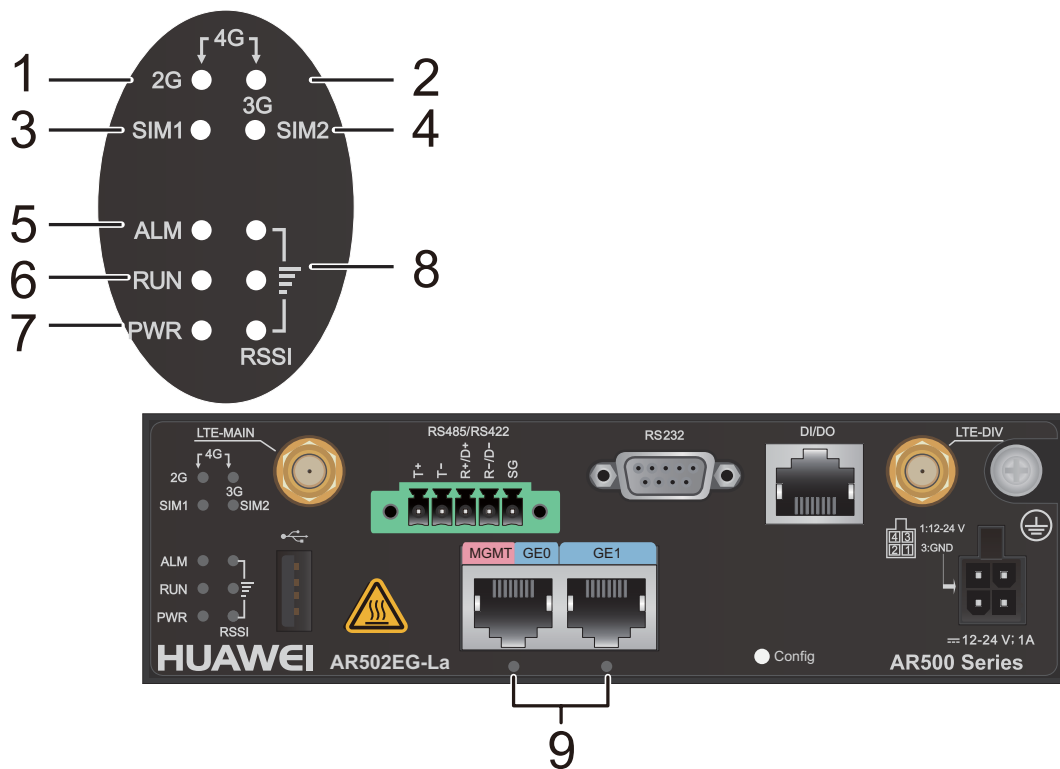
1	WAN interfaces: two LTE antenna interfaces	2	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
3	RS232 interface	4	DI/DO interface

5	<p>Ground point</p> <p>NOTE</p> <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>	6	<p>USB interface</p>
7	<p>LAN interfaces: two GE electrical interfaces</p> <p>NOTE</p> <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● The GE LAN interface can be used as a WAN interface. 	8	<p>Config button</p> <p>NOTE</p> <p>The Config button is used to restore the factory settings and switch RS232 interfaces.</p> <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. <p>Restoring the factory settings will cause service interruption. Exercise caution when using this button.</p>
9	<p>Power socket</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation. 	10	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.
11	<p>DIP switch</p> <p>NOTE</p> <p>By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.</p>	-	-

Indicator Description

Figure 3-8 shows indicators on the AR502EG-La.

Figure 3-8 Indicators on the AR502EG-La



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady on: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady red: The system fails to be upgraded or configured using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady on: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	GE electrical interface indicators (GE0 to GE1)	Green	Steady on: A link has been established on the corresponding GE interface. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.

Interface Description

RS232 interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-19](#) lists RS232 interface attributes.

Table 3-19 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)

Attribute	Description
Cable type	6.7 RS232 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 3-20](#) lists GE electrical interface attributes.

Table 3-20 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-21](#) lists USB interface attributes.

Table 3-21 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-22](#) lists LTE antenna interface attributes.

Table 3-22 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 2/4/12 ● WCDMA: bands 2/4/5
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Universal Mobile Telecommunications System (UMTS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

DI/DO interface

The DI/DO interfaces are used to detect voltage level signals or deliver instructions. [Table 3-23](#) lists DI/DO interface attributes.

Table 3-23 DI/DO interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Signal type	LVTTL voltage level, digital input/output
Cable type	6.2.7 RJ-45 Connector (DI/DO)

RS485/RS422 interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-24](#) lists RS485/RS422 interface attributes.

Table 3-24 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

Heat Dissipation

The AR502EG-La router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-25](#) lists technical specifications of the AR502EG-La router.

Table 3-25 AR502EG-La technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> Rated voltage: 12 V DC/24 V DC Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: two GE electrical interfaces WAN interfaces: two LTE antenna interfaces Industrial service interfaces: RS485/RS422, RS232, and DI/DO interfaces
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
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.)
Part number	50010442

3.2.4 AR502EG-Lj

Version Mapping

[Table 3-26](#) describes the mapping between the AR502EG-Lj router and software versions.

Table 3-26 Mapping between the AR502EG-Lj router and software versions

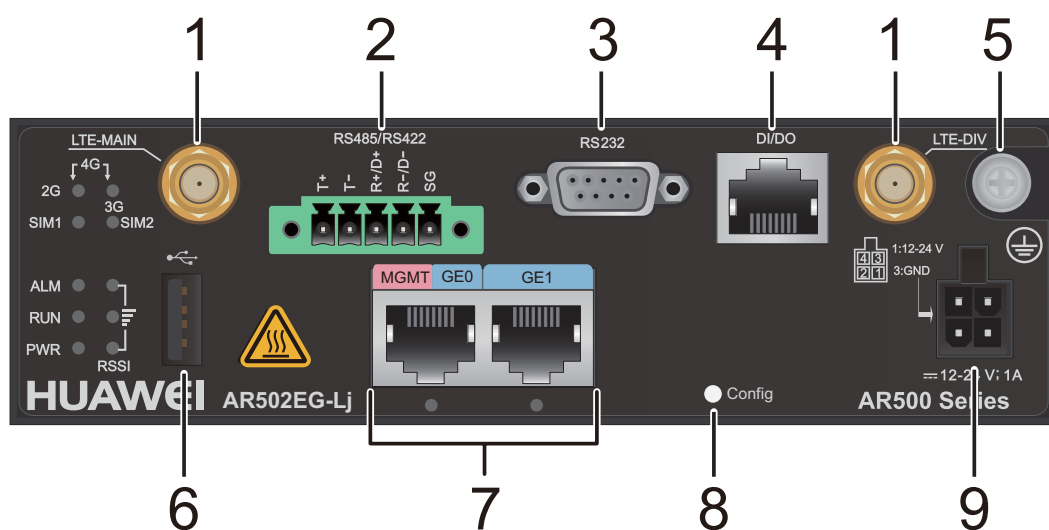
Device Model	Software Version
AR502EG-Lj	V200R010C10 and later versions

Appearance and Structure

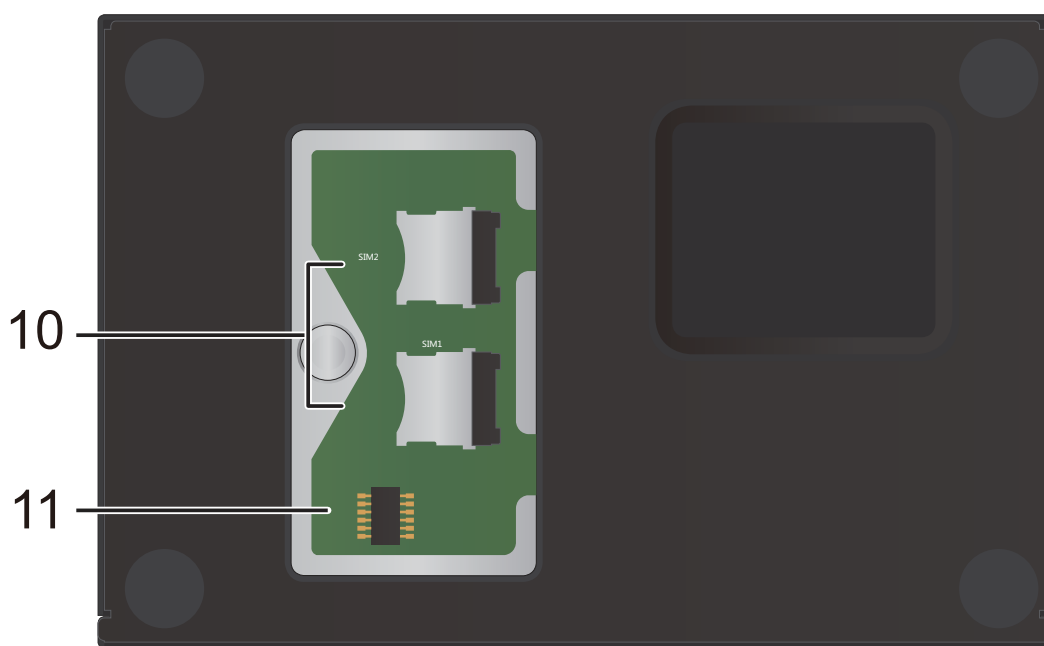
Figure 3-9 shows the appearance of the AR502EG-Lj router.

Figure 3-9 AR502EG-Lj appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:

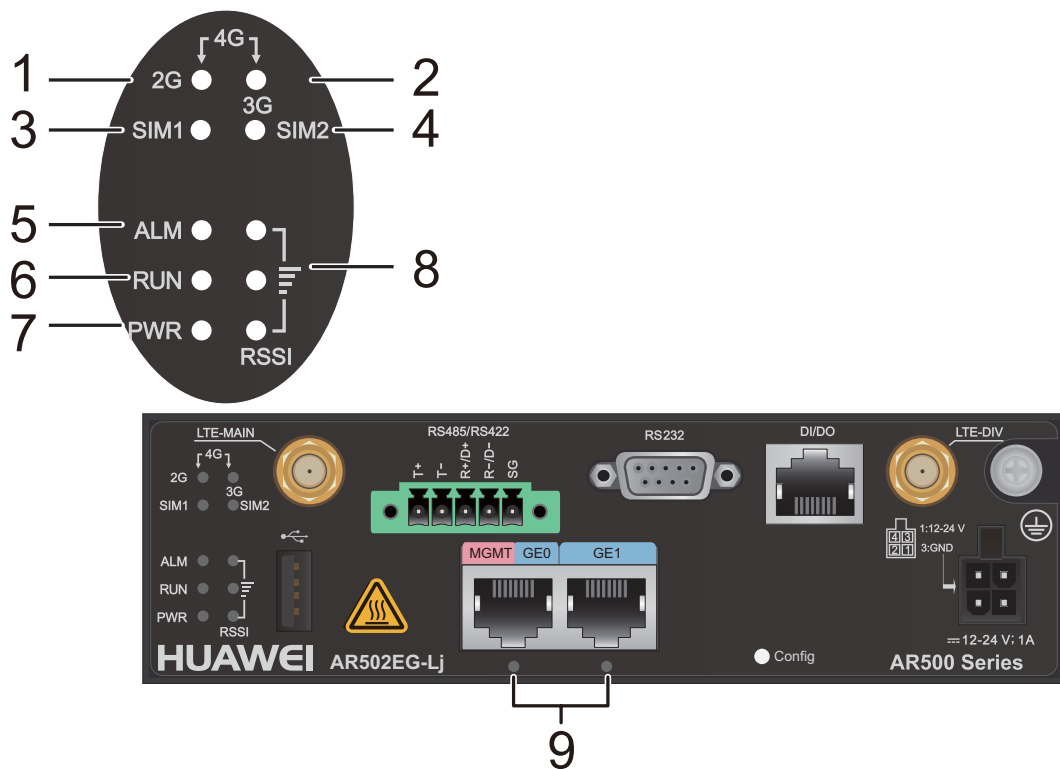


1	WAN interfaces: two LTE antenna interfaces	2	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
3	RS232 interface	4	DI/DO interface
5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	USB interface
7	LAN interfaces: two GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● The GE LAN interface can be used as a WAN interface. 	8	Config button NOTE The Config button is used to restore the factory settings and switch RS232 interfaces. <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. Restoring the factory settings will cause service interruption. Exercise caution when using this button.
9	Power socket NOTE <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation. 	10	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.
11	DIP switch NOTE By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.	-	-

Indicator Description

Figure 3-10 shows indicators on the AR502EG-Lj.

Figure 3-10 Indicators on the AR502EG-Lj



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady on: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady red: The system fails to be upgraded or configured using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady on: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger RSSI value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	GE electrical interface indicators (GE0 and GE1)	Green	Steady on: A link has been established on the corresponding GE interface. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.

Interface Description

RS232 Interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-27](#) lists RS232 interface attributes.

Table 3-27 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-28](#) lists GE electrical interface attributes.

Table 3-28 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-29](#) lists USB interface attributes.

Table 3-29 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-30](#) lists LTE antenna interface attributes.

Table 3-30 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: Band 1/3/19 ● WCDMA: Band 1/6/19
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● Universal Mobile Telecommunications System (UMTS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

DI/DO Interface

The DI/DO interfaces are used to detect voltage level signals or deliver instructions. [Table 3-31](#) lists DI/DO interface attributes.

Table 3-31 DI/DO interface attributes

Attribute	Description
Connector type	RJ45
Signal type	LVTTL voltage level, digital input/output
Cable type	6.2.7 RJ-45 Connector (DI/DO)

RS485/RS422 Interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-32](#) lists RS485/RS422 interface attributes.

Table 3-32 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

Heat Dissipation

The AR502EG-Lj router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-33](#) lists technical specifications of the AR502EG-Lj router.

Table 3-33 AR502EG-Lj technical specifications

Item	Description
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL

Item	Description
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: two GE electrical interfaces WAN interfaces: two LTE antenna interfaces Industrial service interfaces: RS485/RS422, RS232, and DI/DO interfaces
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
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.)
Part number	50010459

3.2.5 AR502EG-L-PD

Version Mapping

[Table 3-34](#) describes the mapping between the AR502EG-L-PD router and software versions.

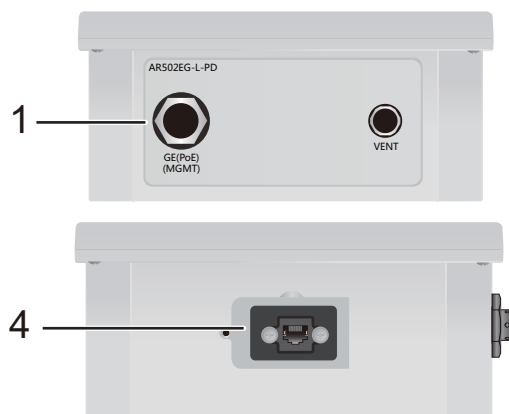
Table 3-34 Mapping between the AR502EG-L-PD router and software versions

Router Model	Software Version
AR502EG-L-PD	V200R009C00SPC301 and later versions

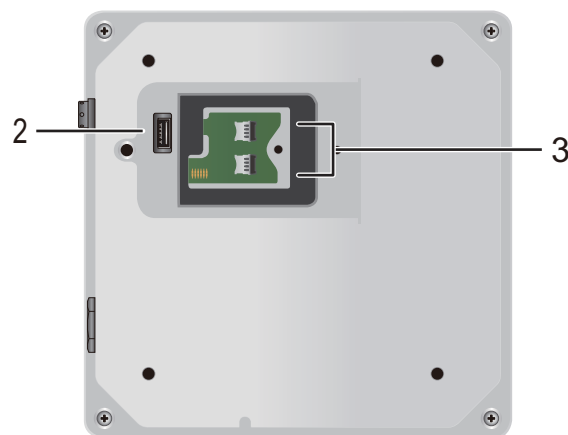
Appearance and Structure

[Figure 3-11](#) shows the appearance of the AR502EG-L-PD router.

Figure 3-11 AR502EG-L-PD appearance



Removing the SIM card cover from the bottom:



1	GE(PoE) electrical interface NOTE This interface is the management network interface of the router and is used to upgrade the router.	2	USB interface NOTE This interface is used for USB-based deployment.
3	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	4	RS232 interface NOTE This interface is used to maintain the router.

Interface Description

GE(PoE) electrical interface

A GE(PoE) electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives service traffic at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. A PoE device is connected through this interface to power the router. [Table 3-35](#) lists GE/PoE electrical interface attributes.

Table 3-35 GE(PoE) electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
PoE	Power supply: in compliance with IEEE 802.3af and 802.3at
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-36](#) lists USB interface attributes.

Table 3-36 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

RS232 interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-37](#) lists RS232 interface attributes.

Table 3-37 RS232 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	6.4 Serial Cable (CON/RS232)

Heat Dissipation

The AR502EG-L-PD router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-38](#) lists technical specifications of the AR502EG-L-PD router.

Table 3-38 AR502EG-L-PD technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	230 mm x 230 mm x 105 mm (9.06 in. x 9.06 in. x 4.13 in.)
Weight	2.13 kg (4.70 lb)
Power consumption	
Maximum power consumption	10 W
Power specifications	
Input power	PoE: in compliance with IEEE 802.3af and 802.3at
Interface density	
Management interface	1
USB interface	1

Item	Specification
Service interface	LAN interface: one GE electrical interface
Environment parameters	
Operating temperature	Operating at maximum LTE transmit power: -40°C to +55°C (-40°F to +131°F)
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.)
BOM number	50010422

3.2.6 AR502EGW-L

Version Mapping

Table 3-39 describes the mapping between the AR502EGW-L router and software versions.

Table 3-39 Mapping between the AR502EGW-L router and software versions

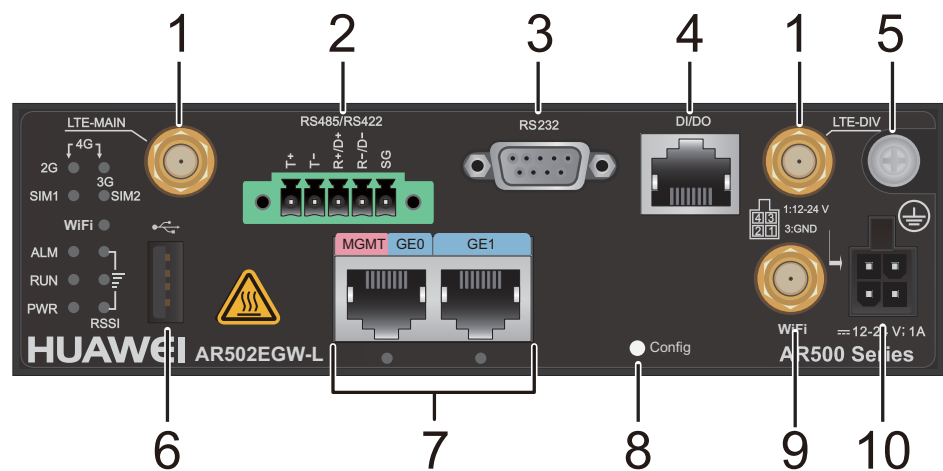
Device Model	Software Version
AR502EGW-L	V200R008C20 and later versions

Appearance and Structure

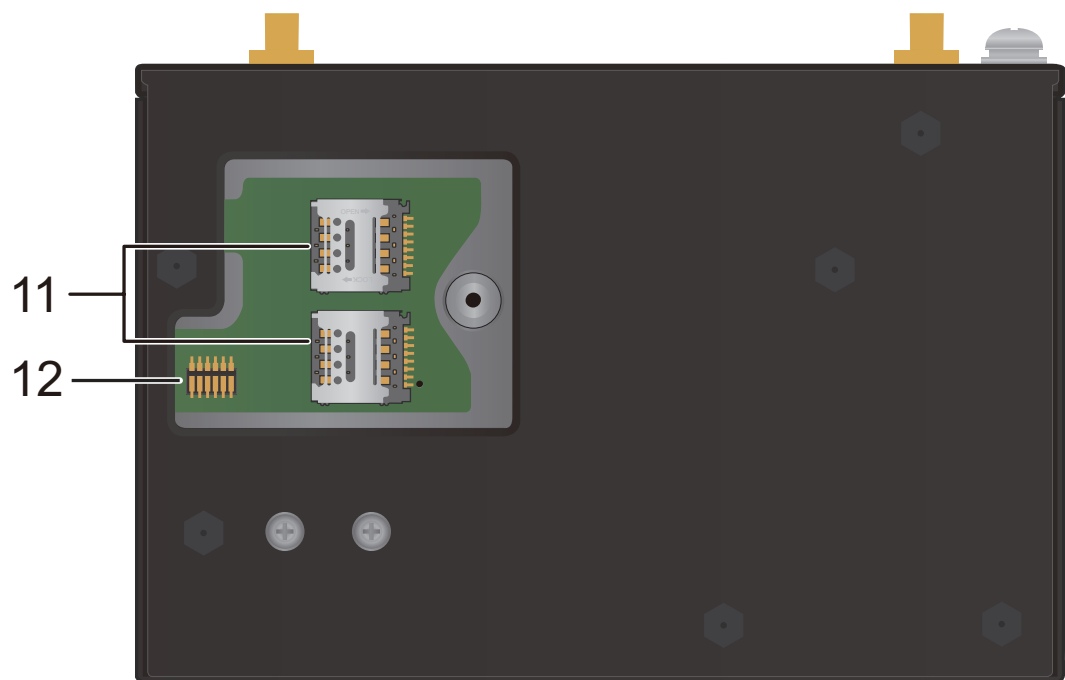
Figure 3-12 shows the appearance of the AR502EGW-L router.

Figure 3-12 AR502EGW-L appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



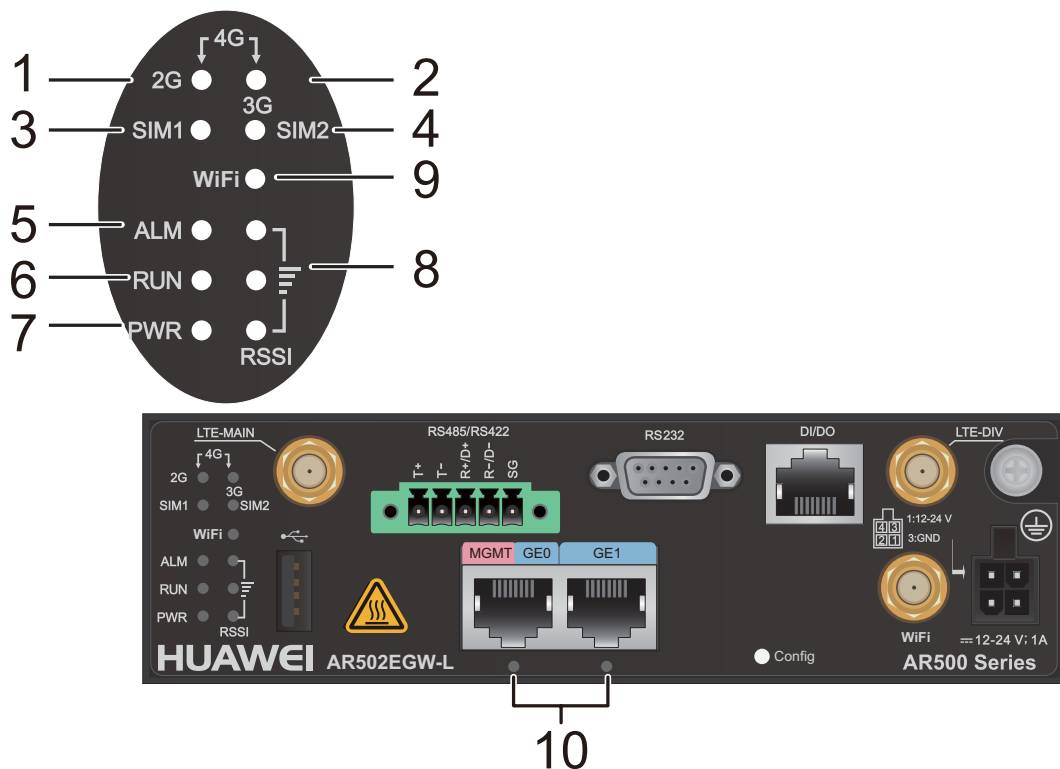
1	WAN interfaces: two LTE antenna interfaces	2	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
3	RS232 interface	4	DI/DO interface

5	<p>Ground point</p> <p>NOTE</p> <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>	6	<p>USB interface</p>
7	<p>LAN interfaces: two GE electrical interfaces</p> <p>NOTE</p> <p>GE0 is a management interface used to upgrade the router.</p>	8	<p>Config button</p> <p>NOTE</p> <p>The Config button is used to restore the factory settings and switch RS232 interfaces.</p> <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. <p>Restoring the factory settings will cause service interruption. Exercise caution when using this button.</p>
9	<p>LAN interface: Wi-Fi antenna interface</p>	10	<p>Power socket</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation.
11	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	12	<p>DIP switch</p> <p>NOTE</p> <p>By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.</p>

Indicator Description

Figure 3-13 shows indicators on the AR502EGW-L.

Figure 3-13 Indicators on the AR502EGW-L



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady red: The system fails to be upgraded or configured using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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 restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	WiFi	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	GE electrical interface indicators (GE0 to GE1)	Green	Steady on: A link has been established on the corresponding GE interface. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.

Interface Description

RS232 interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-40](#) lists RS232 interface attributes.

Table 3-40 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-41](#) lists GE electrical interface attributes.

Table 3-41 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-42](#) lists USB interface attributes.

Table 3-42 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-43](#) lists LTE antenna interface attributes.

Table 3-43 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-44](#) lists Wi-Fi antenna interface attributes.

Table 3-44 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	150 Mbit/s
MIMO mode (Tx x Rx)	1x1
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Ordering Information

DI/DO interface

The DI/DO interfaces are used to detect voltage level signals or deliver instructions. [Table 3-45](#) lists DI/DO interface attributes.

Table 3-45 DI/DO interface attributes

Attribute	Description
Connector type	RJ45
Signal type	LVTTL voltage level, digital input/output
Cable type	6.2.7 RJ-45 Connector (DI/DO)

RS485/RS422 interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-46](#) lists RS485/RS422 interface attributes.

Table 3-46 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422

Attribute	Description
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

Heat Dissipation

The AR502EGW-L router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-47 lists technical specifications of the AR502EGW-L router.

Table 3-47 AR502EGW-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB, 256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL
Interface density	
Management interfaces	1

Item	Specification
USB interfaces	1
Service interfaces	LAN interfaces: two GE electrical interfaces and one Wi-Fi antenna interface WAN interfaces: two LTE antenna interfaces Industrial service interfaces: RS485/RS422, RS232, and DI/DO interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-25°C to +70°C (-13°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)
Part number	50010309 (256 MB) 50010436 (512 MB)

3.2.7 AR502EGRb-L

Version Mapping

Table 3-48 describes the mapping between the AR502EGRb-L router and software versions.

Table 3-48 Mapping between the AR502EGRb-L router and software versions

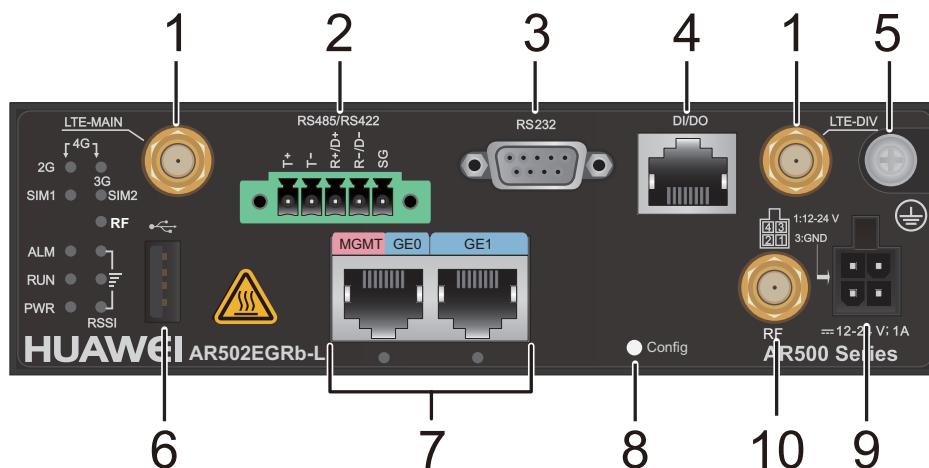
Router Model	Software Version
AR502EGRb-L	V200R008C50 and later versions

Appearance and Structure

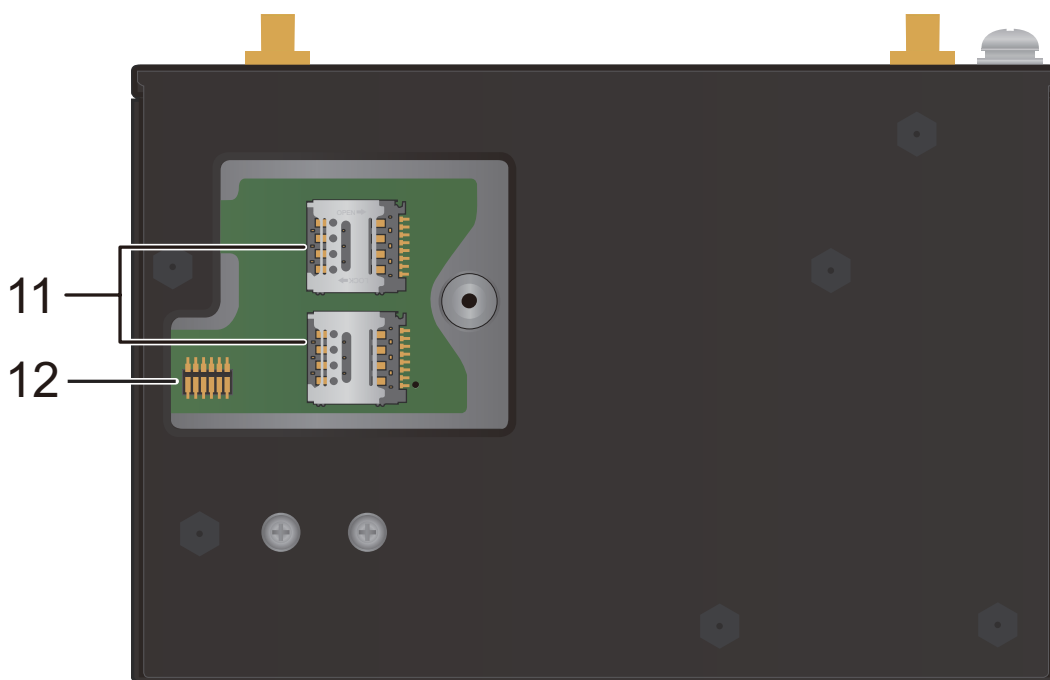
Figure 3-14 shows the appearance of the AR502EGRb-L router.

Figure 3-14 AR502EGRb-L appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



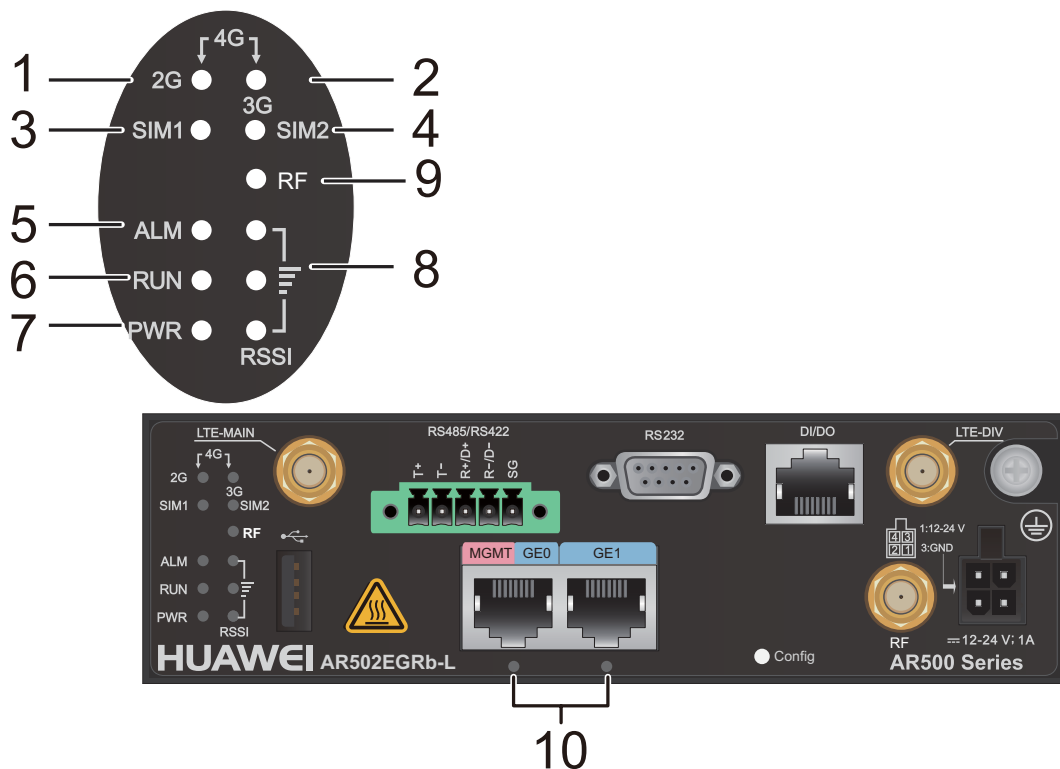
1	WAN interfaces: two LTE antenna interfaces	2	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
3	RS232 interface	4	DI/DO interface

5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	USB interface
7	LAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	8	Config button NOTE The Config button is used to restore the factory settings and switch RS232 interfaces. <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. Restoring the factory settings will cause service interruption. Exercise caution when using this button.
9	Power socket NOTE <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation. 	10	RF antenna interface
11	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	12	DIP switch NOTE By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.

Indicator Description

Figure 3-15 shows indicators on the AR502EGRb-L.

Figure 3-15 Indicators on the AR502EGRb-L



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: <ul style="list-style-type: none"> Steady red: The system failed to be upgraded or configured using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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 restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	RF indicator	Green	Steady on: A radio frequency link has been established. Blinking: Data is being transmitted over the radio frequency link. Off: No radio frequency link is established or no data is being transmitted on the link.
10	GE electrical interface indicators (GE0 to GE1)	Green	Steady on: A link has been established on the corresponding GE interface. Blinking: Data is being transmitted or received on the corresponding GE interface. Off: No link is established or no data is being transmitted or received on the corresponding GE interface.

Interface Description

RS232 interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-49](#) lists RS232 interface attributes.

Table 3-49 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-50](#) lists GE electrical interface attributes.

Table 3-50 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-51](#) lists USB interface attributes.

Table 3-51 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-52](#) lists LTE antenna interface attributes.

Table 3-52 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s

Attribute	Description
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

DI/DO interface

The DI/DO interfaces are used to detect voltage level signals or deliver instructions. [Table 3-53](#) lists DI/DO interface attributes.

Table 3-53 DI/DO interface attributes

Attribute	Description
Connector type	RJ45
Signal type	LVTTL voltage level, digital input/output
Cable type	6.2.7 RJ-45 Connector (DI/DO)

RS485/RS422 interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-54](#) lists RS485/RS422 interface attributes.

Table 3-54 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

RF antenna interface

An RF antenna interface connects to an RF antenna to receive and transmit wireless data. [Table 3-55](#) lists the attributes of an RF antenna interface.

Table 3-55 RF antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	IEEE802.15.4g
Frequency bands supported	915 MHz
Rate	2.4 Mbit/s
Cable type	6.3.7 915 MHz RF Remote Antenna

Heat Dissipation

The AR502EGRb-L router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-56](#) lists technical specifications of the AR502EGRb-L router.

Table 3-56 AR502EGRb-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL
Interface density	
Management interfaces	1

Item	Specification
USB interfaces	1
Service interfaces	LAN interfaces: two GE electrical interfaces and one RF antenna interface WAN interfaces: two LTE antenna interfaces Industrial service interfaces: RS485/RS422, RS232, and DI/DO interfaces
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
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.)
Part number	50010374

3.2.8 AR502EGRC-Lc

Version Mapping

[Table 3-57](#) describes the mapping between the AR502EGRC-Lc router and software versions.

Table 3-57 Mapping between the AR502EGRC-Lc router and software versions

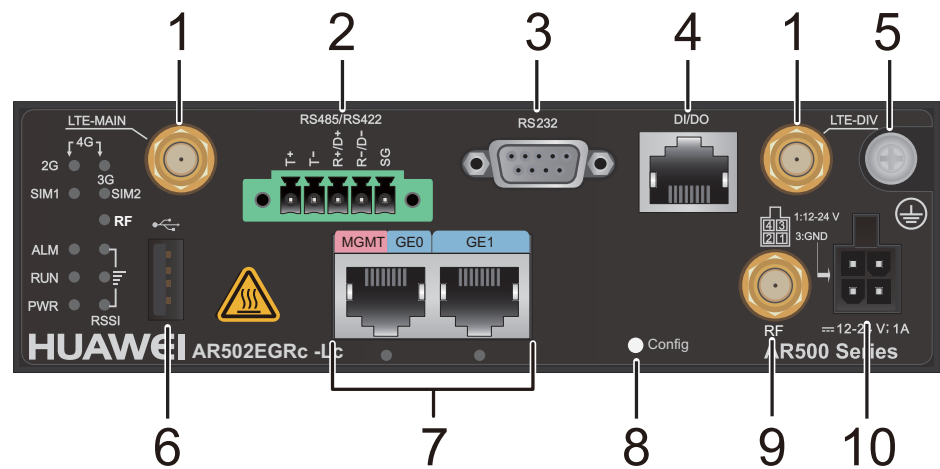
Router Model	Software Version
AR502EGRC-Lc	V200R008C50 and later versions

Appearance and Structure

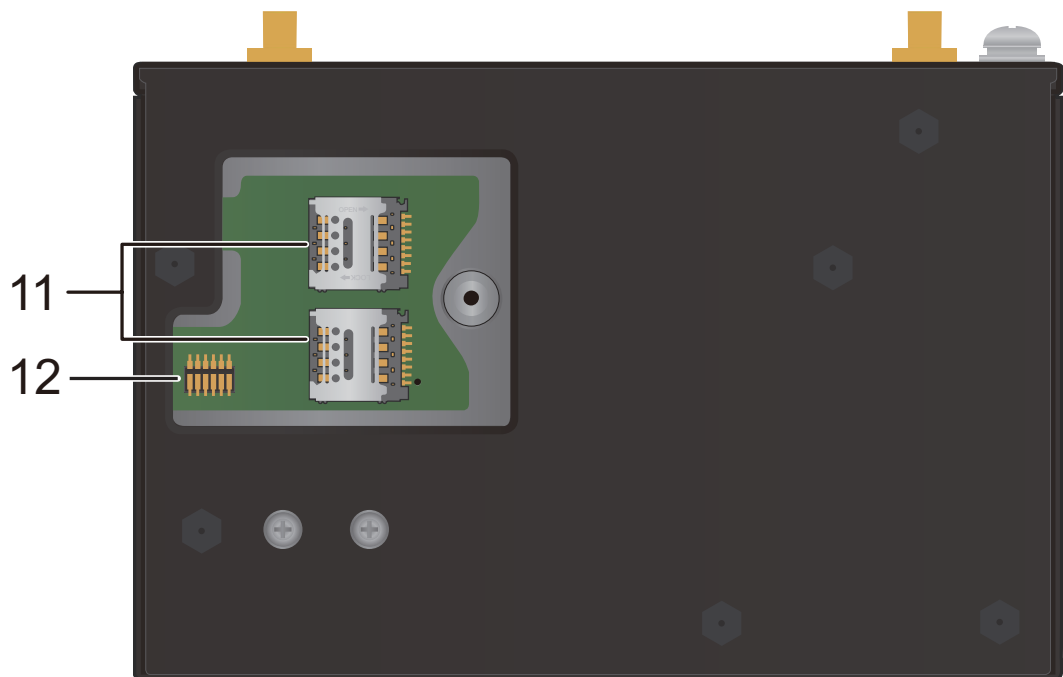
[Figure 3-16](#) shows the appearance of the AR502EGRC-Lc router.

Figure 3-16 AR502EGRc-Lc appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



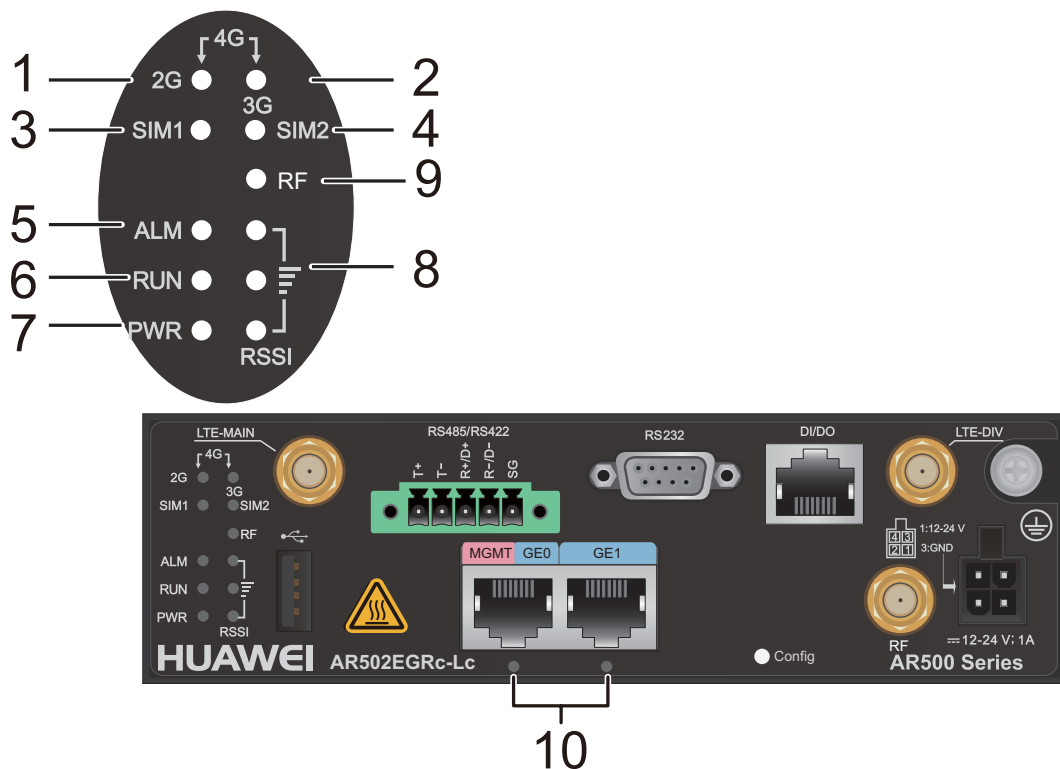
1	WAN interfaces: two LTE antenna interfaces	2	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
3	RS232 interface	4	DI/DO interface

5	<p>Ground point</p> <p>NOTE</p> <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>	6	<p>USB interface</p>
7	<p>LAN interfaces: two GE electrical interfaces</p> <p>NOTE</p> <p>GE0 is a management interface and is used to upgrade the router.</p>	8	<p>Config button</p> <p>NOTE</p> <p>The Config button is used to restore the factory settings and switch RS232 interfaces.</p> <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. <p>Restoring the factory settings will cause service interruption. Exercise caution when using this button.</p>
9	<p>RF antenna interface</p>	10	<p>Power socket</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation.
11	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	12	<p>DIP switch</p> <p>NOTE</p> <p>By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.</p>

Indicator Description

Figure 3-17 shows indicators on the AR502EGRc-Lc.

Figure 3-17 Indicators on the AR502EGRc-Lc



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: <ul style="list-style-type: none"> Steady red: The system failed to be upgraded or configured using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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 restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	RF indicator	Green	Steady on: A radio frequency link has been established. Blinking: Data is being transmitted over the radio frequency link. Off: No radio frequency link is established or no data is being transmitted on the link.
10	GE electrical interface indicators (GE0 to GE1)	Green	Steady on: A link has been established on the corresponding GE interface. Blinking: Data is being transmitted on the corresponding GE interface. Off: No link is established on the interface or no data is being transmitted on the link.

Interface Description

RS232 interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-58](#) lists RS232 interface attributes.

Table 3-58 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female

Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-59](#) lists GE electrical interface attributes.

Table 3-59 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-60](#) lists USB interface attributes.

Table 3-60 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-61](#) lists LTE antenna interface attributes.

Table 3-61 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none">● LTE FDD: bands 1/3/8● LTE TDD: bands 38/39/40/41● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9● TD-SCDMA: bands 34/39● GSM/GPRS/EDGE: 900/1800 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 236.8 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
Network protocols	LTE, WCDMA, GSM
Cable type	6.3.2 LTE Whip Antenna 6.3.3 LTE Indoor Remote Antenna 6.3.4 Outdoor LTE Antenna

DI/DO interface

The DI/DO interfaces are used to detect voltage level signals or deliver instructions. [Table 3-62](#) lists DI/DO interface attributes.

Table 3-62 DI/DO interface attributes

Attribute	Description
Connector type	RJ45
Signal type	LVTTL voltage level, digital input/output
Cable type	6.2.7 RJ-45 Connector (DI/DO)

RS485/RS422 interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-63](#) lists RS485/RS422 interface attributes.

Table 3-63 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none">● RS485: half-duplex● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

RF antenna interface

An RF antenna interface connects to an RF antenna to receive and transmit wireless data. [Table 3-64](#) lists the attributes of an RF antenna interface.

Table 3-64 RF antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	IEEE802.15.4g
Frequency bands supported	433 MHz
Rate	2.4 Mbit/s
Cable type	6.3.6 433 MHz RF Remote Antenna

Heat Dissipation

The AR502EGRc-Lc router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-65](#) lists technical specifications of the AR502EGRc-Lc router.

Table 3-65 AR502EGRc-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Real Time Clock	Supported
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: two GE electrical interfaces and one RF antenna interface WAN interfaces: two LTE antenna interfaces Industrial service interfaces: RS485/RS422, RS232, and DI/DO interfaces
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing

Item	Specification
Operating altitude	< 5000 m (16404 ft.)
Part number	50010308

3.2.9 AR502EGRz-Lc

Version Mapping

Table 3-66 describes the mapping between the AR502EGRz-Lc router and software versions.

Table 3-66 Mapping between the AR502EGRz-Lc router and software versions

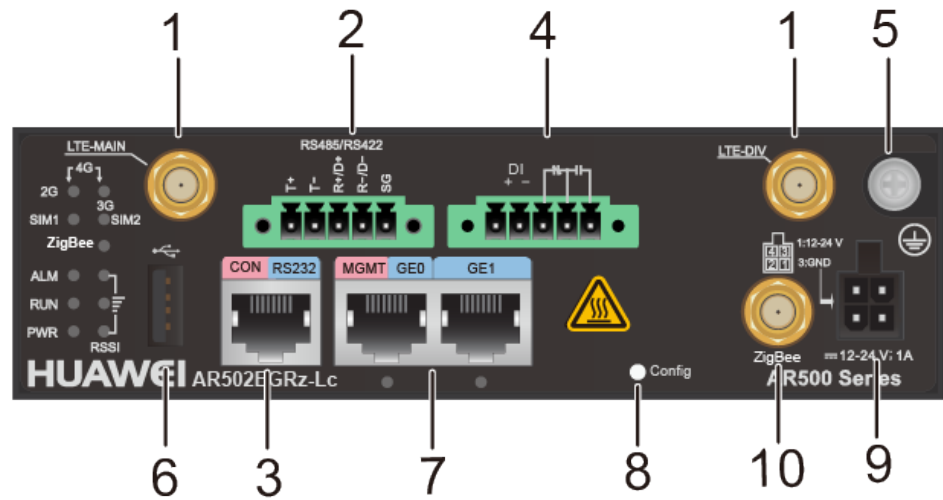
Device Model	Software Version
AR502EGRz-Lc	V200R009C00 and later versions

Appearance and Structure

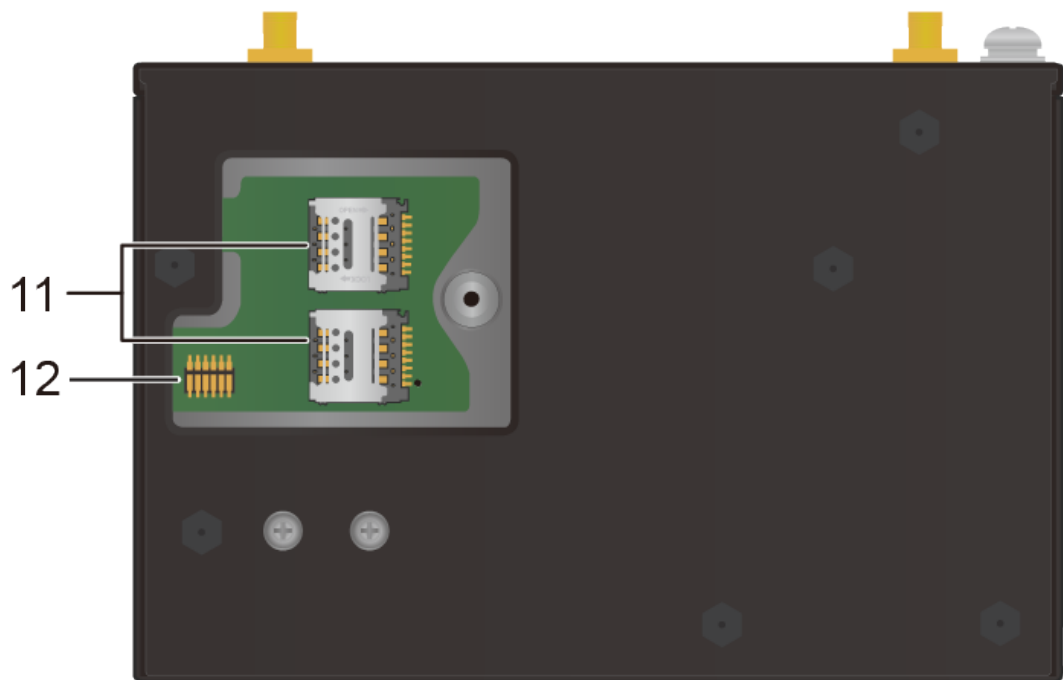
Figure 3-18 shows the appearance of the AR502EGRz-Lc router.

Figure 3-18 AR502EGRz-Lc appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



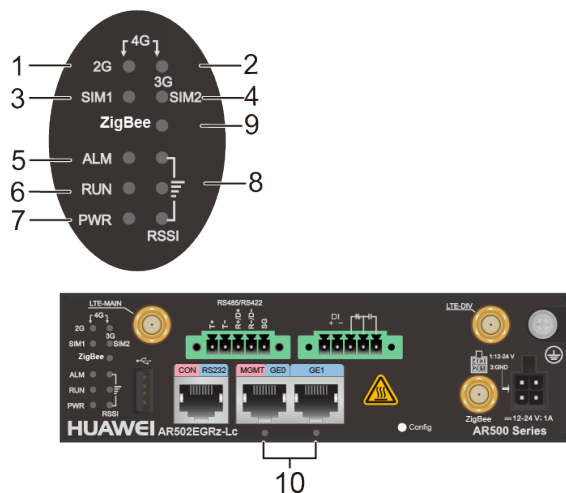
1	WAN interfaces: two LTE antenna interfaces	2	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
3	CON/RS232 interface	4	DI/DO interface

5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	USB interface
7	LAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	8	Config button NOTE The Config button is used to restore the factory settings and switch RS232 interfaces. <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. Restoring the factory settings will cause service interruption. Exercise caution when using this button.
9	Power socket NOTE <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation. 	10	ZigBee antenna interface
11	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	12	DIP switch NOTE By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.

Indicator Description

Figure 3-19 shows indicators on the AR502EGRz-Lc.

Figure 3-19 Indicators on the AR502EGRz-Lc



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady red: The system fails to be upgraded or configured using the USB flash drive.

Number	Indicator/ Button	Color	Description
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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 restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	<p>One indicator on: The signal strength is low.</p> <p>Two indicators on: The signal strength is medium.</p> <p>Three indicators on: The signal strength is high.</p> <p>Three indicators off: No signal is available.</p>

Number	Indicator/ Button	Color	Description
9	ZigBee	Green	Steady on: A link has been established. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.
10	GE electrical interface indicators (GE0 to GE1)	Green	Steady on: A link has been established. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.

Interface Description

RS232 interface

The CON/RS232 interface can connect to an operation terminal for onsite configuration. [Table 3-67](#) lists CON/RS232 interface attributes.

Table 3-67 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 3-68](#) lists GE electrical interface attributes.

Table 3-68 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-69](#) lists USB interface attributes.

Table 3-69 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-70](#) lists LTE antenna interface attributes.

Table 3-70 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/3/8 ● LTE TDD: bands 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 236.8 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
Network protocols	LTE, WCDMA, GSM
Cable type	6.3.2 LTE Whip Antenna 6.3.3 LTE Indoor Remote Antenna 6.3.4 Outdoor LTE Antenna

DI/DO interface

A DI interface receives alarm input (9.6-60 V), and a DO interface sends output signals to instruct an external device to perform required actions. [Table 3-71](#) lists DI/DO interface attributes.

Table 3-71 DI/DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	<ul style="list-style-type: none"> ● DI: 9.6-60 V DC power input ● DO: Boolean value (short circuit and open circuit)

RS485/RS422 interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-72](#) lists RS485/RS422 interface attributes.

Table 3-72 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

ZigBee antenna interface

A ZigBee antenna interface connects to a ZigBee antenna to transmit and receive wireless data. [Table 3-73](#) lists ZigBee antenna interface attributes.

Table 3-73 ZigBee antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	IEEE 802.15.4
Frequency bands supported	2.4 GHz
Rate	250 kbit/s

Attribute	Description
Cable type	6.3.14 Wi-Fi Strip-Shaped Remote Antenna 6.3.10 Wi-Fi Antenna

Heat Dissipation

The AR502EGRz-Lc router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-74](#) lists technical specifications of the AR502EGRz-Lc router.

Table 3-74 AR502EGRz-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
Interface density	
Management interfaces	1
USB interfaces	1

Item	Specification
Service interfaces	LAN interfaces: two GE electrical interfaces and one ZigBee antenna interface WAN interfaces: two LTE antenna interfaces Industrial service interfaces: RS485/RS422, RS232, and DI/DO interfaces
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
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.)
Part number	50010399

3.2.10 AR502EGRz-L

Version Mapping

Table 3-75 describes the mapping between the AR502EGRz-L router and software versions.

Table 3-75 Mapping between the AR502EGRz-L router and software versions

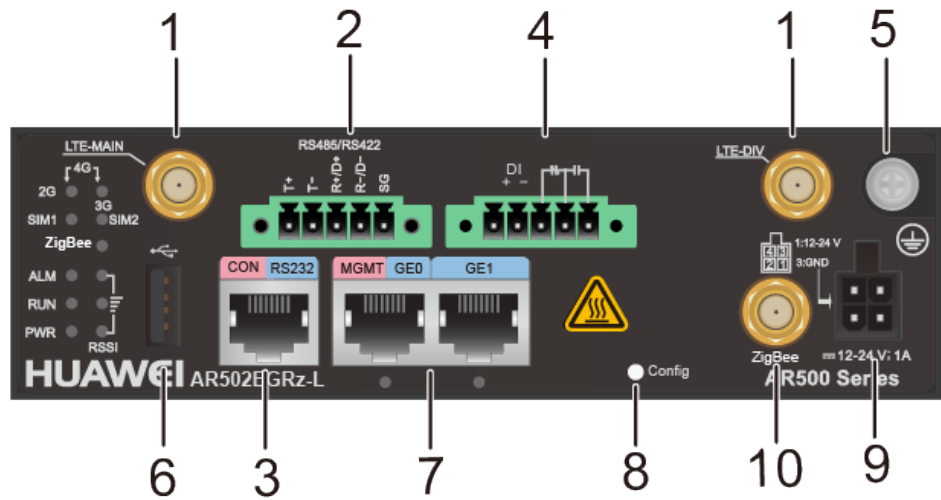
Device Model	Software Version
AR502EGRz-L	V200R009C00 and later versions

Appearance and Structure

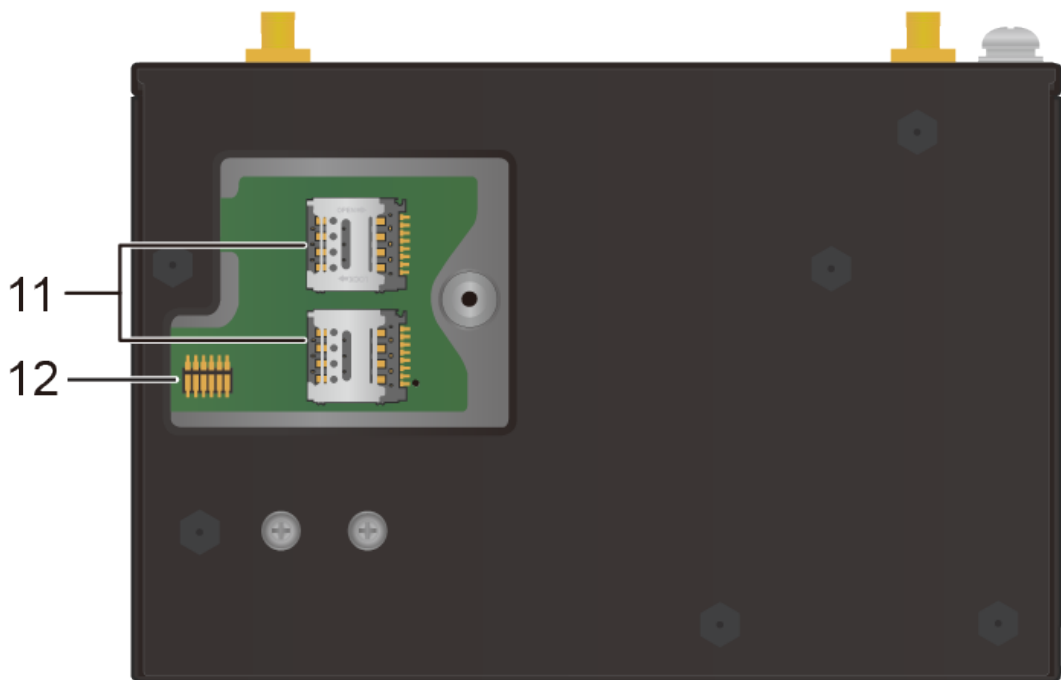
Figure 3-20 shows the appearance of the AR502EGRz-L router.

Figure 3-20 AR502EGRz-L appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



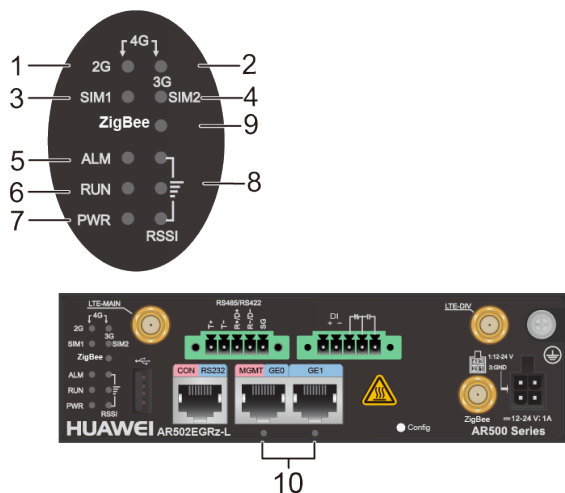
1	WAN interfaces: two LTE antenna interfaces	2	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
3	CON/RS232 interface	4	DI/DO interface

5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	USB interface
7	LAN interfaces: two GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	8	Config button NOTE The Config button is used to restore the factory settings and switch RS232 interfaces. <ul style="list-style-type: none"> ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. Restoring the factory settings will cause service interruption. Exercise caution when using this button.
9	Power socket NOTE <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation. 	10	ZigBee antenna interface
11	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	12	DIP switch NOTE By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.

Indicator Description

Figure 3-21 shows indicators on the AR502EGRz-L.

Figure 3-21 Indicators on the AR502EGRz-L



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	<p>2G indicator steady on: The wireless module is working in 2G mode.</p> <p>3G indicator steady on: The wireless module is working in 3G mode.</p> <p>2G and 3G indicators steady on: The wireless module is working in 4G mode.</p> <p>2G and 3G indicators off: The wireless module does not work normally or is unregistered.</p>
3 and 4	SIM	Green	<p>Steady on: A SIM card is installed in the slot and is working normally.</p> <p>Off: No SIM card is installed in the slot.</p>
5	ALM	Red	<ul style="list-style-type: none"> When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> Steady red: A system fault has occurred and requires manual intervention. Off: The system is running properly. When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: <ul style="list-style-type: none"> Steady red: The system fails to be upgraded or configured using the USB flash drive.

Number	Indicator/ Button	Color	Description
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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 restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	<p>One indicator on: The signal strength is low.</p> <p>Two indicators on: The signal strength is medium.</p> <p>Three indicators on: The signal strength is high.</p> <p>Three indicators off: No signal is available.</p>

Number	Indicator/ Button	Color	Description
9	ZigBee	Green	Steady on: A link has been established. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.
10	GE electrical interface indicators (GE0 to GE1)	Green	Steady on: A link has been established. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.

Interface Description

RS232 interface

The CON/RS232 interface can connect to an operation terminal for onsite configuration. [Table 3-76](#) lists CON/RS232 interface attributes.

Table 3-76 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 3-77](#) lists GE electrical interface attributes.

Table 3-77 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-78](#) lists USB interface attributes.

Table 3-78 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-79](#) lists LTE antenna interface attributes.

Table 3-79 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

DI/DO interface

A DI interface receives alarm input (9.6-60 V), and a DO interface sends output signals to instruct an external device to perform required actions. [Table 3-80](#) lists DI/DO interface attributes.

Table 3-80 DI/DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	<ul style="list-style-type: none"> ● DI: 9.6-60 V DC power input ● DO: Boolean value (short circuit and open circuit)

RS485/RS422 interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-81](#) lists RS485/RS422 interface attributes.

Table 3-81 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

ZigBee antenna interface

A ZigBee antenna interface connects to a ZigBee antenna to transmit and receive wireless data. [Table 3-82](#) lists ZigBee antenna interface attributes.

Table 3-82 ZigBee antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	IEEE 802.15.4
Frequency bands supported	2.4 GHz
Rate	250 kbit/s
Cable type	6.3.14 Wi-Fi Strip-Shaped Remote Antenna 6.3.10 Wi-Fi Antenna

Heat Dissipation

The AR502EGRz-L router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-83](#) lists technical specifications of the AR502EGRz-L router.

Table 3-83 AR502EGRz-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: two GE electrical interfaces and one ZigBee antenna interface WAN interfaces: two LTE antenna interfaces Industrial service interfaces: RS485/RS422, RS232, and DI/DO interfaces
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
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.)
Part number	50010398

3.2.11 AR502G-L-D-H

Version Mapping

Table 3-84 lists the mapping between the AR502G-L-D-H router and software versions.

Table 3-84 Mapping between the AR502G-L-D-H router and software versions

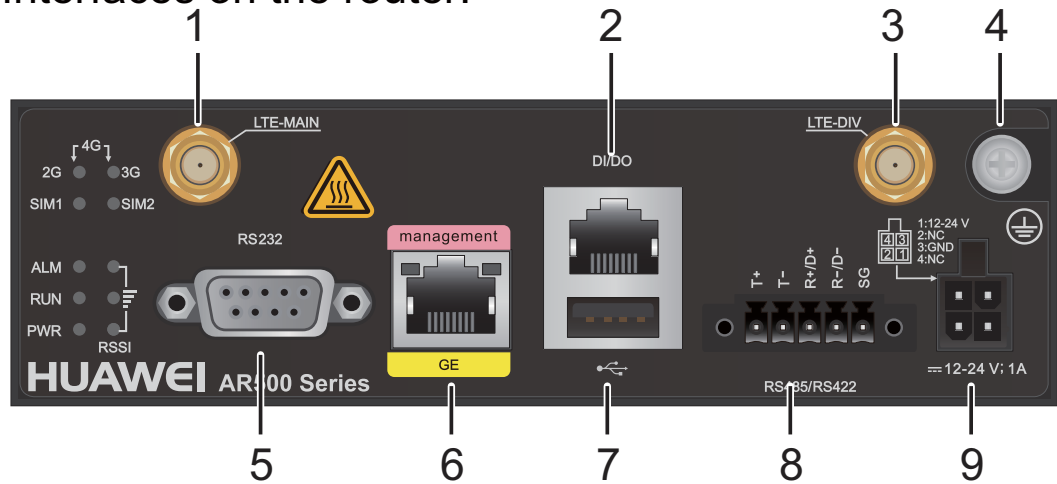
Router Model	Software Version
AR502G-L-D-H	V200R005C80, V200R007C00

Appearance and Structure

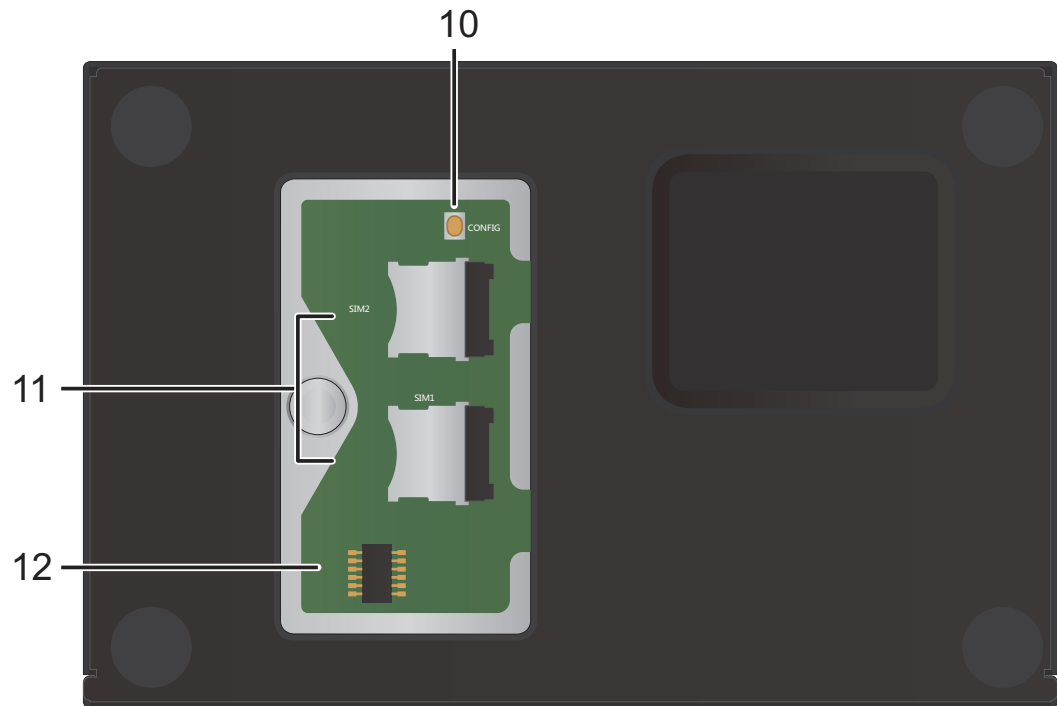
Figure 3-22 shows the panel of the AR502G-L-D-H router.

Figure 3-22 AR502G-L-D-H panel

Interfaces on the router:



Removing the SIM card cover from the bottom:



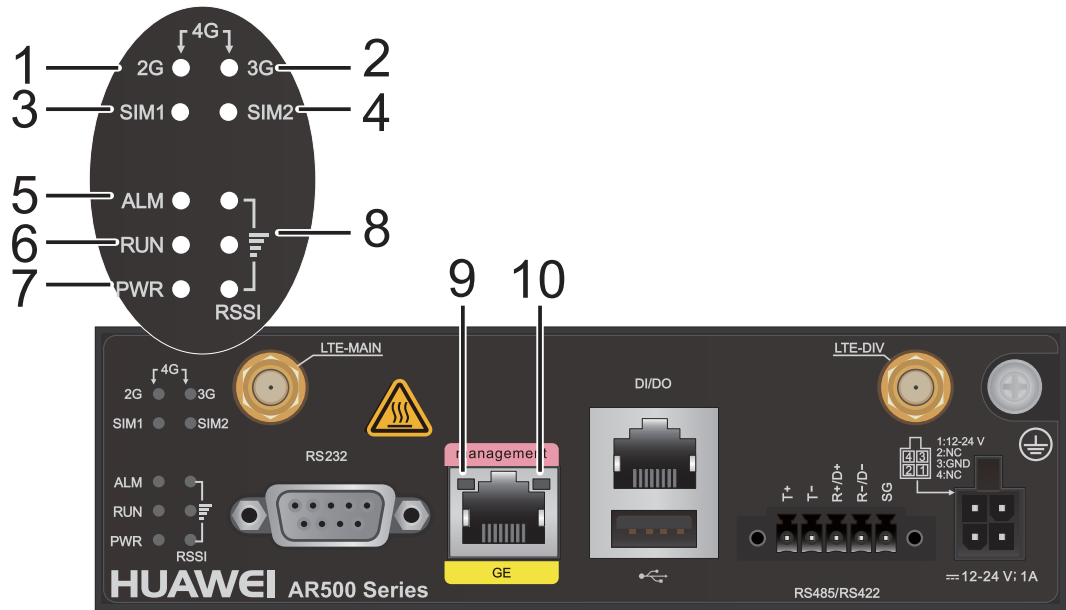
1	Primary LTE diversity antenna interface	2	DI/DO Interface
3	LTE diversity antenna interface	4	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.

5	RS232 interface	6	WAN interface: GE electrical interface NOTE GE is a management interface and is used to upgrade the router.
7	USB interface	8	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.
9	Power socket NOTE <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation. 	10	CONFIG NOTE This button is used to restore factory settings. Push the button to power on the router and hold down the button for at least 10 seconds (until the ALM indicator turns red) to restore the factory settings. Restoring the factory settings will cause service interruption. Exercise caution when deciding to use this button.
11	SIM card slot NOTE <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default primary card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	12	DIP switch NOTE By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.

Indicator Description

Figure 3-23 shows the indicators on the AR502G-L-D-H router.

Figure 3-23 Indicators on the AR502G-L-D-H



Number	Indicator/ Button	Color	Description
1 and 2	Signal indicators	Green	<ul style="list-style-type: none"> ● 2G indicator steady on: The wireless module is working in 2G mode. ● 3G indicator steady on: The wireless module is working in 3G mode. ● 2G and 3G indicators steady on: The wireless module is working in 4G mode. ● 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	<ul style="list-style-type: none"> ● Steady on: A SIM card is installed in the corresponding slot and is working normally. ● Off: No SIM card is installed in the slot.
5	ALM	Red	<ul style="list-style-type: none"> ● Steady on: A system fault has occurred and requires manual intervention. ● Off: The system is running properly.
6	RUN	Green	<ul style="list-style-type: none"> ● Slow blinking: The system is running properly. ● Fast blinking: The system is powering on or restarting. ● Off: The system software is not running or is resetting.

Number	Indicator/ Button	Color	Description
7	PWR	Green	<ul style="list-style-type: none"> ● Steady on: The router is receiving power normally from the power source connected to the power socket. ● Off: The router cannot be powered by the power source connected to the power socket, or the power socket is not connected to any power source.
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	<ul style="list-style-type: none"> ● One indicator on: The signal strength is low. ● Two indicators on: The signal strength is medium. ● Three indicators on: The signal strength is high. ● Three indicators off: No signal is available.
9	GE interface indicator	Orange	<ul style="list-style-type: none"> ● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
10	GE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The GE interface is in Link Up state. ● Off: The GE interface is in Link Down state.

Interface Description

RS232 Interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-85](#) lists RS232 interface attributes.

Table 3-85 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-86](#) lists GE electrical interface attributes.

Table 3-86 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-87](#) lists USB interface attributes.

Table 3-87 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

LTE Antenna Interface

LTE antenna interfaces of a router include a primary antenna interface and a diversity antenna interface, which work simultaneously. The primary antenna interface receives and transmits LTE signals. The diversity antenna interface supports 2x2 MIMO and helps improve quality of received LTE signals. [Table 3-88](#) lists LTE antenna interface attributes.

Table 3-88 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance	<ul style="list-style-type: none">● GSM/GPRS/EDGE: bands 2/3/5/8● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/8● LTE FDD: band 3

Attribute	Description
Maximum rate	<ul style="list-style-type: none"> ● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate of 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 236.8 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 ● 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 ● Frequency Division Duplex-Long Term Evolution (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Network protocol	LTE, WCDMA, GSM
Antenna type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.3 LTE Indoor Remote Antenna ● 6.3.4 Outdoor LTE Antenna

DI/DO Interface

The DI/DO interfaces are used to detect voltage level signals or deliver instructions. [Table 3-89](#) lists DI/DO interface attributes.

Table 3-89 DI/DO interface attributes

Attribute	Description
Connector type	RJ45
Signal type	LVTTL voltage level, digital input/output
Cable type	6.2.7 RJ-45 Connector (DI/DO)

RS485/RS422 Interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-90](#) lists RS485/RS422 interface attributes.

Table 3-90 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

Heat Dissipation

The AR502G-L-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-91](#) lists technical specifications of the AR502G-L-D-H router.

Table 3-91 AR502G-L-D-H technical specification

Item	Specification
System parameters	
Processor	HI6921
Memory	256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.9 in. x 3.9 in. x 1.7 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	

Item	Specification
DC power input	<ul style="list-style-type: none"> Rated voltage: 12 V DC/24 V DC Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL
Interface density	
Management interfaces	1
RS232 interfaces	1
USB 2.0 interfaces	1
DI/DO interfaces	1
RS485/RS422 Interfaces	1
LTE antenna interfaces	2
Service interfaces (standard configuration)	WAN interface: one GE electrical interface
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	<ul style="list-style-type: none"> Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F) <p>NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -35°C to +75°C (-31°F to +167°F) when it transmits LTE signals at the the highest transmit power.</p>
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)
Part number	50010259

3.2.12 AR502GR-L-D-H

Version Mapping

Table 3-92 lists the mapping between the AR502GR-L-D-H router and software versions.

Table 3-92 Mapping between the AR502GR-L-D-H router and software versions

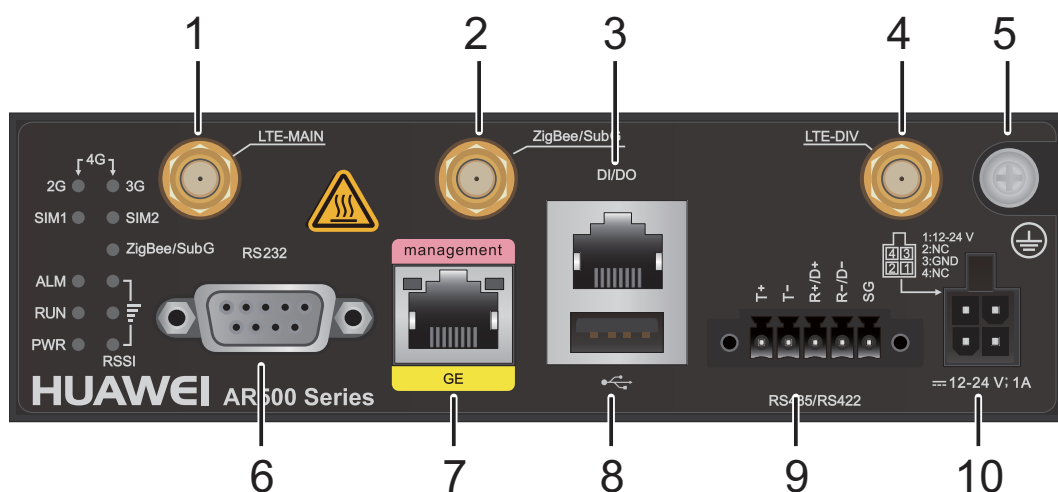
Router Model	Software Version
AR502GR-L-D-H	V200R007C00

Appearance and Structure

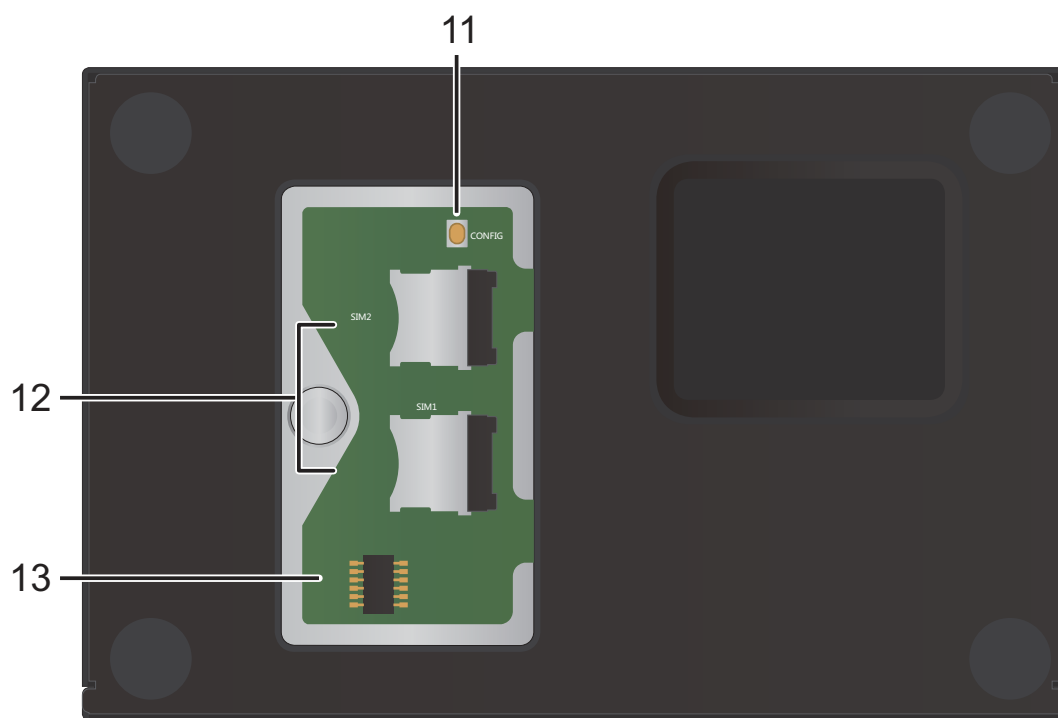
Figure 3-24 shows the panel of the AR502GR-L-D-H router.

Figure 3-24 AR502GR-L-D-H panel

Interfaces on the router:



Removing the SIM card cover from the bottom:

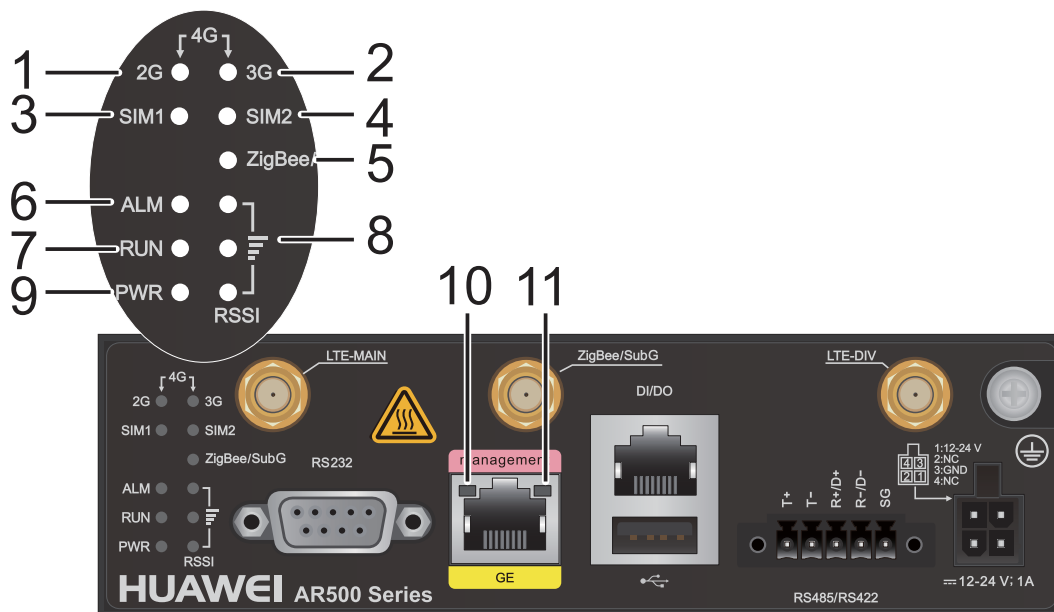


1	Primary LTE diversity antenna interface	2	ZigBee antenna interface/Sub-GHz antenna interface
3	DI/DO Interface	4	LTE diversity antenna interface
5	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	6	RS232 interface
7	WAN interface: GE electrical interface NOTE GE is a management interface and is used to upgrade the router.	8	USB interface
9	RS485/RS422 interface NOTE SG is the ground for RS485/RS422 signal isolation.	10	Power socket NOTE <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation.
11	CONFIG NOTE This button is used to restore factory settings. Push the button to power on the router and hold down the button for at least 10 seconds (until the ALM indicator turns red) to restore the factory settings. Restoring the factory settings will cause service interruption. Exercise caution when deciding to use this button.	12	SIM card slot NOTE <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default primary card. ● If only one SIM card needs to be installed, install it in slot SIM1.
13	DIP switch NOTE By default, the DIP switch is in RS485 state and works in half-duplex mode, with pull-up and pull-down resistance of 150 kohm and without 120 ohm matched load resistance.	-	-

Indicator Description

Figure 3-25 shows the indicators on the AR502GR-L-D-H router.

Figure 3-25 Indicators on the AR502GR-L-D-H



Number	Indicator/ Button	Color	Description
1 and 2	Signal indicators	Green	<ul style="list-style-type: none"> ● 2G indicator steady on: The wireless module is working in 2G mode. ● 3G indicator steady on: The wireless module is working in 3G mode. ● 2G and 3G indicators steady on: The wireless module is working in 4G mode. ● 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	<ul style="list-style-type: none"> ● Steady on: A SIM card is installed in the corresponding slot and is working normally. ● Off: No SIM card is installed in the slot.

Number	Indicator/ Button	Color	Description
5	ZigBee/ SubG	Green	<p>Steady on: The ZigBee network has been established successfully or the sub-GHz antenna interface has successfully connected to the peer end.</p> <p>Fast blinking: The ZigBee/sub-GHz antenna is transmitting and receiving data.</p> <p>Off:</p> <ul style="list-style-type: none"> ● The ZigBee/sub-GHz function is not configured or no ZigBee/sub-GHz antenna is connected to the antenna interface. ● The ZigBee/sub-GHz module does not work normally. ● The ZigBee network fails to be established or the sub-GHz antenna interface fails to connect to the peer end.
6	ALM	Red	<ul style="list-style-type: none"> ● Steady on: A system fault has occurred and requires manual intervention. ● Off: The system is running properly.
7	RUN	Green	<ul style="list-style-type: none"> ● Slow blinking: The system is running properly. ● Fast blinking: The system is powering on or restarting. ● Off: The system software is not running or is resetting.
8	<p>RSSI</p> <p>NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.</p>	Green	<ul style="list-style-type: none"> ● One indicator on: The signal strength is low. ● Two indicators on: The signal strength is medium. ● Three indicators on: The signal strength is high. ● Three indicators off: No signal is available.

Number	Indicator/ Button	Color	Description
9	PWR	Green	<ul style="list-style-type: none"> ● Steady on: The router is receiving power normally from the power source connected to the power socket. ● Off: The router cannot be powered by the power source connected to the power socket, or the power socket is not connected to any power source.
10	GE interface indicator	Orange	<ul style="list-style-type: none"> ● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
11	GE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The GE interface is in Link Up state. ● Off: The GE interface is in Link Down state.

Interface Description

RS232 Interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-93](#) lists RS232 interface attributes.

Table 3-93 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-94](#) lists GE electrical interface attributes.

Table 3-94 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-95](#) lists USB interface attributes.

Table 3-95 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

LTE Antenna Interface

LTE antenna interfaces of a router include a primary antenna interface and a diversity antenna interface, which work simultaneously. The primary antenna interface receives and transmits LTE signals. The diversity antenna interface supports 2x2 MIMO and helps improve quality of received LTE signals. [Table 3-96](#) lists LTE antenna interface attributes.

Table 3-96 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance	<ul style="list-style-type: none"> ● GSM/GPRS/EDGE: bands 2/3/5/8 ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/8 ● LTE FDD: band 3
Maximum rate	<ul style="list-style-type: none"> ● Global System for Mobile Communications circuit switched (GSM CS): uplink rate of 14.4 kbit/s and downlink rate of 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 236.8 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 ● 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 ● Frequency Division Duplex-Long Term Evolution (LTE FDD): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Network protocol	LTE, WCDMA, GSM
Antenna type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.3 LTE Indoor Remote Antenna ● 6.3.4 Outdoor LTE Antenna

DI/DO Interface

The DI/DO interfaces are used to detect voltage level signals or deliver instructions. [Table 3-97](#) lists DI/DO interface attributes.

Table 3-97 DI/DO interface attributes

Attribute	Description
Connector type	RJ45
Signal type	LVTTL voltage level, digital input/output
Cable type	6.2.7 RJ-45 Connector (DI/DO)

RS485/RS422 Interface

The RS485/RS422 interface can be connected to a meter or monitoring terminal. [Table 3-98](#) lists RS485/RS422 interface attributes.

Table 3-98 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	<ul style="list-style-type: none"> ● RS485: half-duplex ● RS422: full-duplex
Communication distance	1 km (> 19 kbit/s)
Baud rate	1200/2400/4800/9600/115200
Cable type	6.2.8 5-Pin Phoenix Connector (RS485/RS422)

ZigBee antenna interface

The ZigBee antenna interface connects to a ZigBee antenna to transmit and receive wireless data. [Table 3-99](#) lists ZigBee antenna interface attributes.

Table 3-99 ZigBee antenna interface attributes

Attribute	Description
Connector type	RP-SMA female connector
Standards compliance	IEEE802.15.4
Frequency bands supported	2.4 GHz
Rate	250 kbit/s

Attribute	Description
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Antenna type	<ul style="list-style-type: none"> ● 6.3.8 ZigBee Whip Antenna ● 6.3.9 Outdoor ZigBee Antenna

Sub-GHz antenna interface

The sub-GHz antenna interface connects to a sub-GHz antenna to receive and transmit wireless data. [Table 3-100](#) lists sub-GHz antenna interface attributes.

Table 3-100 Sub-GHz antenna interface attributes

Attribute	Description
Connector type	RP-SMA female connector
Standards compliance	ETSI EN 300 220-1
Frequency bands supported	170 MHz
Rate	4.8 kbit/s
Services provided	Data transmission
Antenna type	6.3.22 sub-GHz Antenna

Heat Dissipation

The AR502GR-L-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-101](#) lists technical specifications of the AR502GR-L-D-H router.

Table 3-101 AR502GR-L-D-H technical specification

Item	Specification
System parameters	
Processor	HI6921
Memory	256 MB
Flash	512 MB
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.9 in. x 3.9 in. x 1.7 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> Rated voltage: 12 V DC/24 V DC Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL
Interface density	
Management interfaces	1
RS232 interfaces	1
USB 2.0 interfaces	1
DI/DO interfaces	1
RS485/RS422 interfaces	1
LTE antenna interfaces	2
ZigBee/Sub-GHz antenna interfaces	1
Service interfaces (standard configuration)	WAN interface: one GE electrical interface
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	<ul style="list-style-type: none"> Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F) <p>NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -35°C to +75°C (-31°F to +167°F) when it transmits LTE signals at the the highest transmit power.</p>
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)
Part number	50010276

3.2.13 AR503EDGW-Lc

Version Mapping

Table 3-102 lists the mapping between the AR503EDGW-Lc router and software versions.

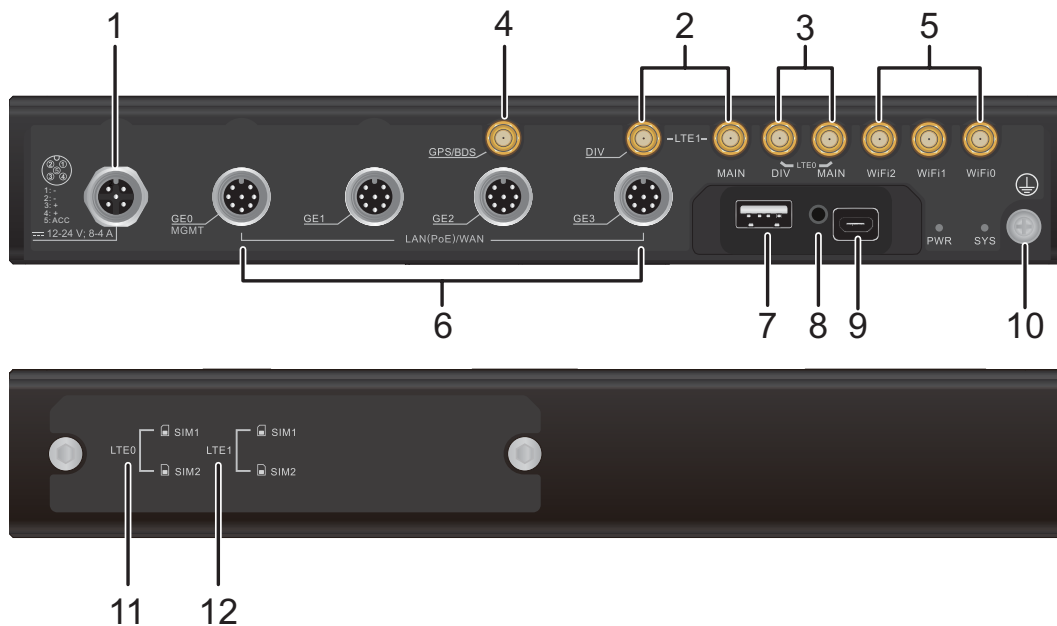
Table 3-102 Mapping between the AR503EDGW-Lc router and software versions

Router Model	Software Version
AR503EDGW-Lc	V200R008C20 and later versions

Appearance and Structure

Figure 3-26 shows the appearance of the AR503EDGW-Lc router.

Figure 3-26 AR503EDGW-Lc appearance



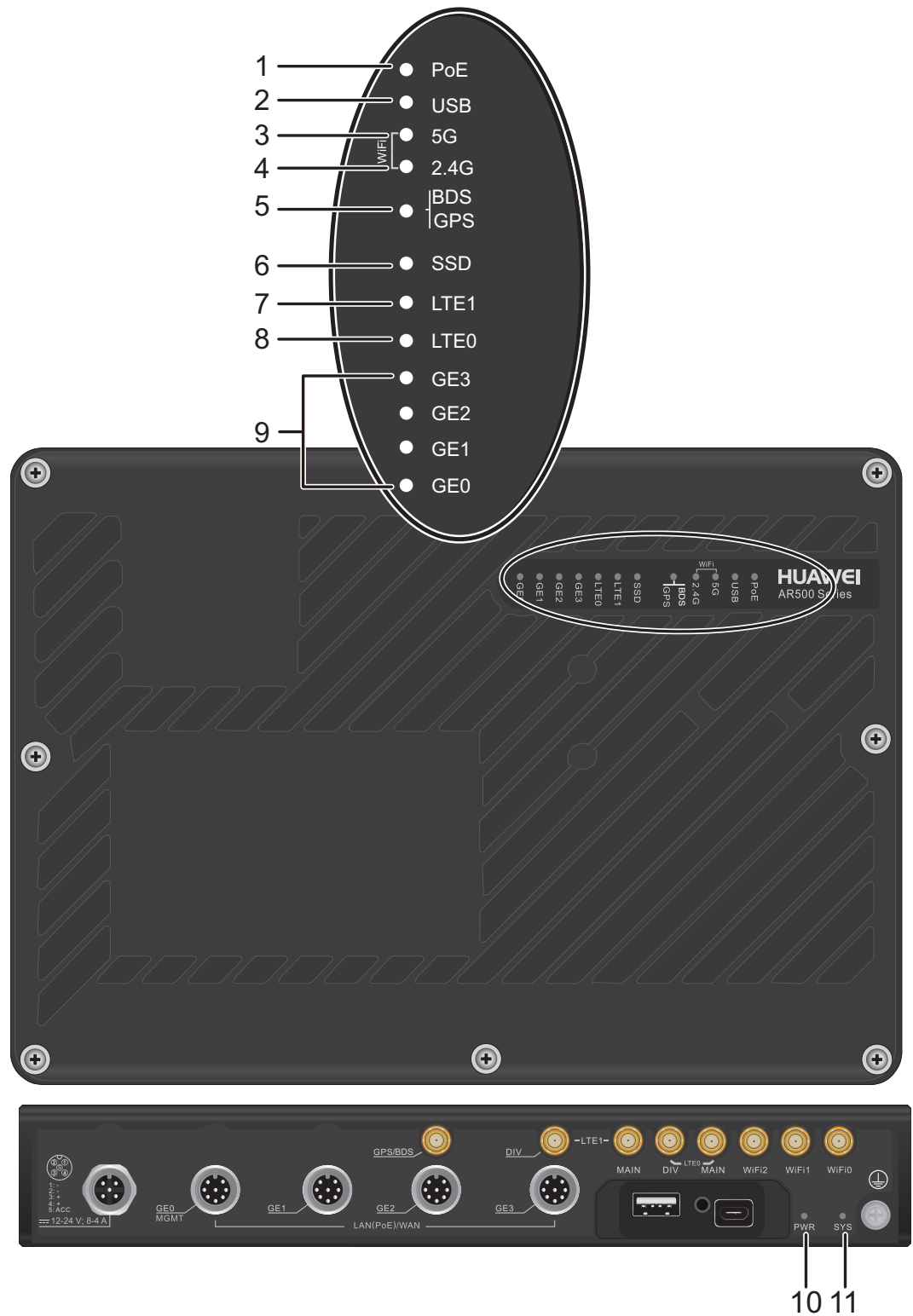
1	Power input jack NOTE Use a DC power cable to connect the router to an external power source.	2	LTE1 antenna interface
3	LTE0 antenna interface	4	GPS/BDS antenna interface

5	Three Wi-Fi antenna interfaces	6	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interfaces GE0 to GE3 can be configured as WAN interfaces. GE0 is a management interface and is used to upgrade the router.
7	USB interface (host)	8	RST button NOTE <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> To restore the factory settings, hold down the button for at least 5 seconds. To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>
9	CONSOLE interface	10	Ground point NOTE <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>
11	Two SIM card slots of LTE0 NOTE <ul style="list-style-type: none"> The SIM card slots support double-card single-standby. The router must use industrial SIM cards. 	12	Two SIM card slots of LTE1 NOTE <ul style="list-style-type: none"> The SIM card slots support double-card single-standby. The router must use industrial SIM cards.

Indicator Description

[Figure 3-27](#) shows the indicators on the AR503EDGW-Lc.

Figure 3-27 Indicators on the AR503EDGW-Lc



Number	Indicator	Color	Description
1	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
2	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.
3	WiFi 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established Blinking: Data is being transmitted on the wireless link. Off: The wireless link is shut down.
4	WiFi 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established Blinking: Data is being transmitted on the wireless link. Off: The wireless link is shut down.
5	GPS/BDS	Green	Steady on: The GPS/BDS function is enabled. Off: The GPS/BDS function is disabled.
6	SSD	Red and green	Steady green: A solid state drive (SSD) card is present and accessible. Off: No SSD card is present.
			Steady red: The SSD card is faulty and cannot be used. Off: The SSD card is workings normally.
7	LTE1	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.
8	LTE0	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.
9	GE interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the interface.
			Blinking: Data is being transmitted or received on the link.

Number	Indicator	Color	Description
			Off: No link is established on the interface.
10	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
11	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered 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.

Interface Description

Console interface

The console interface of a router can connect to an operation terminal for onsite configuration. [Table 3-103](#) lists attributes of the console interface.

Table 3-103 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

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 3-104](#) lists attributes of an LTE antenna interface.

Table 3-104 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 236.8 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
Services provided	6.3.5 LTE Strip-shaped Remote Antenna

GPS/BDS antenna interface

A GPS/BDS antenna interface can connect to a GPS/BDS remote antenna to provide the GPS/BDS positioning function. **Table 3-105** lists the attributes of a GPS/BDS antenna interface.

Table 3-105 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Frequency bands supported	<ul style="list-style-type: none"> ● GPS: 1575.42 MHz ● BDS: 1561.098 MHz
Cable type	6.3.15 GPS/BDS Remote 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 3-106](#) lists attributes of a GE electrical interface.

Table 3-106 GE electrical interface attributes

Attribute	Description
Connector type	M12
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters 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	M12 Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-107](#) lists attributes of a USB interface.

Table 3-107 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-108](#) lists attributes of a Wi-Fi antenna interface.

Table 3-108 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi/3.0 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Services provided	6.3.12 Wi-Fi Remote Antenna (3x3)

Heat Dissipation

The AR503EDGW-Lc router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-109](#) lists the technical specifications of the AR503EDGW-Lc router.

Table 3-109 AR503EDGW-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1.2 GHz
Memory	1 GB

Item	Specification
Flash	512 MB
Micro SD card	Not supported
Hard disk	mSATA hard disk supported
Dimensions and weight	
Dimensions (W x D x H)	280 mm x 200 mm x 44.4 mm (11.02 in. x 7.87 in. x 1.75 in.), 1 U height
Weight	2.6 kg (5.73 lb)
Power specifications	
Rated input voltage (DC)	12 V/24 V
Maximum input voltage (DC)	9 V to 36 V
RPS power supply	Not supported
PoE power supply	Supported (interfaces GE0 to GE3), 20 W power on each GE electrical interface
Power consumption	
Maximum power consumption	62 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (M12 interface)
Console interfaces	1 (MicroUSB interface)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: four LTE antenna interfaces LAN interfaces: three Wi-Fi antenna interfaces and four GE electrical interfaces Multimedia service interface: One GPS/BDS antenna interface
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating environment 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 (16404.2 ft.)
Part number	02350TEB

3.2.14 AR503EDGW-Lc3

Version Mapping

Table 3-110 describes the mapping between the AR503EDGW-Lc3 router and software versions.

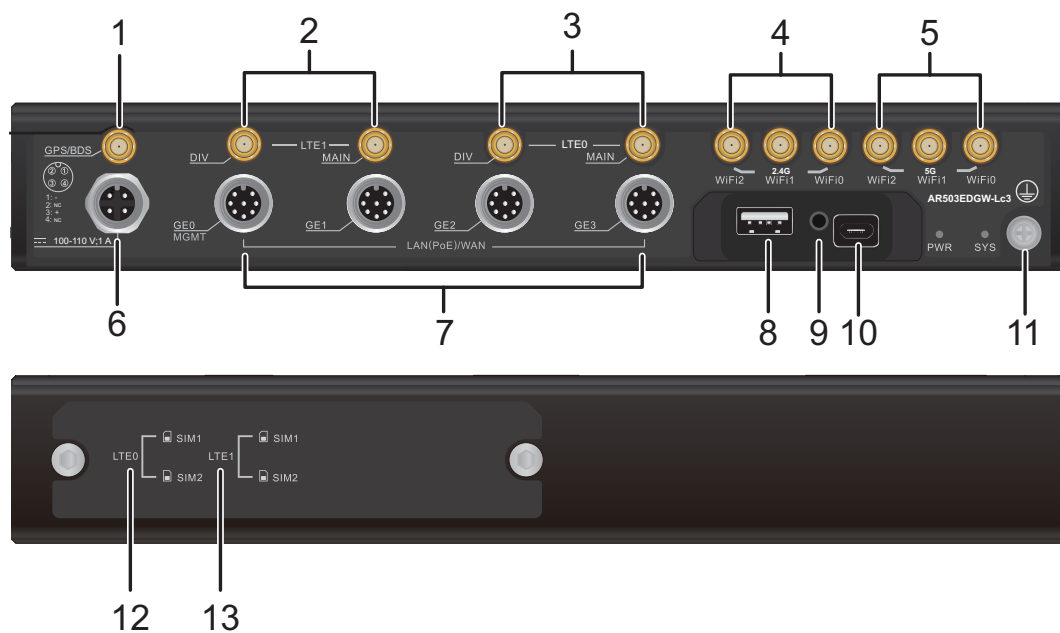
Table 3-110 Mapping between the AR503EDGW-Lc3 router and software versions

Router Model	Software Version
AR503EDGW-Lc3	V200R008C50 and later versions

Appearance and Structure

Figure 3-28 shows the appearance of the AR503EDGW-Lc3 router.

Figure 3-28 AR503EDGW-Lc3 appearance



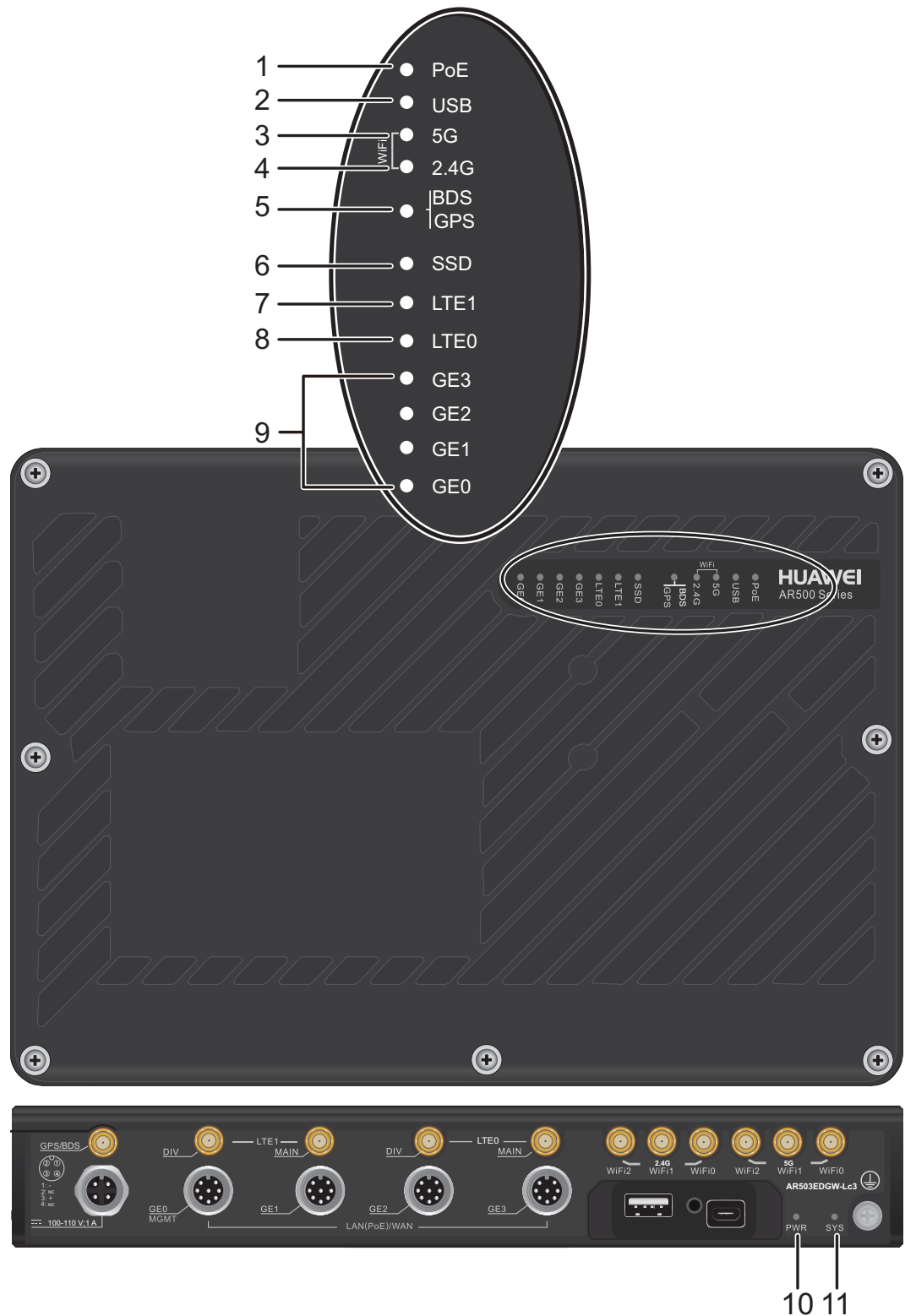
1	GPS/BDS antenna interface	2	LTE1 antenna interface
3	LTE0 antenna interface	4	Three Wi-Fi antenna interfaces (2.4 GHz)
5	Three Wi-Fi antenna interfaces (5.0 GHz)	6	Power input jack NOTE Use a DC power cable to connect the router to an external power source.
7	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interfaces GE0 to GE3 can be configured as WAN interfaces. GE0 is a management interface and is used to upgrade the router. 	8	USB interface (host)
9	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> 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	CONSOLE interface

11	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	12	Two SIM card slots of LTE0 NOTE <ul style="list-style-type: none">● The SIM card slots support double-card single-standby.● The router must use industrial SIM cards.
13	Two SIM card slots of LTE1 NOTE <ul style="list-style-type: none">● The SIM card slots support double-card single-standby.● The router must use industrial SIM cards.	-	-

Indicator Description

Figure 3-29 shows the indicators on the AR503EDGW-Lc3.

Figure 3-29 Indicators on the AR503EDGW-Lc3



Number	Indicator	Color	Description
1	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
2	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.
3	WiFi 5G (effective when working on the 5 GHz band)	Green	Steady on: The wireless link is Up. Blinking: Data is being transmitted on the wireless link. Off: The wireless link is shut down.
4	WiFi 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: The wireless link is Up. Blinking: Data is being transmitted on the wireless link. Off: The wireless link is shut down.
5	GPS/BDS	Green	Steady on: The GPS/BDS function is enabled. (BDS stands for BeiDou Navigation Satellite System.) Off: The GPS/BDS function is disabled.
6	SSD	Red and green	Steady green: A solid state drive (SSD) card is available and accessible. Off: No SSD card is present.
			Steady red: The SSD card is faulty and cannot be used. Off: The SSD card is working normally.
7	LTE1	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.
8	LTE0	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.

Number	Indicator	Color	Description
9	GE interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the corresponding GE interface.
			Off: No link is established corresponding GE interface.
10	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
11	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered 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.

Interface Description

Console interface

The console interface of a router can connect to an operation terminal for onsite configuration. [Table 3-111](#) lists attributes of the console interface.

Table 3-111 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

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 3-112](#) lists attributes of an LTE antenna interface.

Table 3-112 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 236.8 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
Services provided	6.3.5 LTE Strip-shaped Remote Antenna

GPS/BDS antenna interface

A GPS/BDS antenna interface can connect to a GPS/BDS remote antenna to provide the GPS/BDS positioning function. [Table 3-113](#) lists the attributes of a GPS/BDS antenna interface.

Table 3-113 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Frequency bands supported	<ul style="list-style-type: none"> ● GPS: 1575.42 MHz ● BDS: 1561.098 MHz
Cable type	6.3.15 GPS/BDS Remote 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 3-114](#) lists attributes of a GE electrical interface.

Table 3-114 GE electrical interface attributes

Attribute	Description
Connector type	M12
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters 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	M12 Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-115](#) lists attributes of a USB interface.

Table 3-115 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-116](#) lists attributes of a Wi-Fi antenna interface.

Table 3-116 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi/3.0 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Services provided	6.3.12 Wi-Fi Remote Antenna (3x3)

Heat Dissipation

The AR503EDGW-Lc3 router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-117](#) lists the technical specifications of the AR503EDGW-Lc3 router.

Table 3-117 AR503EDGW-Lc3 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1.2 GHz
Memory	1 GB

Item	Specification
Flash	512 MB
Micro SD card	Not supported
Hard disk	mSATA hard disk supported
Dimensions and weight	
Dimensions (W x D x H)	280 mm x 200 mm x 44.4 mm (11.02 in. x 7.84 in. x 1.75 in.), 1 U height
Weight	2.6 kg (5.73 lb)
Power specifications	
Rated input voltage range (DC)	100 V to 110 V
Maximum input voltage (DC)	110 V
RPS power supply	Not supported
PoE power supply	Supported on GE electrical interfaces GE0 to GE3, with a maximum of 30 W power on each interface
Power consumption	
Maximum power consumption	62 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (M12)
Console interface	1 (Micro USB)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: four LTE antenna interfaces LAN interfaces: six Wi-Fi antenna interfaces and four GE electrical interfaces Multimedia service interface: one GPS/BDS antenna interface
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating temperature	<ul style="list-style-type: none"> ● -10°C to +70°C (14°F to 158°F) (PoE not enabled) ● -10°C to +60°C (14°F to 140°F) (PoE enabled) <p>NOTE When the altitude is 1800-5000 m (5906-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).</p>
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351ARJ

3.2.15 AR503EDGW-Lo

Version Mapping

Table 3-118 describes the mapping between the AR503EDGW-Lo router and software versions.

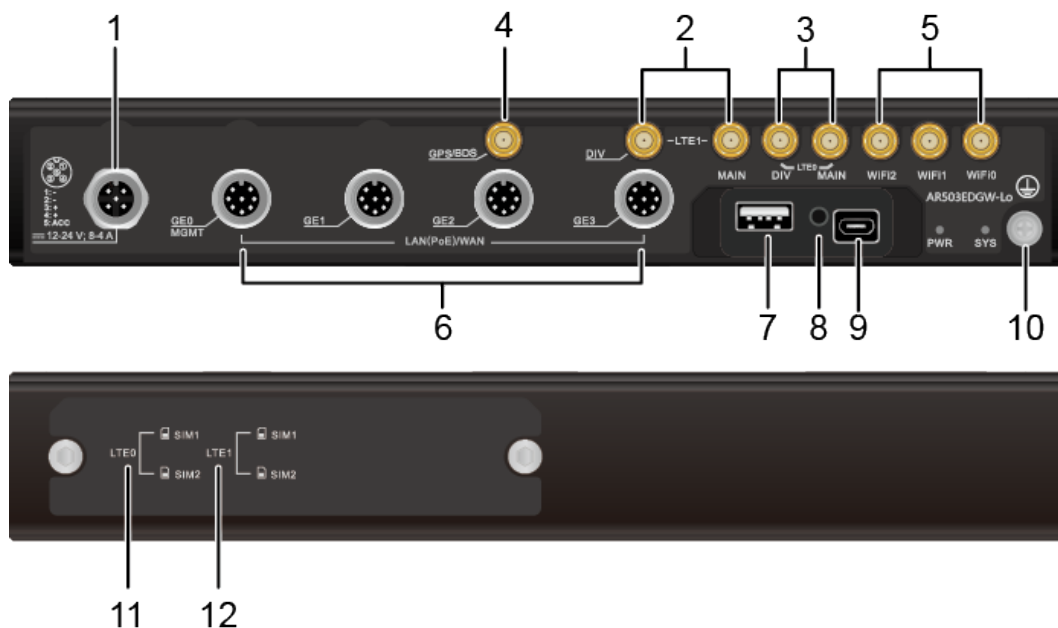
Table 3-118 Mapping between the AR503EDGW-Lo router and software versions

Router Model	Software Version
AR503EDGW-Lo	V200R009C00 and later versions

Appearance and Structure

Figure 3-30 shows the appearance of the AR503EDGW-Lo router.

Figure 3-30 AR503EDGW-Lo appearance



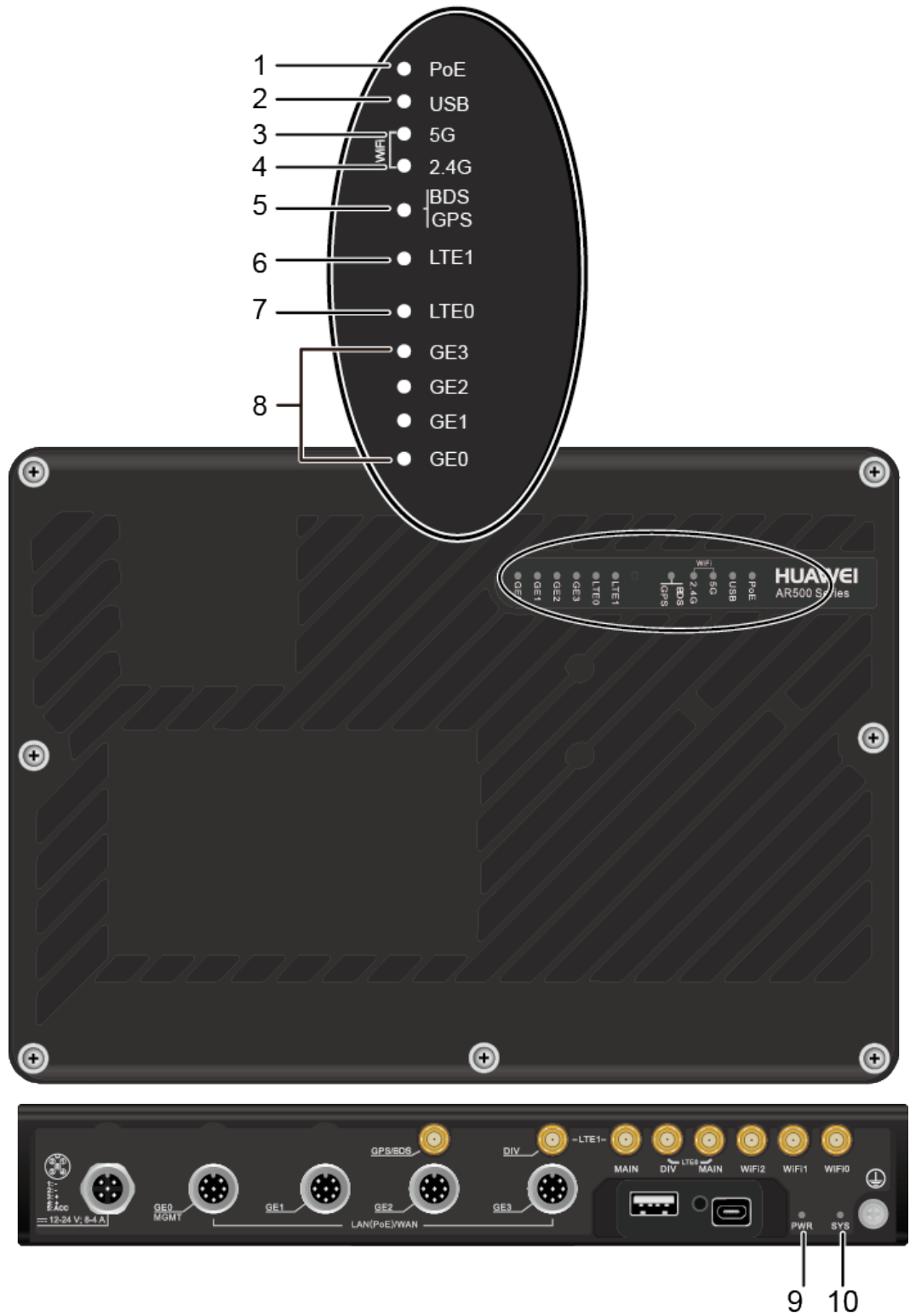
1	Power input jack NOTE Use a DC power cable to connect the router to an external power source.	2	LTE1 antenna interface
3	LTE0 antenna interface	4	GPS/BDS antenna interface
5	Three Wi-Fi antenna interfaces	6	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interfaces GE0 to GE3 can be configured as WAN interfaces. GE0 is a management interface and is used to upgrade the router.
7	USB interface (host)	8	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> 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.

9	CONSOLE interface	10	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
11	Two SIM card slots of LTE0 NOTE <ul style="list-style-type: none">● The SIM card slots support double-card single-standby.● The router must use industrial SIM cards.	12	Two SIM card slots of LTE1 NOTE <ul style="list-style-type: none">● The SIM card slots support double-card single-standby.● The router must use industrial SIM cards.

Indicator Description

Figure 3-31 shows indicators on the AR503EDGW-Lo.

Figure 3-31 Indicators on the AR503EDGW-Lo



Number	Indicator	Color	Description
1	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
2	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.
3	WiFi 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established. Blinking: Data is being transmitted on the WLAN link. Off: The WLAN link is shut down.
4	WiFi 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established. Blinking: Data is being transmitted on the WLAN link. Off: The WLAN link is shut down.
5	GPS/BDS	Green	Steady on: The GPS/BDS function is enabled. (BDS stands for BeiDou Navigation Satellite System.) Off: The GPS/BDS function is disabled.
6	LTE1	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.
7	LTE0	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.
8	GE interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the link.
			Off: No link is established on the corresponding interface.
9	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.

Number	Indicator	Color	Description
10	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.

Interface Description

Console interface

The console interface of a router can connect to an operation terminal for onsite configuration. [Table 3-119](#) lists attributes of the console interface.

Table 3-119 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

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 3-120](#) lists LTE antenna interface attributes.

Table 3-120 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)

Attribute	Description
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/2/3/5/7/8/20/28, all bands with diversity ● TDD LTE: bands 38/39/40/41, all bands with diversity ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9, all bands with diversity ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/2/5/8, all bands with diversity ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● GPS/GLONASS: L1
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● TD-SCDMA: uplink rate of 384 kbit/s and downlink rate of 2.8 kbit/s ● TD-HSPA: uplink rate of 2.2 Mbit/s and downlink rate of 2.8 Mbit/s ● 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 236.8 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	6.3.5 LTE Strip-shaped Remote Antenna

GPS/BDS antenna interface

A GPS/BDS antenna interface can connect to a GPS/BDS remote antenna to provide the GPS/BDS positioning function. [Table 3-121](#) lists the attributes of a GPS/BDS antenna interface.

Table 3-121 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)

Attribute	Description
Frequency bands supported	<ul style="list-style-type: none"> ● GPS: 1575.42 MHz ● BDS: 1561.098 MHz
Cable type	6.3.15 GPS/BDS Remote 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 3-122](#) lists attributes of a GE electrical interface.

Table 3-122 GE electrical interface attributes

Attribute	Description
Connector type	M12
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters 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	M12 Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-123](#) lists attributes of a USB interface.

Table 3-123 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 to transmit and receive data. [Table 3-124](#) lists attributes of a Wi-Fi antenna interface.

Table 3-124 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi/3.0 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Services provided	6.3.12 Wi-Fi Remote Antenna (3x3)

Heat Dissipation

The AR503EDGW-Lo router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-125](#) lists technical specifications of the AR503EDGW-Lo router.

Table 3-125 AR503EDGW-Lo technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1.2 GHz
Memory	1 GB
Flash	512 MB
Micro SD card	Not supported
Hard disk	mSATA hard disk supported
Dimensions and weight	

Item	Specification
Dimensions (W x D x H)	280 mm x 200 mm x 44.4 mm (11.0 in. x 7.9 in. x 1.75 in.), 1 U height
Weight	2.6 kg (5.73 lb)
Power specifications	
Rated input voltage (DC)	12 V/24 V
Maximum input voltage (DC)	9 V to 36 V
RPS power supply	Not supported
PoE power supply	Supported (interfaces GE0 to GE3), 20 W power on each GE electrical interface
Power consumption	
Maximum power consumption	62 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (M12)
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: four LTE antenna interfaces LAN interfaces: three Wi-Fi antenna interfaces and four GE electrical interfaces Multimedia service interface: one GPS/BDS antenna interface
Extended slots	Not supported
Environment parameters	
Operating temperature	-10°C to +55°C (14°F to 131°F) NOTE When the altitude is 1800-5000 m (5906-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature	-40°C to +85°C (-40°F to +185°F)

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)
Part number	02351MHE

3.2.16 AR503EQGW-L

Version Mapping

Table 3-126 lists the mapping between the AR503EQGW-L router and software versions.

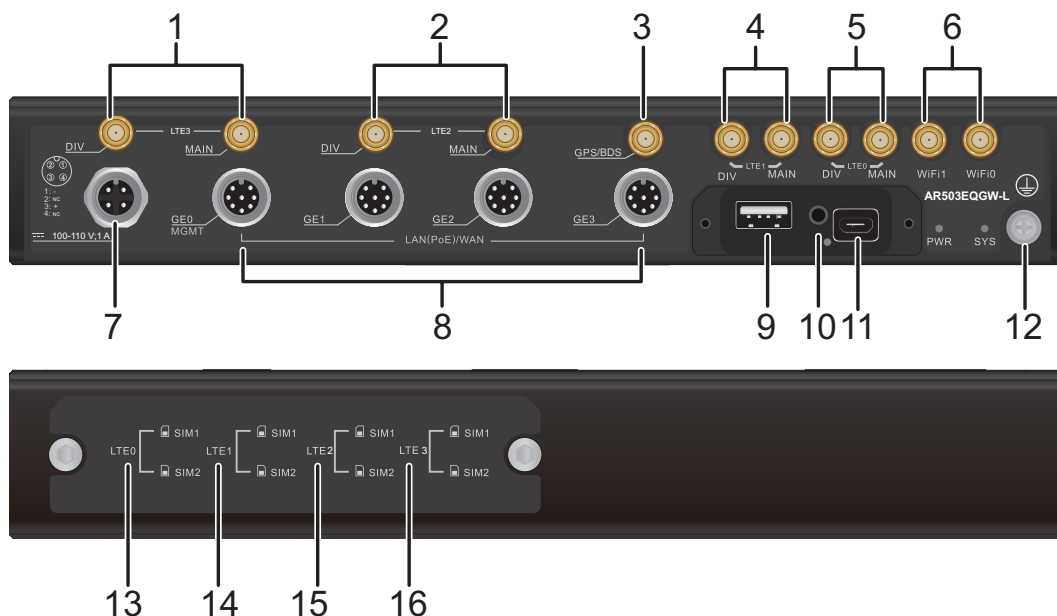
Table 3-126 Mapping between the AR503EQGW-L router and software version

Router Model	Software Version
AR503EQGW-L	V200R008C30 and later versions

Appearance and Structure

Figure 3-32 shows the appearance of the AR503EQGW-L router.

Figure 3-32 AR503EQGW-L appearance

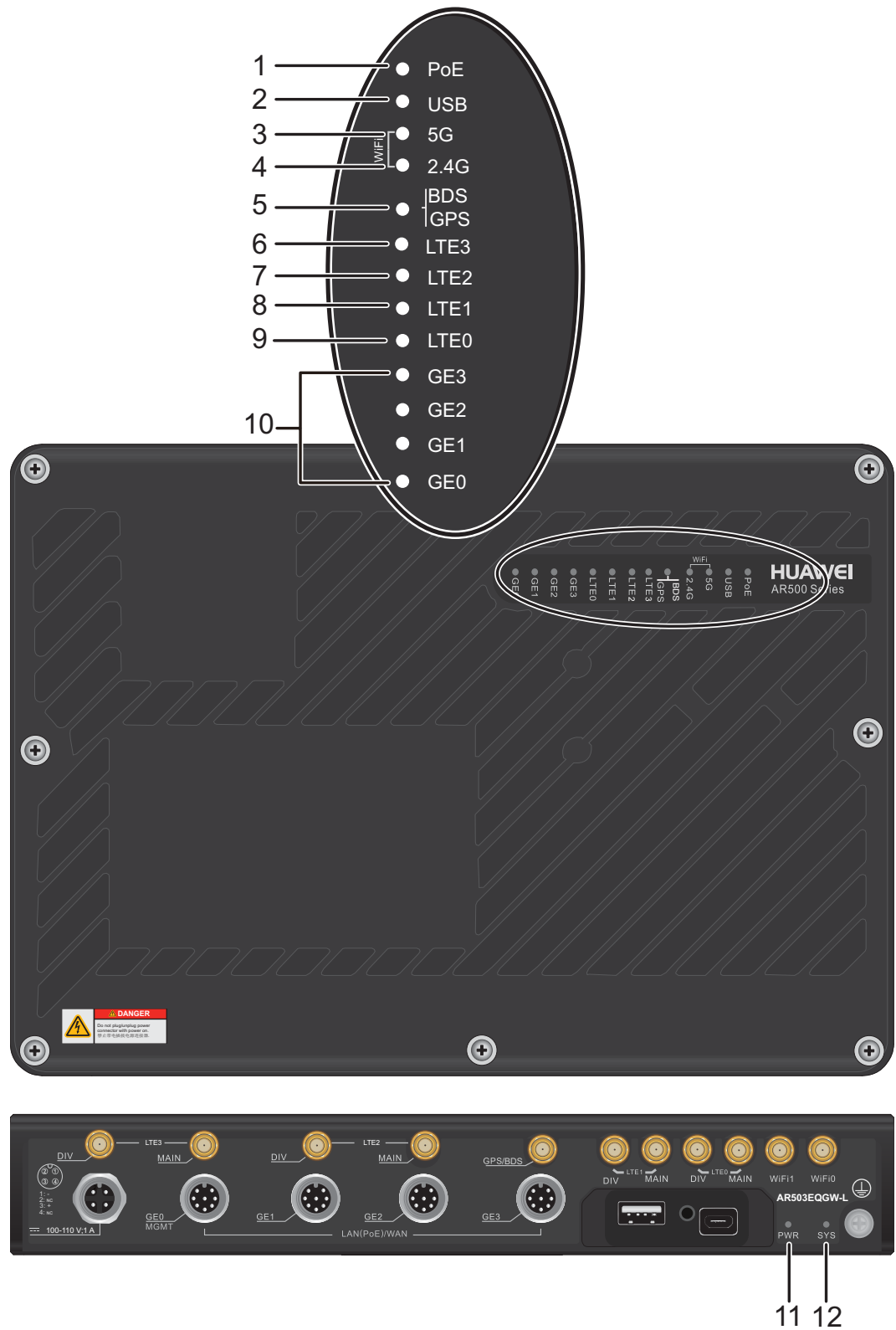


1	LTE3 antenna interface	2	LTE2 antenna interface
3	GPS/BDS antenna interface	4	LTE1 antenna interface
5	LTE0 antenna interface	6	Two Wi-Fi antenna interfaces
7	Power input jack NOTE Use a DC power cable to connect the router to an external power source.	8	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interfaces GE0 to GE3 can be configured as WAN interfaces. GE0 is a management interface and is used to upgrade the router.
9	USB interface (host)	10	RST button NOTE This button is used to reset the router. <ul style="list-style-type: none"> 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	CONSOLE interface	12	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
13	Two SIM card slots of LTE0 NOTE <ul style="list-style-type: none"> The SIM card slots support double-card single-standby. The router must use industrial SIM cards. 	14	Two SIM card slots of LTE1 NOTE <ul style="list-style-type: none"> The SIM card slots support double-card single-standby. The router must use industrial SIM cards.
15	Two SIM card slots of LTE2 NOTE <ul style="list-style-type: none"> The SIM card slots support double-card single-standby. The router must use industrial SIM cards. 	16	Two SIM card slots of LTE3 NOTE <ul style="list-style-type: none"> The SIM card slots support double-card single-standby. The router must use industrial SIM cards.

Indicator Description

[Figure 3-33](#) shows the indicators on the AR503EQGW-L.

Figure 3-33 Indicators on the AR503EQGW-L



Number	Indicator	Color	Description
1	PoE	Green	Steady on: The PoE power supply is normal. Off: The system does not provide PoE power supply.
2	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.
3	WiFi 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established Blinking: Data is being transmitted on the WLAN link. Off: The WLAN link is shut down.
4	WiFi 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established Blinking: Data is being transmitted on the WLAN link. Off: The WLAN link is shut down.
5	GPS/BDS	Green	Steady on: The GPS/BDS function is enabled. (BDS stands for BeiDou Navigation Satellite System.) Off: The GPS/BDS function is disabled.
6	LTE3	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.
7	LTE2	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.
8	LTE1	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.
9	LTE0	Green	Steady on: The LTE/3G/2G signal strength is high.
			Off: No LTE/3G/2G signal is available.

Number	Indicator	Color	Description
10	GE interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding interface.
			Blinking: Data is being transmitted or received on the corresponding interface.
			Off: No link is established on the corresponding interface..
11	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
12	SYS	Red and green	Slow blinking green: The system is running properly.
			Fast blinking green: The system is being powered 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.

Interface Description

Console interface

The console interface of a router can connect to an operation terminal for onsite configuration. [Table 3-127](#) lists attributes of the console interface.

Table 3-127 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

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 3-128](#) lists LTE antenna interface attributes.

Table 3-128 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/2/5/8 ● FDD LTE: bands 1/2/3/4/5/7/8/20
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● FDD LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	6.3.5 LTE Strip-shaped Remote Antenna

GPS/BDS antenna interface

A GPS/BDS antenna interface can connect to a GPS/BDS remote antenna to provide the GPS/BDS positioning function. [Table 3-129](#) lists the attributes of a GPS/BDS antenna interface.

Table 3-129 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Frequency bands supported	<ul style="list-style-type: none"> ● GPS: 1575.42 MHz ● BDS: 1561.098 MHz
Cable type	6.3.15 GPS/BDS Remote 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 3-130](#) lists attributes of a GE electrical interface.

Table 3-130 GE electrical interface attributes

Attribute	Description
Connector type	M12
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters 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	M12 Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-131](#) lists attributes of a USB interface.

Table 3-131 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 to transmit and receive data. [Table 3-132](#) lists Wi-Fi antenna interface attributes.

Table 3-132 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi/3.0 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.11 Wi-Fi Remote Antenna (2x2)

Heat Dissipation

The AR503EQGW-L router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-133](#) lists the technical specifications of the AR503EQGW-L router.

Table 3-133 AR503EQGW-L routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1.2 GHz
Memory	1 GB
Flash	512 MB
Micro SD card	Not supported
Hard disk	mSATA hard disk not supported
Dimensions and weight	
Dimensions (W x D x H)	280 mm x 200 mm x 44.4 mm (11.0 in. x 7.9 in. x 1.75 in.), 1 U height
Weight	2.7 kg (5.95 lb)
Power specifications	

Item	Specification
Rated input voltage (DC)	100 V to 110 V
Maximum input voltage (DC)	110 V
RPS power supply	Not supported
PoE power supply	Supported on GE electrical interfaces GE0 to GE3, with a maximum of 30 W power on each interface
Power consumption	
Maximum power consumption	65 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (M12)
Console interface	1 (MicroUSB)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: eight LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces and four GE electrical interfaces Multimedia service interface: One GPS/BDS antenna interface
Extended slots	Not supported
Environment parameters	
Operating temperature	-10°C to +70°C (14°F to 158°F) (PoE not enabled) -10°C to +60°C (14°F to 140°F) (PoE enabled) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) 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
Operating altitude	< 5000 m (16404.2 ft.)

Item	Specification
Part number	02350UGC

3.2.17 AR503EW

Version Mapping

Table 3-134 describes the mapping between the AR503EW router and software versions.

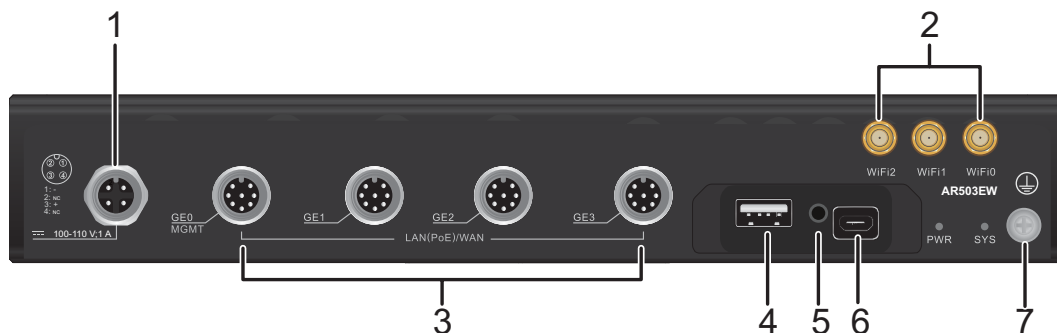
Table 3-134 Mapping between the AR503EW router and software versions

Router Model	Software Version
AR503EW	V200R008C30 and later versions

Appearance and Structure

Figure 3-34 shows the appearance of the AR503EW router.

Figure 3-34 AR503EW appearance



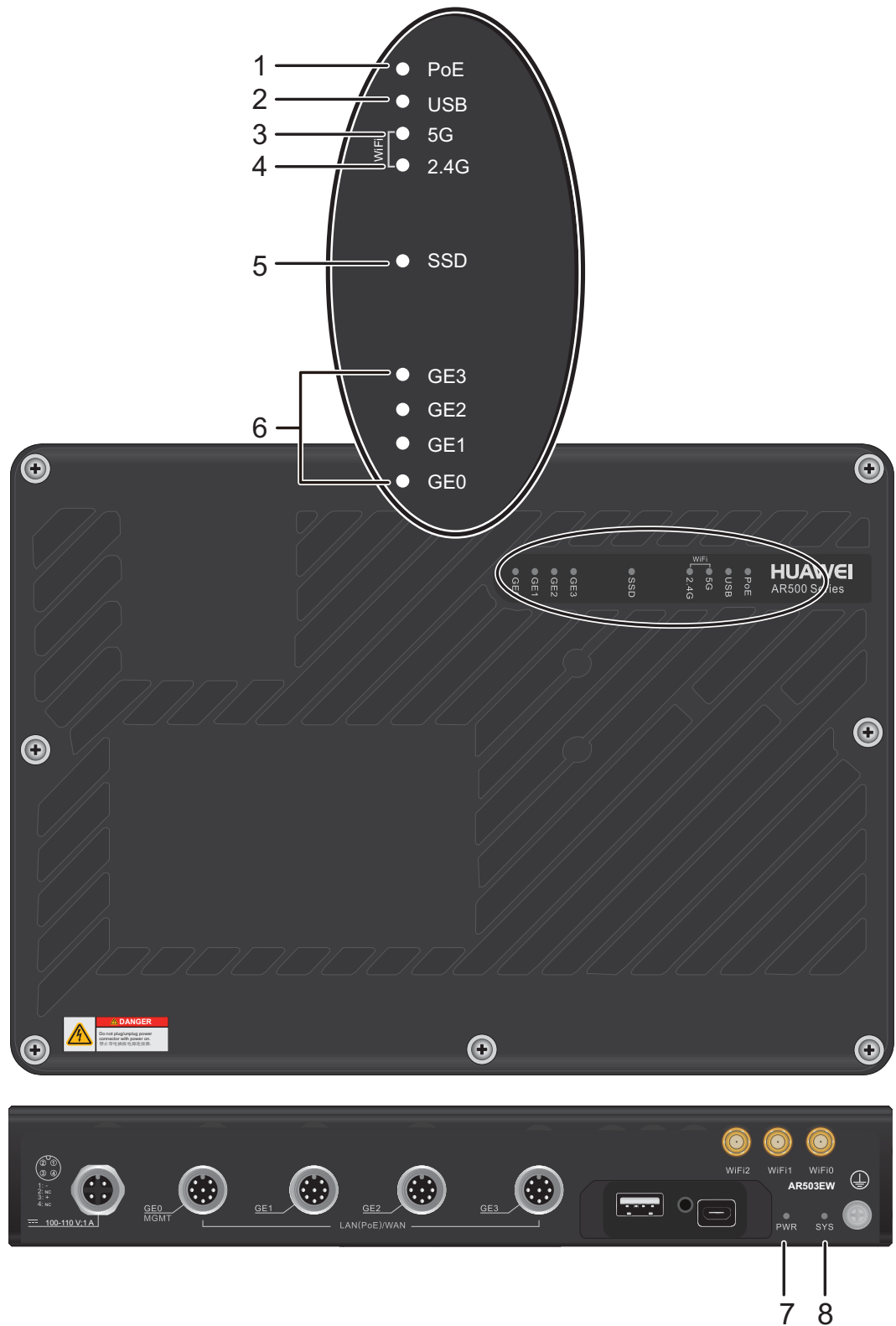
1	Power input jack NOTE Use a DC power cable to connect the router to an external power source.	2	Three Wi-Fi antenna interfaces
3	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> LAN interfaces GE0 to GE3 can be configured as WAN interfaces. GE0 is a management interface and is used to upgrade the router. 	4	USB interface (host)

5	RST button	6	CONSOLE interface
7	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	-	-

Indicator Description

Figure 3-35 shows the indicators on the AR503EW router.

Figure 3-35 Indicators on the AR503EW



Number	Indicator	Color	Description
1	PoE	Green	Steady on: The PoE power supply is normal. Off: The system does not provide PoE power supply.
2	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.
3	WiFi 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established Blinking: Data is being transmitted on the WLAN link. Off: The WLAN link is shut down.
4	WiFi 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established Blinking: Data is being transmitted on the WLAN link. Off: The WLAN link is shut down.
5	SSD	Red and green	Steady green: A solid state drive (SSD) card is available and accessible. Off: No SSD card is present.
			Steady red: The SSD card is faulty and cannot be used. Off: The SSD card is working normally.
6	GE interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding interface.
			Blinking: Data is being transmitted or received on the corresponding interface.
			Off: No link is established on the corresponding interface..
7	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
8	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or restarting.

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.

Interface Description

Console interface

The console interface of a router can connect to an operation terminal for onsite configuration. [Table 3-135](#) lists attributes of the console interface.

Table 3-135 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 3-136](#) lists attributes of a GE electrical interface.

Table 3-136 GE electrical interface attributes

Attribute	Description
Connector type	M12
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.

Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	M12 Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-137](#) lists attributes of a USB interface.

Table 3-137 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 to transmit and receive data. [Table 3-138](#) lists Wi-Fi antenna interface attributes.

Table 3-138 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi/3.0 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

Attribute	Description
Cable type	6.3.12 Wi-Fi Remote Antenna (3x3)

Heat Dissipation

The AR503EW router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-139](#) lists the technical specifications of the AR503EW router.

Table 3-139 AR503EW technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1.2 GHz
Memory	1 GB
Flash	512 MB
Micro SD card	Not supported
Hard disk	mSATA hard disk supported
Dimensions and weight	
Dimensions (W x D x H)	280 mm x 200 mm x 44.4 mm (11.0 in. x 7.9 in. x 1.75 in.), 1 U height
Weight	2.6 kg (5.73 lb)
Power specifications	
Rated input voltage (DC)	100 V to 110 V
Maximum input voltage (DC)	110 V
RPS power supply	Not supported
PoE power supply	Supported on GE electrical interfaces GE0 to GE3, with a maximum of 30 W power on each interface
Power consumption	
Maximum power consumption	55 W
Heat dissipation	
Fans	None

Item	Specification
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (M12)
Console interface	1 (MicroUSB)
USB 2.0 interfaces	1
Service interfaces	LAN interfaces: three Wi-Fi antenna interfaces and four GE electrical interfaces
Extended slots	Not supported
Environment parameters	
Operating temperature	-10°C to +70°C (14°F to 158°F) (PoE not enabled) -10°C to +65°C (14°F to 149°F) (PoE enabled) NOTE When the altitude is 1800 m-5000 m (5906ft.-16404.2 ft.), the highest operating temperature reduces by 1°C (1.8°F) 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
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350UGD

3.2.18 AR503GW-LM7

Version Mapping

Table 3-140 lists the mapping between the AR503GW-LM7 router and software versions.

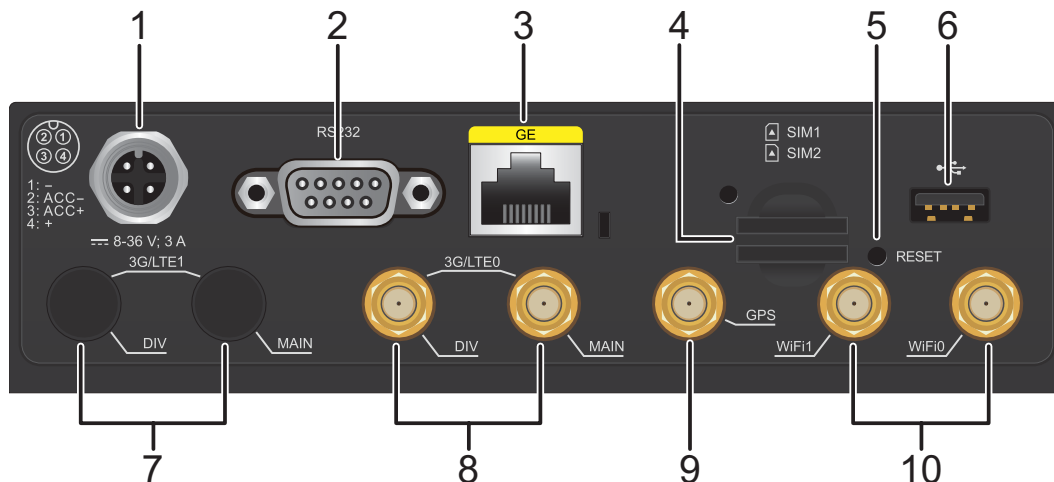
Table 3-140 Mapping between the AR503GW-LM7 router and software versions

Router Model	Software Version
AR503GW-LM7	V200R006C12 and later versions

Appearance and Structure

Figure 3-36 shows the appearance of the AR503GW-LM7 router.

Figure 3-36 AR503GW-LM7 appearance

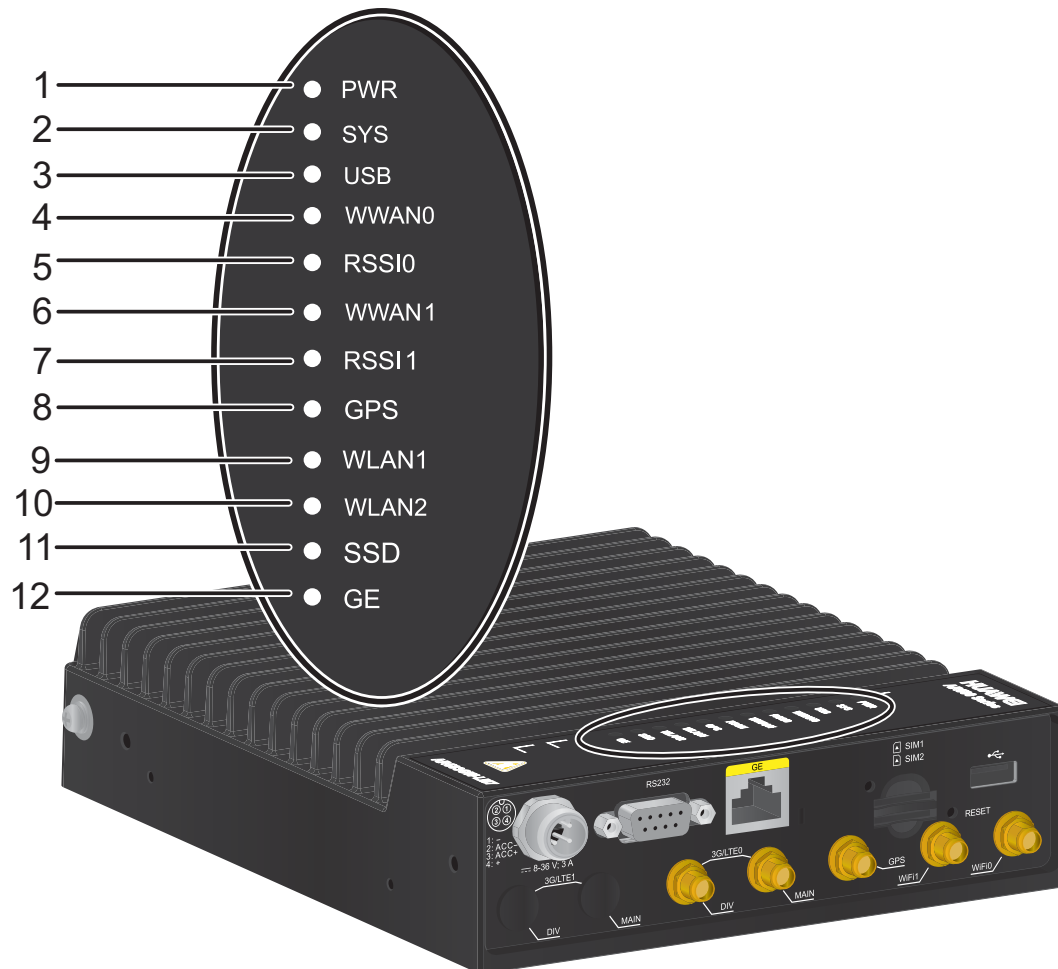


1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	RS232 interface NOTE The RS232 interface can be used as a console interface to configure the router.
3	WAN interface: GE electrical interface	4	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
5	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● 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 3-37 shows the indicators on the AR503GW-LM7 router.

Figure 3-37 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 being powered on or restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

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	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.

Number	Indicator	Color	Description
8	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
9	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.
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 can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-141](#) lists RS232 interface attributes.

Table 3-141 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-142](#) lists attributes of a 3G/LTE antenna interface.

Table 3-142 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/2/3/5/7/8/20 ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: 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	<ul style="list-style-type: none"> ● 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 3-143](#) lists attributes of a GPS antenna interface.

Table 3-143 GPS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
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 3-144](#) lists GE electrical interface attributes.

Table 3-144 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-145](#) lists attributes of a USB interface.

Table 3-145 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 to transmit and receive data. [Table 3-146](#) lists Wi-Fi antenna interface attributes.

Table 3-146 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna 6.3.11 Wi-Fi Remote Antenna (2x2)

Heat Dissipation

The AR503GW-LM7 router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-147](#) lists the technical specifications of the AR503GW-LM7 router.

Table 3-147 AR503GW-LM7 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash	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.), 1 U height
Weight	1.4 kg (3.09 lb)

Item	Specification
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
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

Item	Specification
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010236

3.2.19 AR503GW-LcM7

Version Mapping

Table 3-148 lists the mapping between the AR503GW-LcM7 router and software versions.

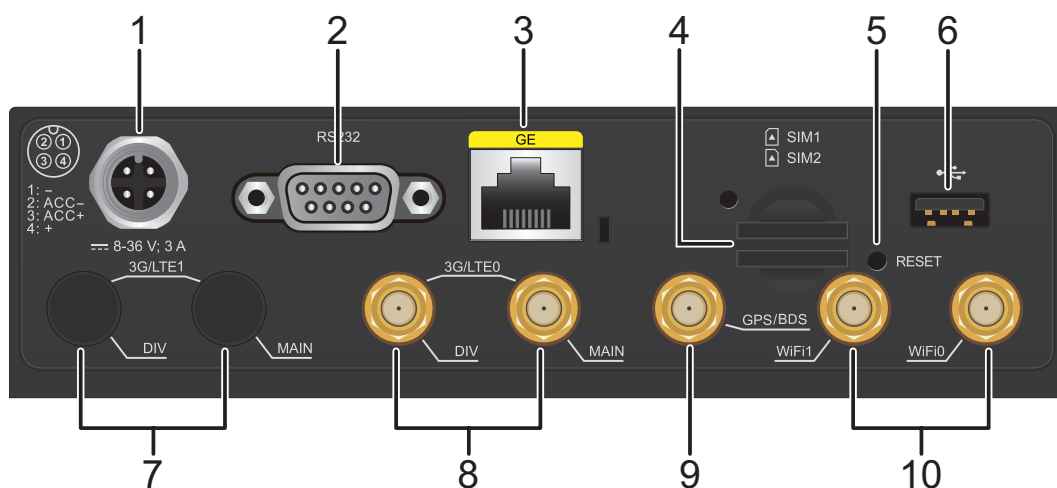
Table 3-148 Mapping between the AR503GW-LcM7 router and software versions

Router Model	Software Version
AR503GW-LcM7	V200R006C15 and later versions

Appearance and Structure

Figure 3-38 shows the appearance of the AR503GW-LcM7 router.

Figure 3-38 AR503GW-LcM7 appearance



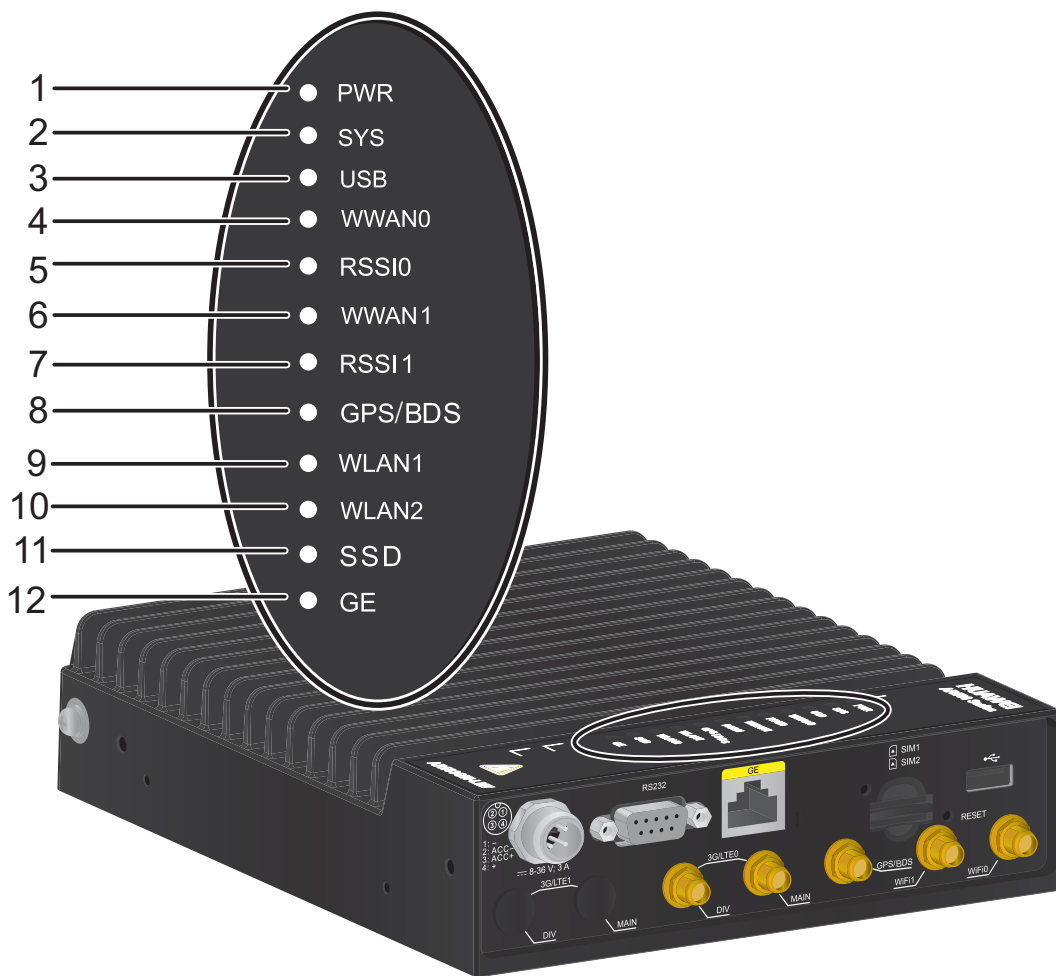
1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	RS232 interface NOTE The RS232 interface can be used as a console interface to configure the router.
---	--	---	---

3	WAN interface: GE electrical interface	4	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
5	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● 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 3-39](#) shows the indicators on the AR503GW-LcM7 router.

Figure 3-39 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 being powered 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.

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.

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 can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-149](#) lists RS232 interface attributes.

Table 3-149 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-150](#) lists attributes of a 3G/LTE antenna interface.

Table 3-150 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 236.8 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	<ul style="list-style-type: none"> ● 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 3-151](#) lists attributes of a GPS/BDS antenna interface.

Table 3-151 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
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 3-152](#) lists GE electrical interface attributes.

Table 3-152 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-153](#) lists attributes of a USB interface.

Table 3-153 USB interface attributes

Attribute	Description
Connector type	Type A

Attribute	Description
Standards compliance	USB2.0
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-154](#) lists Wi-Fi antenna interface attributes.

Table 3-154 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna 6.3.11 Wi-Fi Remote Antenna (2x2)

Heat Dissipation

The AR503GW-LcM7 router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-155](#) lists the technical specifications of the AR503GW-LcM7 router.

Table 3-155 AR503GW-LcM7 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz

Item	Specification
Memory	1 GB
Flash	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.), 1 U height
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

Item	Specification
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 (16404.2 ft.)
Part number	50010278

3.2.20 AR503GW-Lo

Version Mapping

Table 3-156 lists the mapping between the AR503GW-Lo router and software versions.

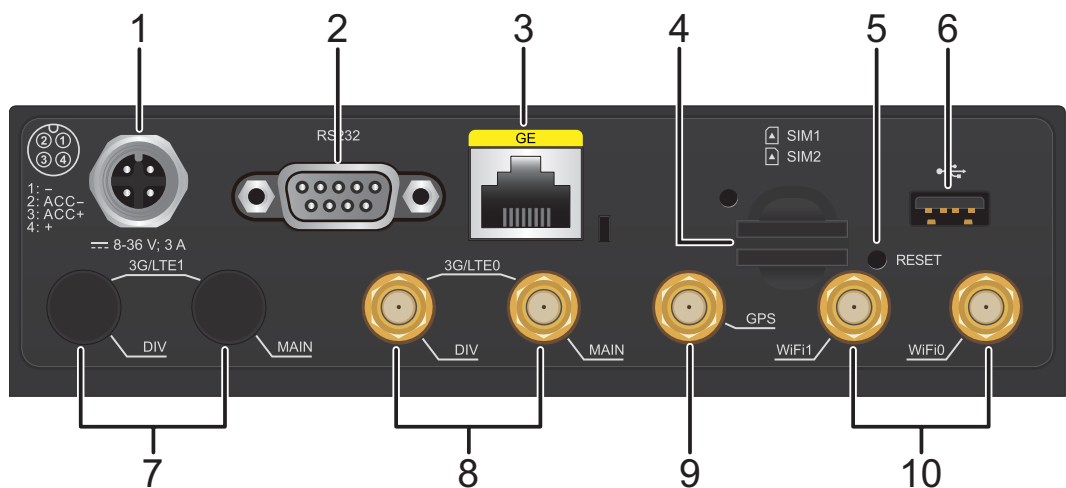
Table 3-156 Mapping between the AR503GW-Lo router and software versions

Router Model	Software Version
AR503GW-Lo	V200R009C00SPC301 and later versions

Appearance and Structure

Figure 3-40 shows the appearance of the AR503GW-Lo router.

Figure 3-40 AR503GW-Lo appearance

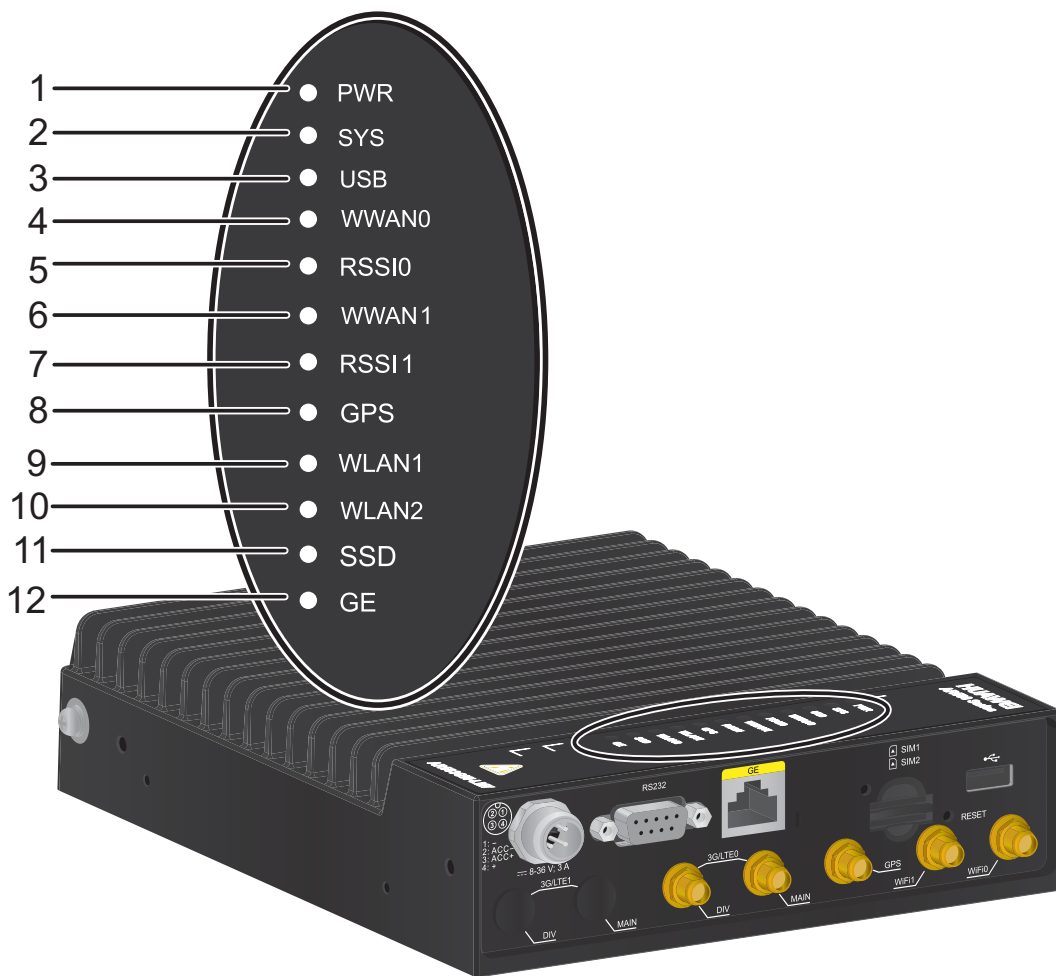


1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	RS232 interface NOTE The RS232 interface can be used as a console interface to configure the router.
3	WAN interface: GE electrical interface	4	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
5	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● 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 3-41 shows indicators on the AR503GW-Lo router.

Figure 3-41 Indicators on the AR503GW-Lo



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.

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.

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 can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-157](#) lists RS232 interface attributes.

Table 3-157 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-158](#) lists attributes of a 3G/LTE antenna interface.

Table 3-158 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: Band 1/2/3/5/7/8/20/28, all bands with diversity ● WCDMA/HSDPA/HSUPA/HSPA+: Band 1/2/5/8, all bands with diversity ● SM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● GPS/GLONASS: L1
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● 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 ● Frequency Division Duplex-Long Term Evolution (LTE FDD): uplink rate of 50 Mbit/s @20M BW cat3 and downlink rate of 150 Mbit/s
Cable type	<ul style="list-style-type: none"> ● 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 3-159](#) lists attributes of a GPS antenna interface.

Table 3-159 GPS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)

Attribute	Description
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 3-160](#) lists GE electrical interface attributes.

Table 3-160 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-161](#) lists attributes of a USB interface.

Table 3-161 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 to transmit and receive data. [Table 3-162](#) lists Wi-Fi antenna interface attributes.

Table 3-162 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna 6.3.11 Wi-Fi Remote Antenna (2x2)

Heat Dissipation

The AR503GW-Lo router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-163](#) lists technical specifications of the AR503GW-Lo router.

Table 3-163 AR503GW-Lo technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash	256 MB
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.), 1 U height

Item	Specification
Weight	1.4 kg (3.09 lb)
Power specifications	
Typical input voltage (DC)	12 V/24 V
Rated input voltage(DC)	8 V to 36 V
Rated input current	1.5 A
Maximum input 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
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)

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)
Part number	50010439

3.2.21 AR503HGW-L

Version Mapping

Table 3-164 describes the mapping between the AR503HGW-L router and software versions.

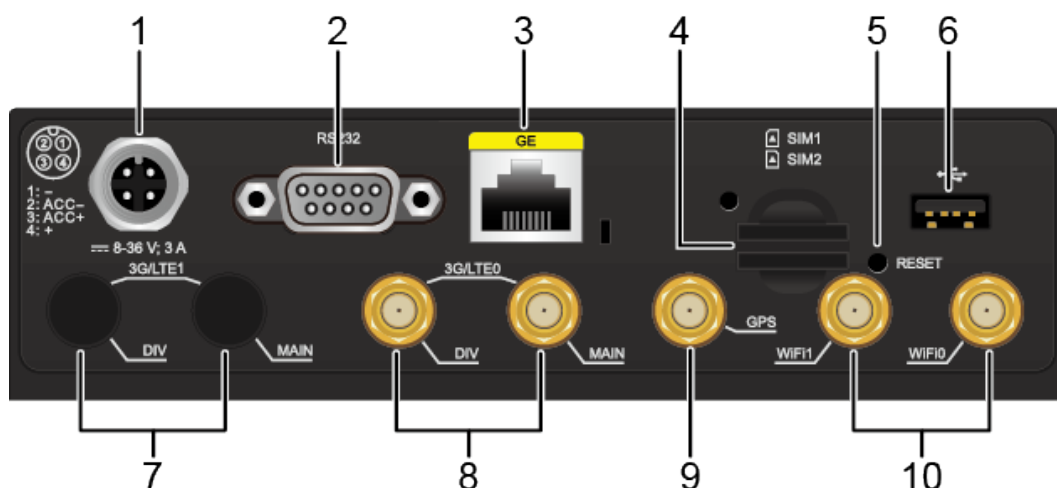
Table 3-164 Mapping between the AR503HGW-L router and software versions

Router Model	Software Version
AR503HGW-L	V200R009C00 and later versions

Appearance and Structure

Figure 3-42 shows the appearance of the AR503HGW-L router.

Figure 3-42 AR503HGW-L appearance

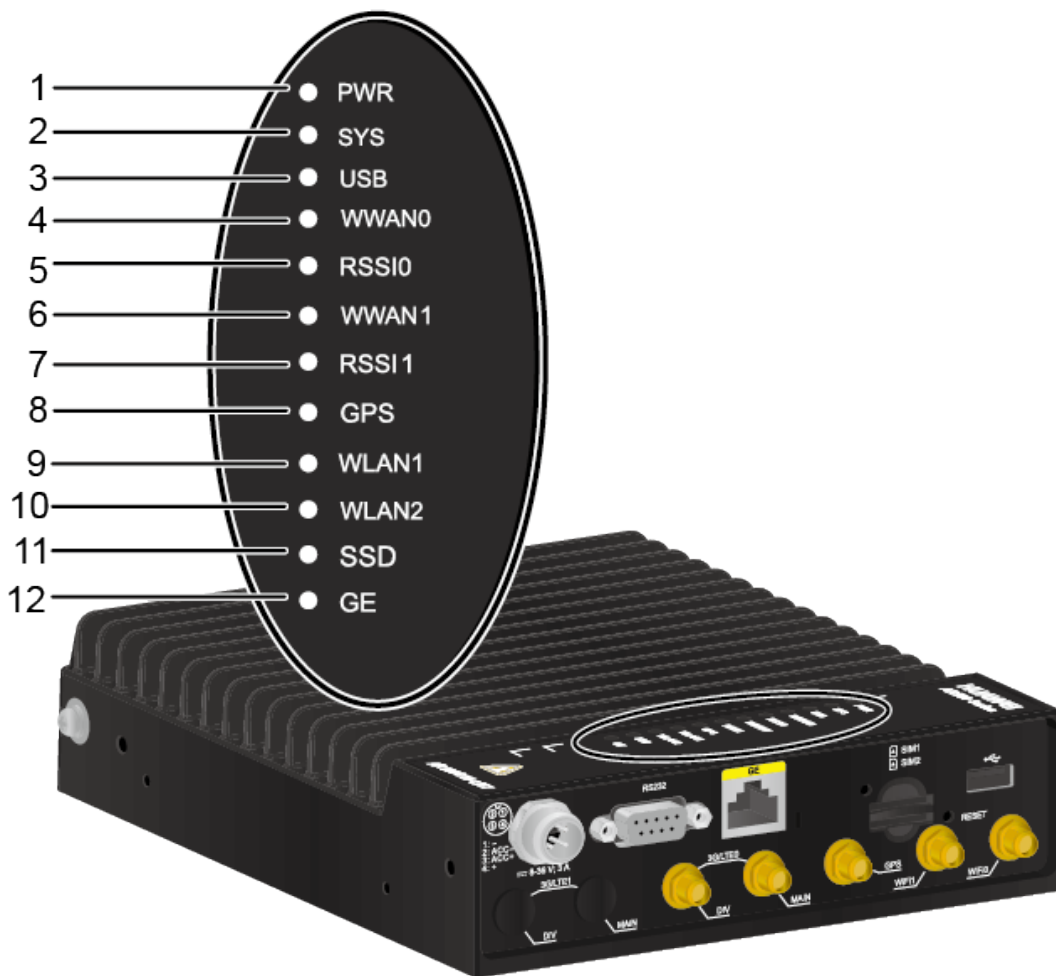


1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	RS232 interface NOTE The RS232 interface can be used as a console interface to configure the router.
3	WAN interface: GE electrical interface	4	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
5	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● 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	2 Wi-Fi antenna interfaces

Indicator Description

Figure 3-43 shows indicators on the AR503HGW-L.

Figure 3-43 Indicators on the AR503HGW-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.

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 Location	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.

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.
			Steady red: The SSD card does not work normally.
			Off: No SSD card is available.
12	GE electrical interface indicator	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the link.
			Off: No link is established on the corresponding interface.

Interface Description

RS232 interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-165](#) lists RS232 interface attributes.

Table 3-165 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 Cable

3G/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 3-166](#) lists LTE antenna interface attributes.

Table 3-166 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

GPS antenna interface

A GPS antenna interface can connect to a GPS remote diversity antenna to provide the GPS positioning function. [Table 3-167](#) lists GPS antenna interface attributes.

Table 3-167 GPS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Frequency bands supported	1575 MHz

Attribute	Description
Cable type	6.3.15 GPS/BDS Remote 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 3-168](#) lists GE electrical interface attributes.

Table 3-168 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 5 Gbit/s upload and download rates. [Table 3-169](#) lists USB interface attributes.

Table 3-169 USB interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB3.0
Working mode	Host

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-170](#) lists Wi-Fi antenna interface attributes.

Table 3-170 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	<ul style="list-style-type: none"> ● 2.4GHz:2.75dBi ● 5GHz:4.52dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.10 Wi-Fi Antenna

Heat Dissipation

The AR503HGW-L router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-171](#) lists technical specifications of the AR503HGW-L router.

Table 3-171 AR503HGW-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	1 GB
Flash	256 MB
Micro SD card (default sd1)	None
Hard disk	mSATA hard disk supported
Dimensions and weight	

Item	Specification
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.), 1 U height
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 3.0 interfaces	1
Service interfaces	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
Environment parameters	
Operating temperature	0°C to +60°C (32°F to 140°F) NOTE When the altitude is 1800-5000 m (5906-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).

Item	Specification
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.)
Part number	50010376

3.2.22 AR503HGW-Lc

Version Mapping

Table 3-172 describes the mapping between the AR503HGW-Lc router and software versions.

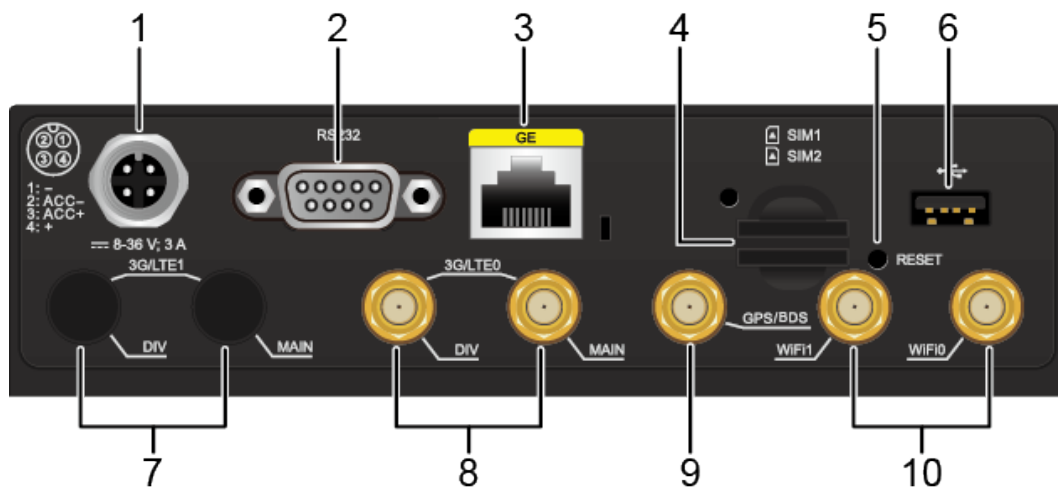
Table 3-172 Mapping between the AR503HGW-Lc router and software versions

Router Model	Software Version
AR503HGW-Lc	V200R009C00 and later versions

Appearance and Structure

Figure 3-44 shows the appearance of the AR503HGW-Lc router.

Figure 3-44 AR503HGW-Lc appearance

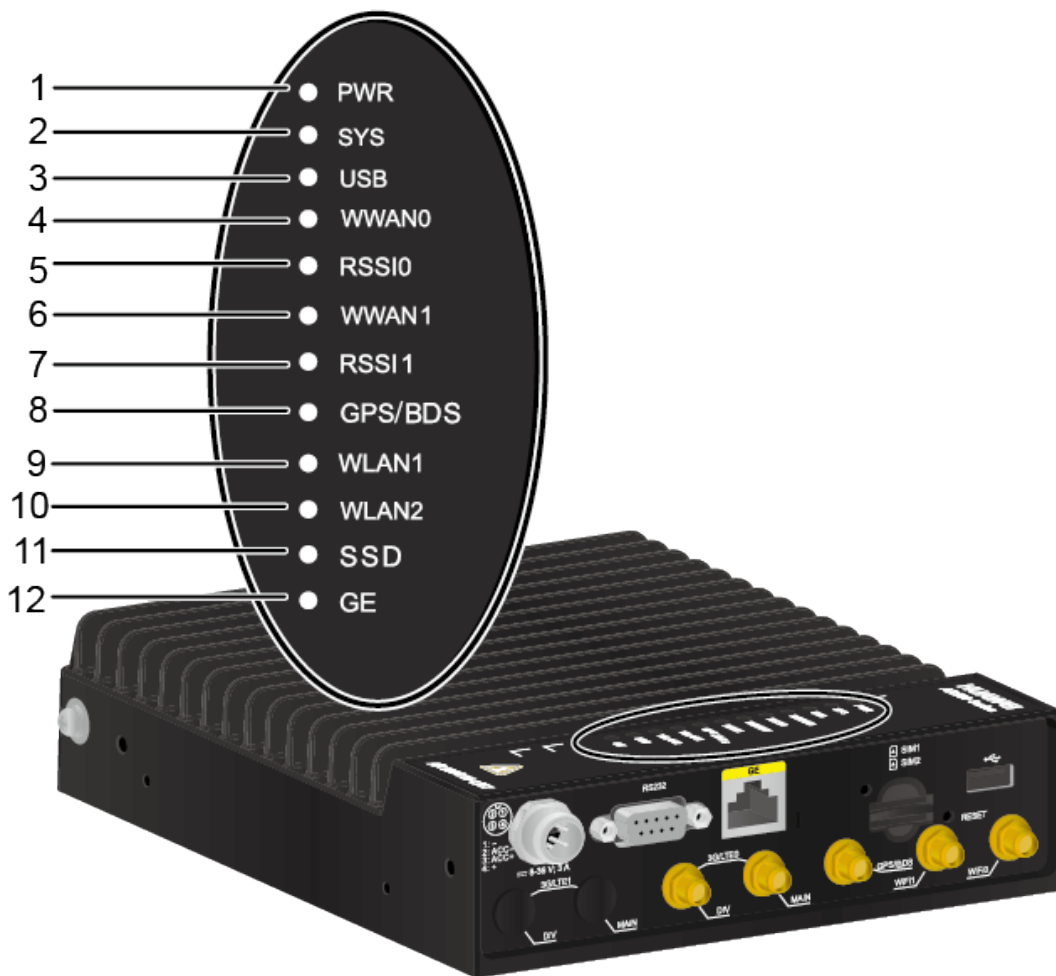


1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	RS232 interface NOTE The RS232 interface can be used as a console interface to configure the router.
3	WAN interface: GE electrical interface	4	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.
5	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● 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	2 Wi-Fi antenna interfaces

Indicator Description

Figure 3-45 shows indicators on the AR503HGW-Lc.

Figure 3-45 Indicators on the AR503HGW-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	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.

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. (BDS stands for BeiDou Navigation Satellite System.)
			Off: The GPS/BDS function is disabled.

Number	Indicator	Color	Description
9	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.
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.
			Steady red: The SSD card does not work normally.
			Off: The SSD card is working normally but no read-write operation is performed on it.
12	GE electrical interface indicator	Green	Steady on: A link has been established on the corresponding GE interface.
			Blinking: Data is being transmitted or received on the link.
			Off: No link is established on the corresponding interface.

Interface Description

RS232 interface

The RS232 interface can be connected to a data terminal for data transmission or to a console for onsite configuration. [Table 3-173](#) lists RS232 interface attributes.

Table 3-173 RS232 interface attributes

Attribute	Description
Connector type	DB9 Female
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.7 RS232 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 3-174](#) lists 3G/LTE antenna interface attributes.

Table 3-174 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● HSPA+: bands 1/2/5/8 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s ● 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 ● 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 236.8 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	6.3.5 LTE Strip-shaped Remote 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 3-175](#) lists GPS/BDS antenna interface attributes.

Table 3-175 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Frequency bands supported	1575.42 MHz, 1561.098 MHz
Cable type	6.3.15 GPS/BDS Remote 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 3-176](#) lists GE electrical interface attributes.

Table 3-176 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 5 Gbit/s upload and download rates. [Table 3-177](#) lists USB interface attributes.

Table 3-177 USB interface attributes

Attribute	Description
Connector type	TYPE A

Attribute	Description
Standards compliance	USB3.0
Working mode	Host

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-178](#) lists Wi-Fi antenna interface attributes.

Table 3-178 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	<ul style="list-style-type: none"> ● 2.4GHz:2.75dBi ● 5GHz:4.52dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.10 Wi-Fi Antenna

Heat Dissipation

The AR503HGW-Lc router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-179](#) lists technical specifications of the AR503HGW-Lc router.

Table 3-179 AR503HGW-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz

Item	Specification
Memory	1 GB
Flash	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.), 1 U height
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 3.0 interfaces	1
Service interfaces	<p>WAN interfaces: one GE electrical interface and two 3G/LTE antenna interfaces</p> <p>LAN interfaces: two Wi-Fi antenna interfaces</p> <p>Multimedia service interface: one GPS/BDS antenna interface</p>

Item	Specification
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to +60°C (32°F to 140°F) NOTE When the altitude is 1800-5000 m (5906-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) 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
Operating altitude	< 5000 m (16404 ft.)
Part number	50010384

3.2.23 AR509CG-Lc

Version Mapping

Table 3-180 lists the mapping between the AR509CG-Lc router and software versions.

Table 3-180 Mapping between the AR509CG-Lc router and software versions

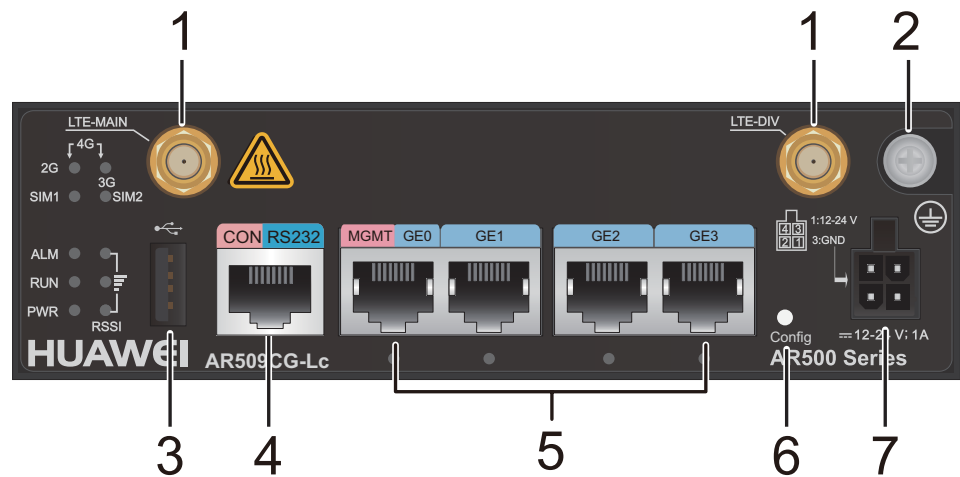
Router Model	Software Version
AR509CG-Lc	V200R008C20 and later versions

Appearance and Structure

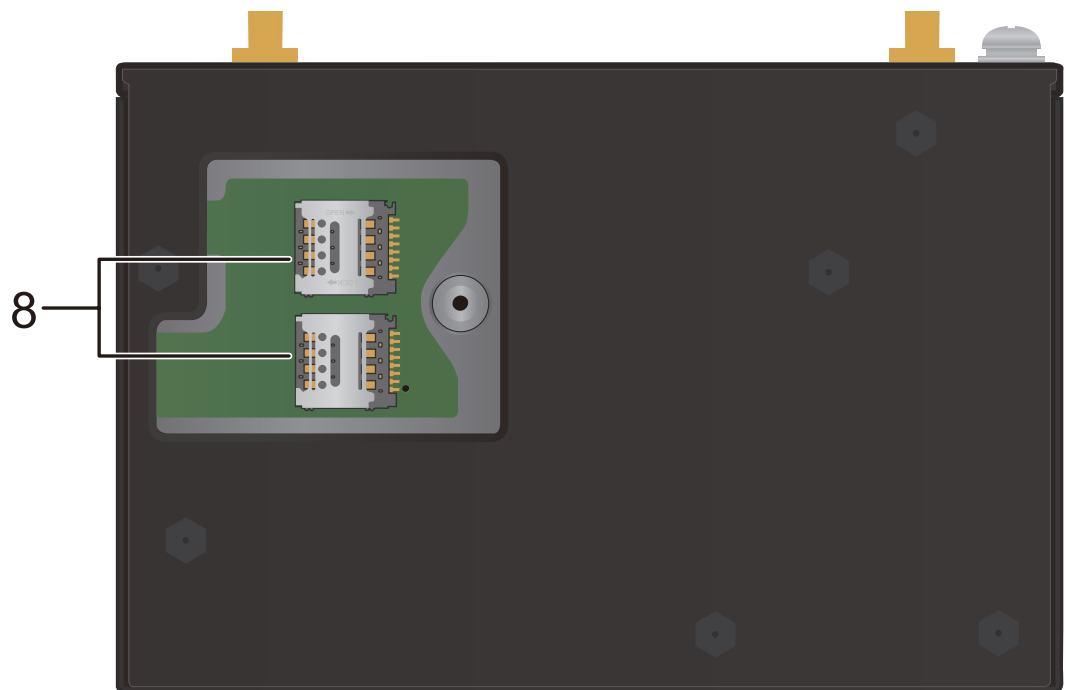
Figure 3-46 shows the appearance of the AR509CG-Lc router.

Figure 3-46 AR509CG-Lc appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



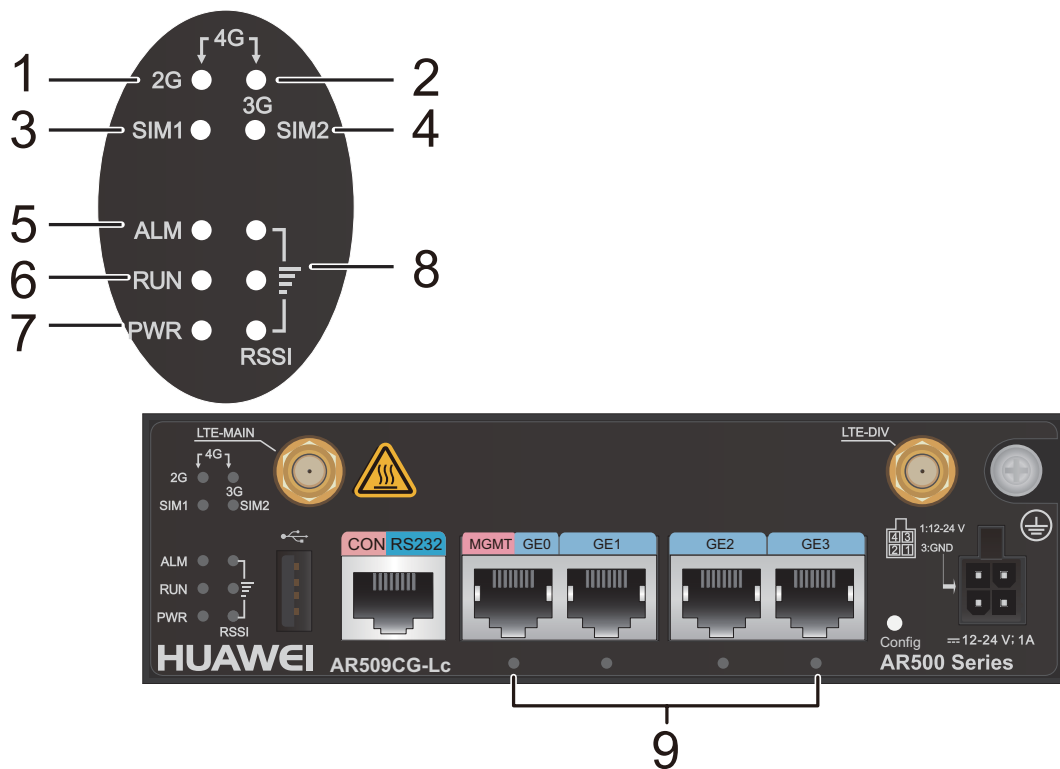
1	LTE antenna interface	2	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
3	USB interface (host)	4	CON/RS232 interface

5	<p>LAN interfaces: four GE electrical interfaces</p> <p>NOTE</p> <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. 	6	<p>Config button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The configuration button is used to restore the factory settings and switch between console and RS232 interfaces. ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5 seconds will switch from the factory default console management interface to the RS232 interface. ● Restoring the factory settings will cause service interruption. Exercise caution when using this button.
7	<p>Power jack</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● Use a DC power cable to connect the router to an external power source. 	8	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.

Indicator Description

Figure 3-47 shows the indicators on the AR509CG-Lc.

Figure 3-47 Indicators on the AR509CG-Lc



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the corresponding slot and is working normally. Off: No SIM card is installed in the corresponding slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady red: The system failed to be upgraded using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - Off: The system software is not running or is resetting. - Slow blinking: The system is running properly. - Fast blinking: The system is being powered on or restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded using the USB flash drive. - Fast blinking: The system is being upgraded using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	GE electrical interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the interface. Blinking: Data is being transmitted or received on the interface. Off: No link is established or no data is being transmitted or received on the interface.

Interface Description

CON/RS232 interface

The CON/RS232 interface of a router can connect to an operation terminal for onsite configuration. [Table 3-181](#) lists attributes of the CON/RS232 interface.

Table 3-181 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 3-182](#) lists GE electrical interface attributes.

Table 3-182 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-183](#) lists attributes of a USB interface.

Table 3-183 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 3-184](#) lists LTE antenna interface attributes.

Table 3-184 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/3/8 ● LTE TDD: bands 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 236.8 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
Network protocols	LTE, WCDMA, GSM
Cable type	6.3.2 LTE Whip Antenna 6.3.3 LTE Indoor Remote Antenna 6.3.4 Outdoor LTE Antenna

Heat Dissipation

The AR509CG-Lc router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-185](#) lists the technical specifications of the AR509CG-Lc router.

Table 3-185 AR509CG-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: four GE electrical interfaces WAN interfaces: two LTE antenna interfaces Industrial service interface: CON/RS232 interface
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010329

3.2.24 AR509CG-Lt

Version Mapping

Table 3-186 lists the mapping between the AR509CG-Lt router and software versions.

Table 3-186 Mapping between the AR509CG-Lt router and software versions

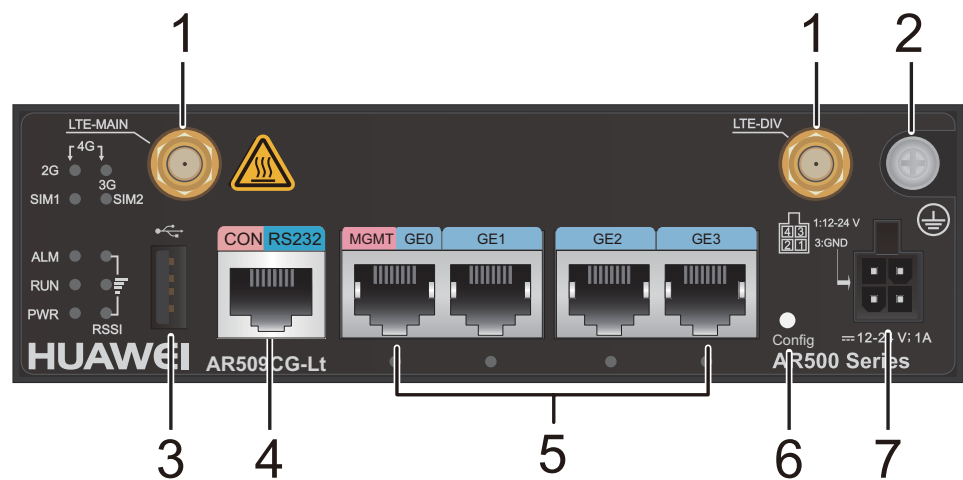
Router Model	Software Version
AR509CG-Lt	V200R008C20 and later versions

Appearance and Structure

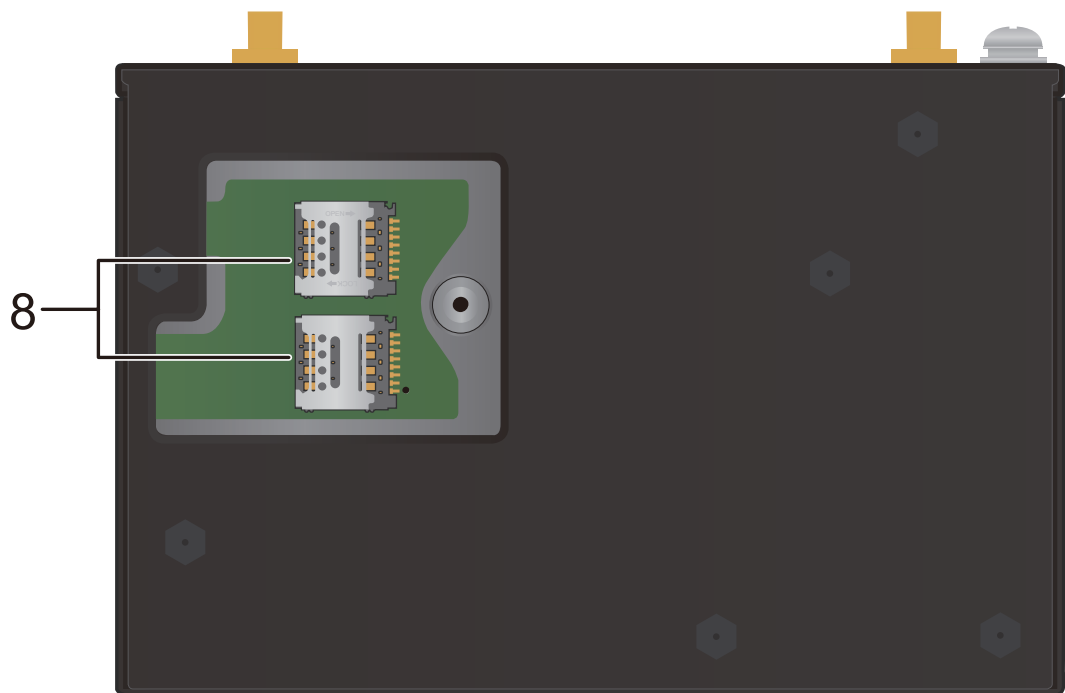
Figure 3-48 shows the appearance of the AR509CG-Lt router.

Figure 3-48 AR509CG-Lt appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



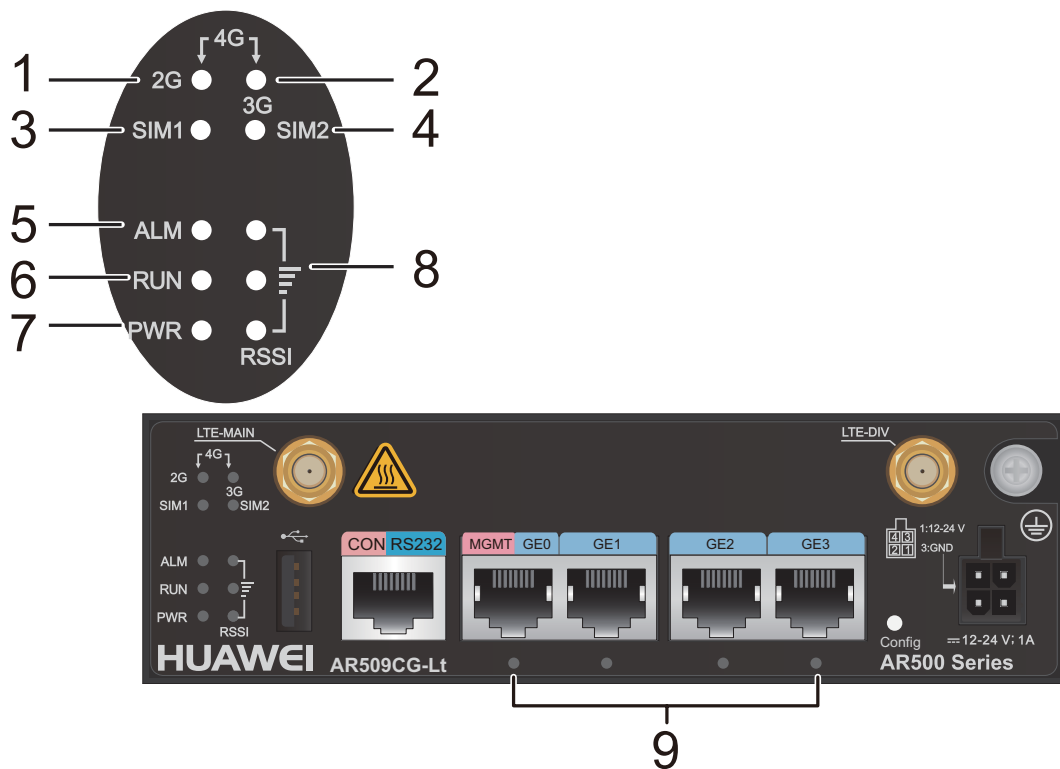
1	LTE antenna interface	2	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
3	USB interface (host)	4	CON/RS232 interface

5	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none">● GE0 is a management interface and is used to upgrade the router.● All GE LAN interfaces can be configured as WAN interfaces.	6	Config button NOTE <ul style="list-style-type: none">● The configuration button is used to restore the factory settings and switch between console and RS232 interfaces.● Holding down the button for 5s or longer will restart the router and restore the factory settings.● Holding down the button for less than 5 seconds will switch from the factory default console management interface to the RS232 interface.● Restoring the factory settings will cause service interruption. Exercise caution when using this button.
7	Power jack NOTE <ul style="list-style-type: none">● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable.● Use a DC power cable to connect the router to an external power source.	8	Two SIM card slots NOTE <ul style="list-style-type: none">● The router supports double-card single-standby, and SIM1 is the default master card.● If only one SIM card needs to be installed, install it in slot SIM1.

Indicator Description

Figure 3-49 shows the indicators on the AR509CG-Lt.

Figure 3-49 Indicators on the AR509CG-Lt



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the corresponding slot and is working normally. Off: No SIM card is installed in the corresponding slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady red: The system failed to be upgraded using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - Off: The system software is not running or is resetting. - Slow blinking: The system is running properly. - Fast blinking: The system is being powered on or restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded using the USB flash drive. - Fast blinking: The system is being upgraded using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	GE electrical interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the interface. Blinking: Data is being transmitted or received on the interface. Off: No link is established or no data is being transmitted or received on the interface.

Interface Description

CON/RS232 interface

The CON/RS232 interface of a router can connect to an operation terminal for onsite configuration. [Table 3-187](#) lists attributes of the CON/RS232 interface.

Table 3-187 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 3-188](#) lists GE electrical interface attributes.

Table 3-188 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-189](#) lists attributes of a USB interface.

Table 3-189 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 3-190](#) lists attributes of an LTE antenna interface.

Table 3-190 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3 ● TDD LTE: bands 38/39/40/41 ● TD-SCDMA: bands 34/39 ● UMTS: band 1 ● EVDO/CDMA1x: 800 MHz ● GSM: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● Time Division Duplexing (TDD) LTE: uplink rate of 18 Mbit/s and downlink rate of 61 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 2.2 Mbit/s and downlink rate of 4.2 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Wideband Code Division Multiple Access packet switched (WCDMA PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● WCDMA circuit switched (CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● Global System for Mobile Communications Circuit Switched Data (GSM CSD): 14.4 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 118 kbit/s and downlink rate of 236.8 kbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
Network protocols	LTE, WCDMA, GSM
Cable type	6.3.2 LTE Whip Antenna 6.3.3 LTE Indoor Remote Antenna 6.3.4 Outdoor LTE Antenna

Heat Dissipation

The AR509CG-Lt router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-191](#) lists the technical specifications of the AR509CG-Lt router.

Table 3-191 AR509CG-Lt technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
DI/DO interface parameter	Voltage level standard: LVTTTL
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: four GE electrical interfaces WAN interfaces: two LTE antenna interfaces Industrial service interface: CON/RS232 interface
Environment parameters	
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F)
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)

Item	Specification
Part number	50010311

3.2.25 AR509CG-Lt-7

Version Mapping

Table 3-192 describes the mapping between the AR509CG-Lt-7 router and software versions.

Table 3-192 Mapping between the AR509CG-Lt-7 router and software versions

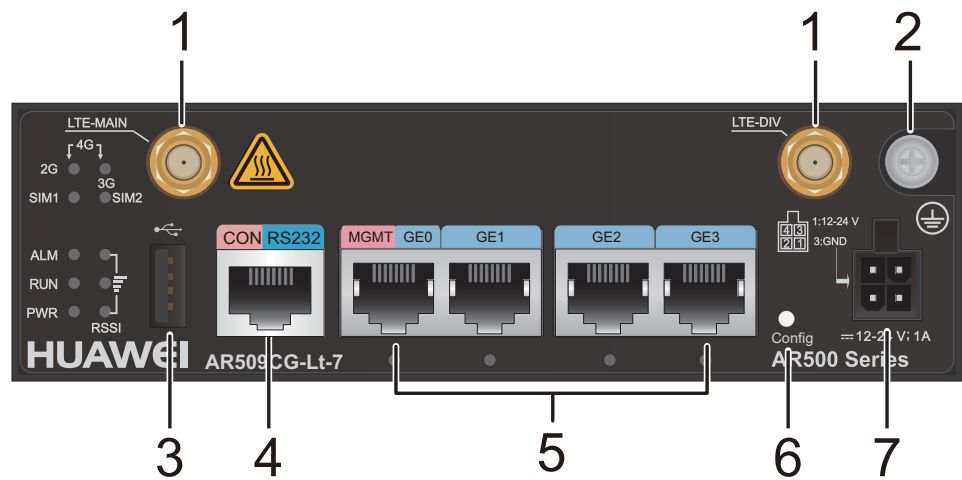
Router Model	Software Version
AR509CG-Lt-7	V200R008C50 and later versions

Appearance and Structure

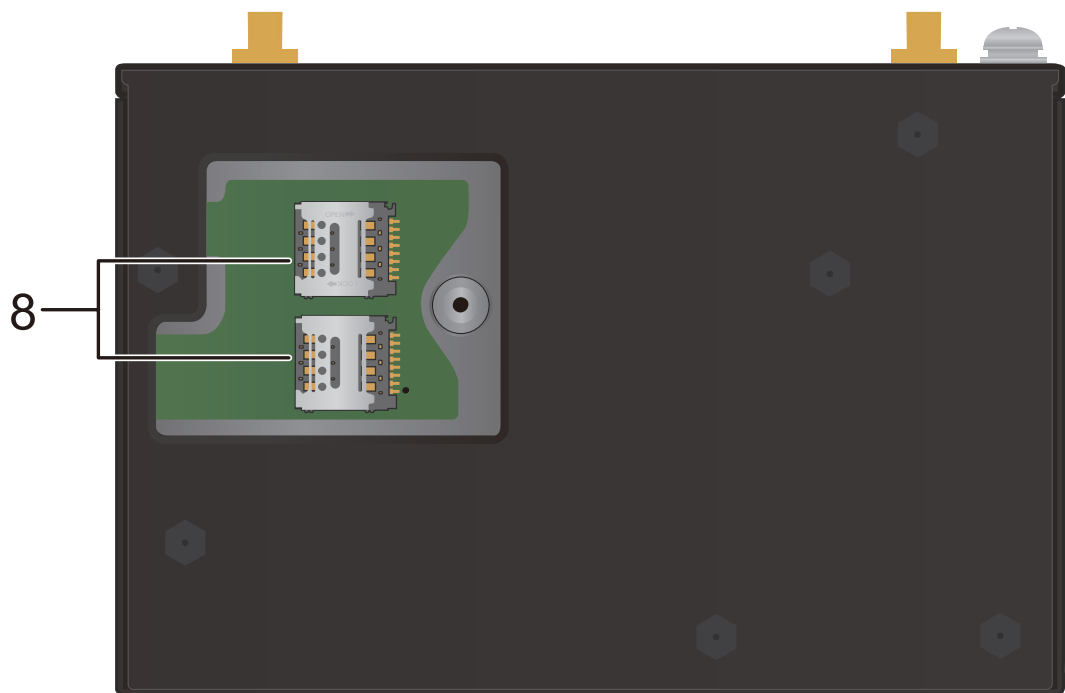
Figure 3-50 shows the appearance of the AR509CG-Lt-7 router.

Figure 3-50 AR509CG-Lt-7 appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



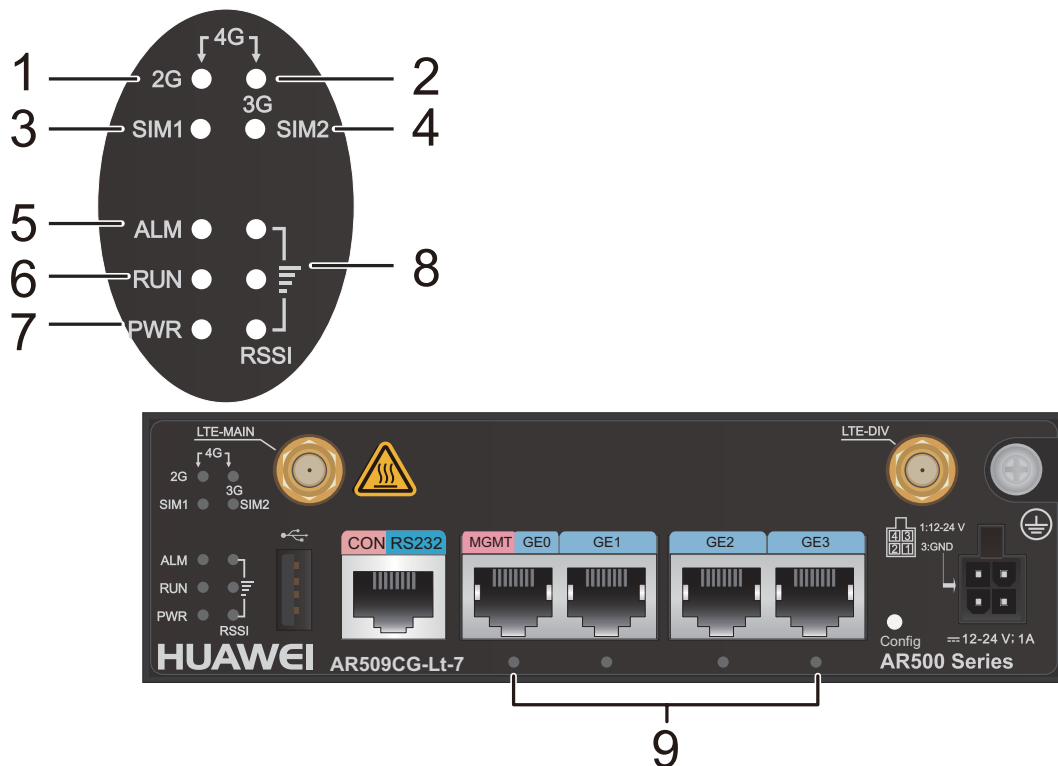
1	LTE antenna interface	2	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
3	USB interface (host)	4	CON/RS232 interface

<p>5 LAN interfaces: four GE electrical interfaces</p> <p>NOTE</p> <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. 	<p>6 Config button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The configuration button is used to restore the factory settings and switch between console and RS232 interfaces. ● Holding down the button for 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5 seconds will switch from the factory default console management interface to the RS232 interface. ● Restoring the factory settings will cause service interruption. Exercise caution when using this button.
<p>7 Power jack</p> <p>NOTE</p> <p>Use a DC power cable to connect the router to an external power source.</p>	<p>8 Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be inserted, install it in slot SIM1.

Indicator Description

Figure 3-51 shows the indicators on the AR509CG-Lt-7.

Figure 3-51 Indicators on the AR509CG-Lt-7



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	<p>2G indicator steady on: The wireless module is working in 2G mode.</p> <p>3G indicator steady on: The wireless module is working in 3G mode.</p> <p>2G and 3G indicators steady on: The wireless module is working in 4G mode.</p> <p>2G and 3G indicators off: The wireless module does not work normally or is unregistered.</p>
3 and 4	SIM	Green	<p>Steady on: A SIM card is installed in the slot and is working normally.</p> <p>Off: No SIM card is installed in the slot.</p>
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: <ul style="list-style-type: none"> Steady red: The system failed to be upgraded or configured using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - Off: The system software is not running or is resetting. - Slow blinking green: The system is running properly. - Fast blinking green: The system is being powered on or restarting. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.

Number	Indicator/ Button	Color	Description
7	PWR	Green	Steady on: The system power supply is normal. Off: The system power supply is abnormal or the router is not connected to a power source.
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No signal is available.
9	GE electrical interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding interface. Blinking: Data is being transmitted or received on the corresponding interface. Off: No link is established or no data is being transmitted or received on the corresponding interface.

Interface Description

CON/RS232 interface

The CON/RS232 interface of a router can connect to an operation terminal for onsite configuration. [Table 3-193](#) lists attributes of the CON/RS232 interface.

Table 3-193 CON/RS232 interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
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 3-194](#) lists GE electrical interface attributes.

Table 3-194 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-195](#) lists attributes of a USB interface.

Table 3-195 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 3-196](#) lists attributes of an LTE antenna interface.

Table 3-196 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3 ● TDD LTE: bands 38/39/40/41 ● TD-SCDMA: bands 34/39 ● UMTS: band 1 ● EVDO/CDMA1x: 800 MHz ● GSM: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● Time Division Duplexing (TDD) LTE: uplink rate of 18 Mbit/s and downlink rate of 61 Mbit/s ● Time Division-Synchronous Code Division Multiple Access (TD-SCDMA): uplink rate of 2.2 Mbit/s and downlink rate of 4.2 Mbit/s ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● Wideband Code Division Multiple Access packet switched (WCDMA PS): uplink rate of 384 kbit/s and downlink rate of 384 kbit/s ● WCDMA circuit switched (CS): uplink rate of 64 kbit/s and downlink rate of 64 kbit/s ● Global System for Mobile Communications Circuit Switched Data (GSM CSD): 14.4 kbit/s ● Enhanced Data Rates for GSM Evolution (EDGE): uplink rate of 118 kbit/s and downlink rate of 236.8 kbit/s ● General Packet Radio Service (GPRS): uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
Network protocols	LTE, WCDMA, GSM
Cable type	6.3.2 LTE Whip Antenna 6.3.3 LTE Indoor Remote Antenna 6.3.4 Outdoor LTE Antenna

Heat Dissipation

The AR509CG-Lt-7 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-197 lists the technical specifications of the AR509CG-Lt-7 router.

Table 3-197 AR509CG-Lt-7 technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.91 in. x 3.94 in. x 1.73 in.), 1 U height
Weight	0.85 kg (1.87 lb)
Power consumption	
Maximum power consumption	8 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: four GE electrical interfaces WAN interfaces: two LTE antenna interfaces Industrial service interface: one CON/RS232 interface
Environment parameters	

Item	Specification
Operating temperature	<ul style="list-style-type: none"> ● Operating at maximum LTE transmit power: -25°C to +65°C (-13°F to +149°F) ● Operating at typical LTE transmit power: -25°C to +70°C (-13°F to +158°F) <p>NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -35°C to +75°C (-31°F to +167°F) when it transmits LTE signals at the highest transmit power.</p>
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010385

3.2.26 AR509CGW-L

Version Mapping

[Table 3-198](#) lists the mapping between the AR509CGW-L router and software versions.

Table 3-198 Mapping between the AR509CGW-L router and software versions

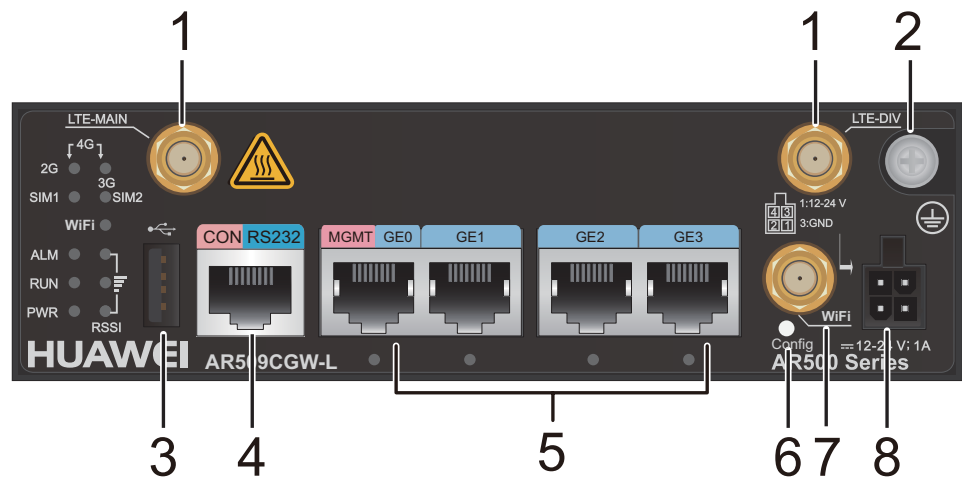
Router Model	Software Version
AR509CGW-L	V200R008C50 and later versions

Appearance and Structure

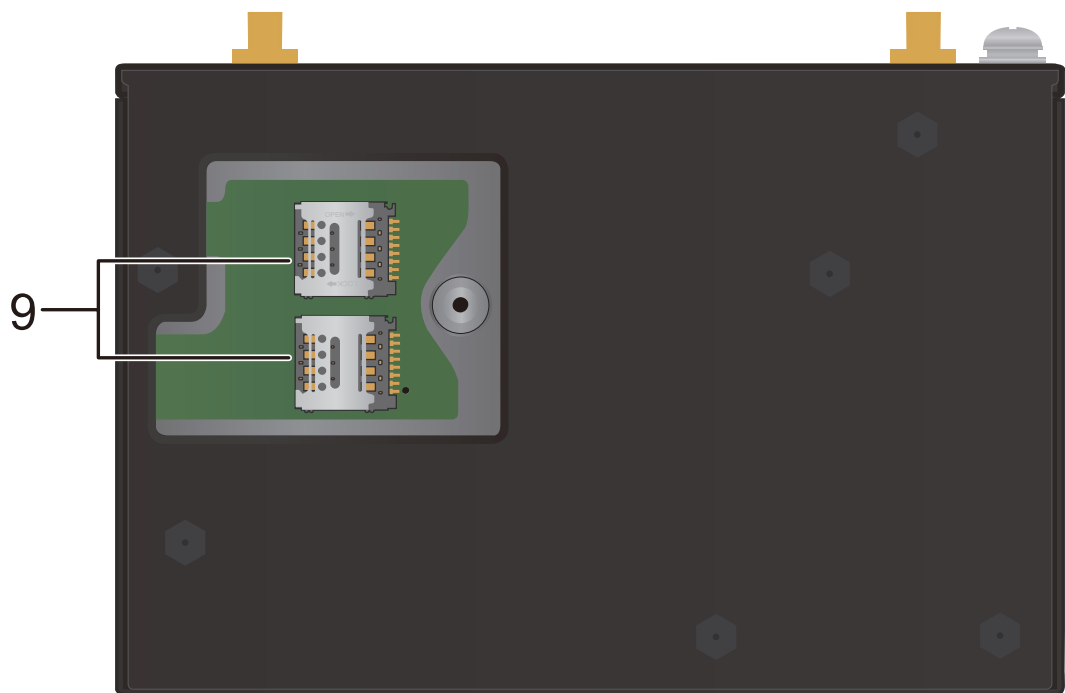
[Figure 3-52](#) shows the appearance of the AR509CGW-L router.

Figure 3-52 AR509CGW-L appearance

Interfaces on the router:



Removing the SIM card cover from the bottom:



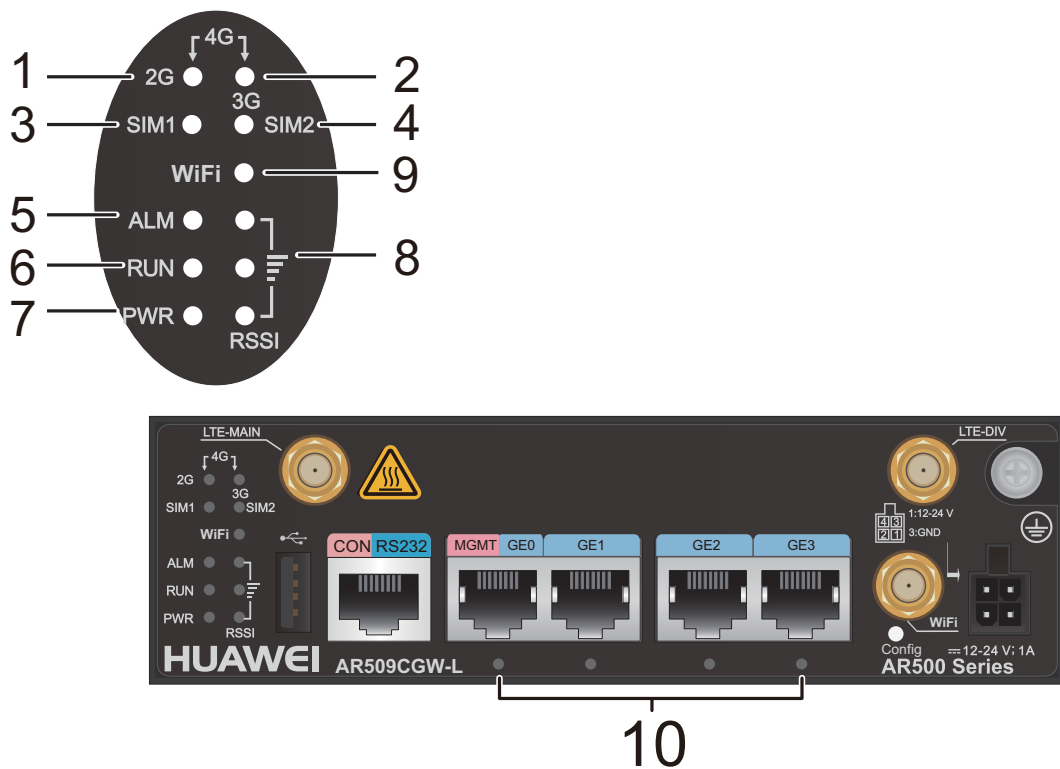
1	WAN interfaces: two LTE antenna interfaces	2	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
3	USB interface	4	CON/RS232 interface

5	<p>LAN interfaces: four GE electrical interfaces</p> <p>NOTE</p> <p>GE0 is a management interface and is used to upgrade the router.</p>	6	<p>Config button</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The configuration button is used to restore the factory settings and switch between console and RS232 interfaces. ● Holding down the button 5s or longer will restart the router and restore the factory settings. ● Holding down the button for less than 5s will switch between the CON and RS232 modes. The factory default mode is CON. ● Restoring the factory settings will cause service interruption. Exercise caution when using this button. ● A pin is delivered in the accessory package. You can use this pin for operation on the configuration button.
7	<p>LAN interface: Wi-Fi antenna interface</p>	8	<p>Power socket</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.4 24 W Integrated Power Adapter with an Adapter Cable. ● GND is the ground for power signal isolation.
9	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router must use industrial SIM cards. ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1. 	-	-

Indicator Description

Figure 3-53 shows indicators on the AR509CGW-L router.

Figure 3-53 Indicators on the AR509CGW-L



Number	Indicator/ Button	Color	Description
1 and 2	4G/3G/2G indicators	Green	2G indicator steady on: The wireless module is working in 2G mode. 3G indicator steady on: The wireless module is working in 3G mode. 2G and 3G indicators steady on: The wireless module is working in 4G mode. 2G and 3G indicators off: The wireless module does not work normally or is unregistered.
3 and 4	SIM	Green	Steady on: A SIM card is installed in the slot and is working normally. Off: No SIM card is installed in the slot.

Number	Indicator/ Button	Color	Description
5	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady red: The system failed to be upgraded or configured using the USB flash drive.
6	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive.
7	PWR	Green	<p>Steady on: The system power supply is normal.</p> <p>Off: The system power supply is abnormal or the router is not connected to a power source.</p>

Number	Indicator/ Button	Color	Description
8	RSSI NOTE There are three RSSI indicators arranged vertically on the panel, which turn on in sequence. More RSSI indicators in steady on state indicate a larger received signal strength indicator (RSSI) value and higher signal strength.	Green	One indicator on: The signal strength is low. Two indicators on: The signal strength is medium. Three indicators on: The signal strength is high. Three indicators off: No radio signals are detected.
9	WiFi	Green	Blinking: The Wi-Fi link is transmitting data. The blinking frequency changes with the traffic transmission rate on the link. Off: The Wi-Fi link is shut down.
10	GE electrical interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding interface. Blinking: Data is being transmitted or received on the corresponding interface. Off: No link is established or no data is being transmitted or received on the corresponding interface.

Interface Description

CON/RS232 interface

The CON/RS232 interface can connect to an operation terminal for onsite configuration. [Table 3-199](#) lists CON/RS232 interface attributes.

Table 3-199 CON/RS232 interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
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 3-200](#) lists GE electrical interface attributes.

Table 3-200 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-201](#) lists USB interface attributes.

Table 3-201 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
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 3-202](#) lists LTE antenna interface attributes.

Table 3-202 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	<ul style="list-style-type: none"> ● 6.3.2 LTE Whip Antenna ● 6.3.4 Outdoor LTE Antenna ● 6.3.3 LTE Indoor Remote Antenna

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-203](#) lists Wi-Fi antenna interface attributes.

Table 3-203 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11b/g/n
Frequency bands supported	2.4 GHz
Rate	150 Mbit/s
MIMO mode (Tx x Rx)	1x1
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	Ordering Information

Heat Dissipation

The AR509CGW-L router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-204](#) lists technical specifications of the AR509CGW-L router.

Table 3-204 AR509CGW-L technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash memory	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 100 mm x 44 mm (5.9 in. x 3.9 in. x 1.7 in.), 1 U height
Weight	0.653 kg (1.440 lb)
Power consumption	
Maximum power consumption	8 W

Item	Specification
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC/24 V DC ● Maximum voltage range: 8 V DC to 36 V DC
Interface density	
Management interfaces	1
USB interfaces	1
Service interfaces	LAN interfaces: four GE electrical interfaces and one Wi-Fi antenna interface WAN interfaces: two LTE antenna interfaces Industrial service interface: one CON/RS232 interface
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-10°C to +70°C (14°F to 158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)
Part number	50010355

3.2.27 AR509G-L-D-H

Version Mapping

Table 3-205 lists the mapping between the AR509G-L-D-H router and software versions.

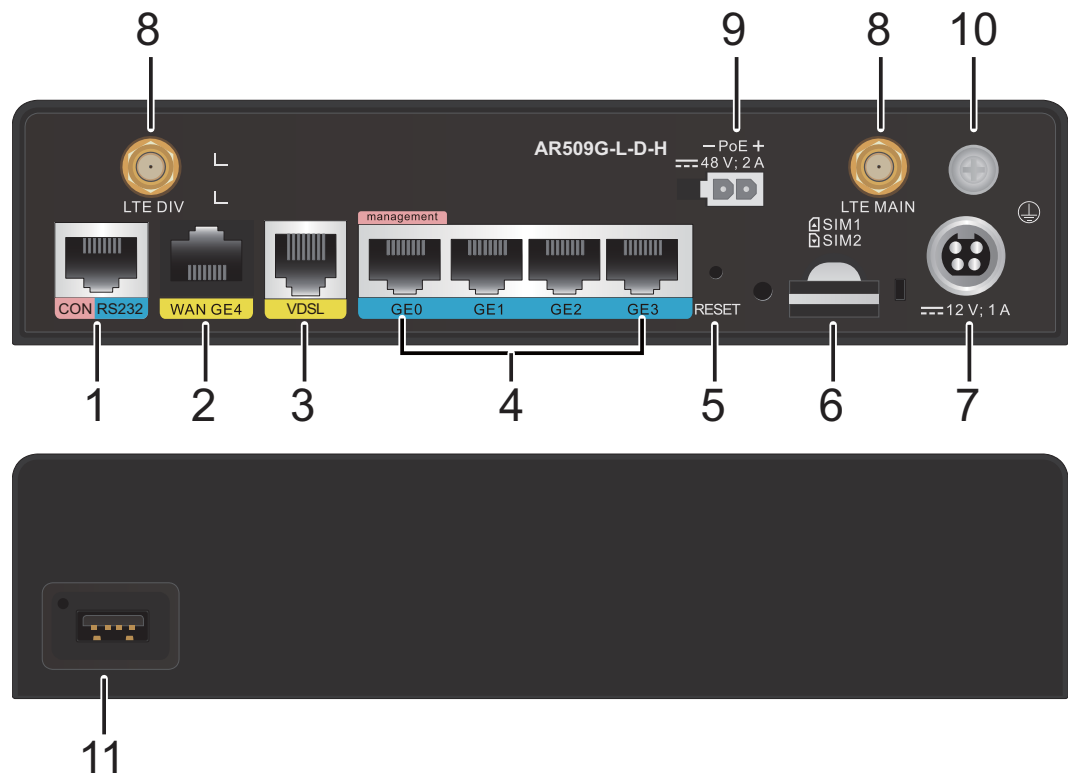
Table 3-205 Mapping between the AR509G-L-D-H router and software versions

Router Model	Software Version
AR509G-L-D-H	V200R006C10 and later versions

Appearance and Structure

Figure 3-54 shows the appearance of the AR509G-L-D-H router.

Figure 3-54 AR509G-L-D-H appearance



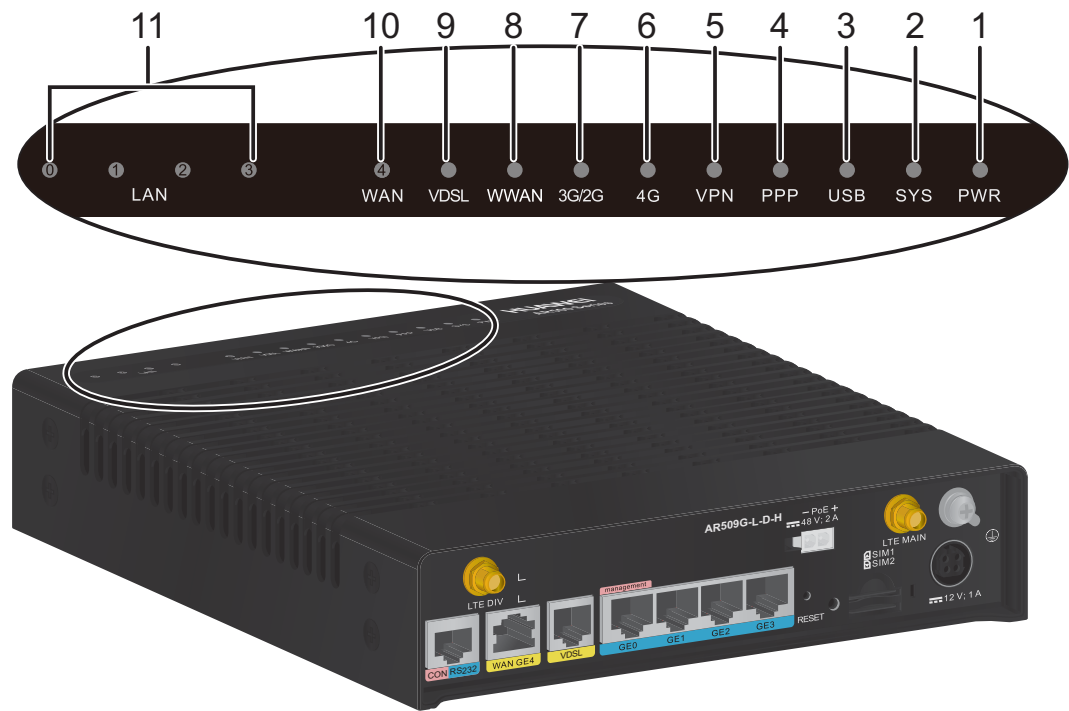
1	CON/RS232 interface	2	WAN interface: GE electrical interface
3	WAN interface: VDSL interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces. NOTE Electrical interfaces GE0 to GE3 support PoE+.

5	<p>RESET button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● 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. ● Holding down the button for 10 seconds or longer will switch from the default CON mode to the RS232 mode or from RS232 to CON mode. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	6	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.
7	<p>Power jack</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.3 24 W Integrated Power Adapter or 4.5 60 W Industrial AC Power Module. ● Use a DC power cable to connect the router to an external power source. 	8	<p>LTE antenna interface</p>
9	<p>PoE power jack</p> <p>PoE power jack</p> <p>NOTE</p> <p>The PoE power jack connects to a 4.8 100 W PoE Power Adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.</p>	10	<p>Ground point</p> <p>NOTE</p> <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>
11	<p>USB interface (host)</p>	-	-

Indicator Description

Figure 3-55 shows the indicators on the AR509G-L-D-H router.

Figure 3-55 Indicators on the AR509G-L-D-H



Number	Indicator	Color	Description
1	PWR	Green	<ul style="list-style-type: none"> ● Steady on: The system power supply is normal. ● Off: The system power is off.
2	SYS	Red and green	<ul style="list-style-type: none"> ● Off: The system software is not running or is resetting. ● Slow blinking: The system is running properly. ● Fast blinking: The system is being powered on or restarting. ● Steady red: A system fault has occurred and requires manual intervention.

Number	Indicator	Color	Description
3	USB	Red and green	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Steady on: A PPP connection has been set up. ● Off: No PPP connection is established.
5	VPN	Green	<ul style="list-style-type: none"> ● Steady on: A VPN connection has been established. ● Off: The VPN service is unavailable.
6	4G	Green	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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.

Number	Indicator	Color	Description
10	WAN	Green	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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 3-206](#) lists attributes of the CON/RS232 interface.

Table 3-206 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 3-207](#) lists GE electrical interface attributes.

Table 3-207 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-208](#) lists attributes of a USB interface.

Table 3-208 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 3-209](#) lists LTE antenna interface attributes.

Table 3-209 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	6.3.2 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 3-210** lists attributes of a VDSL interface.

Table 3-210 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	6.9 Standard Telephone Cable

Heat Dissipation

The AR509G-L-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-211 lists the technical specifications of the AR509G-L-D-H router.

Table 3-211 AR509G-L-D-H technical specification

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	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.), 1 U height
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	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

Item	Specification
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	<ul style="list-style-type: none"> 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 (16404.2 ft.)
Part number	50010221

Related Documents

Video: [Introduction to Huawei AR509](#)

3.2.28 AR509G-Lc

Version Mapping

Table 3-212 lists the mapping between the AR509G-Lc router and software versions.

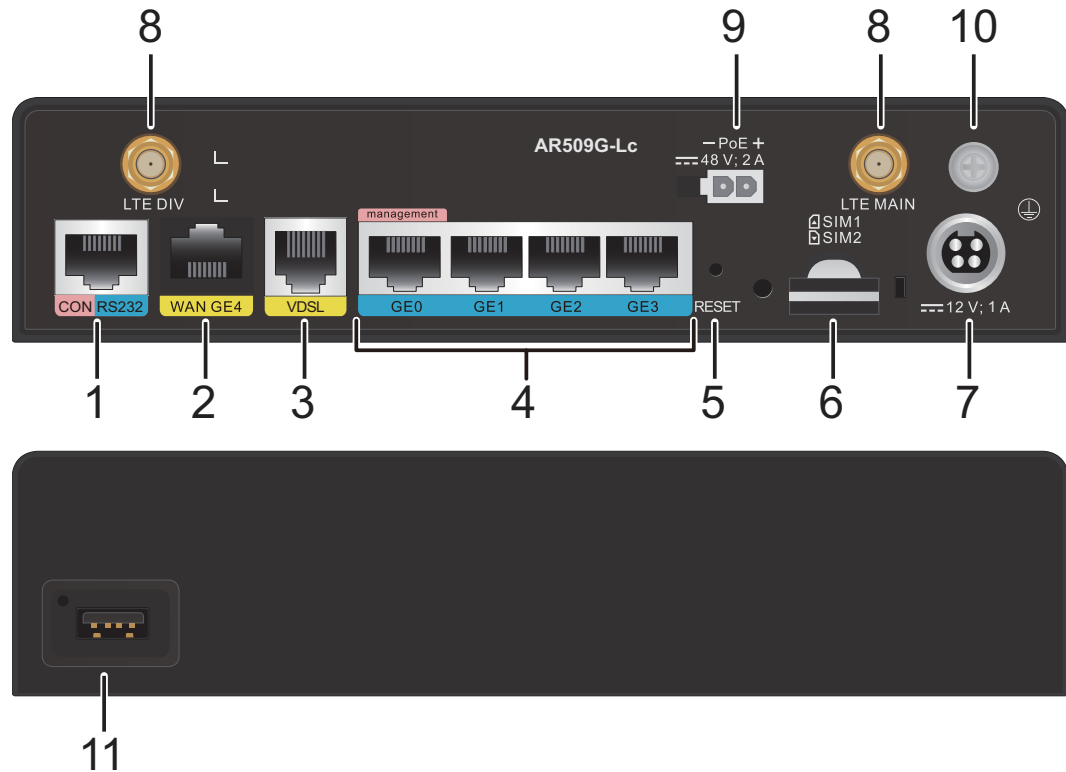
Table 3-212 Mapping between the AR509G-Lc router and software versions

Router Model	Software Version
AR509G-Lc	V200R006C17, V200R008C30 and later versions

Appearance and Structure

Figure 3-56 shows the appearance of the AR509G-Lc router.

Figure 3-56 AR509G-Lc appearance



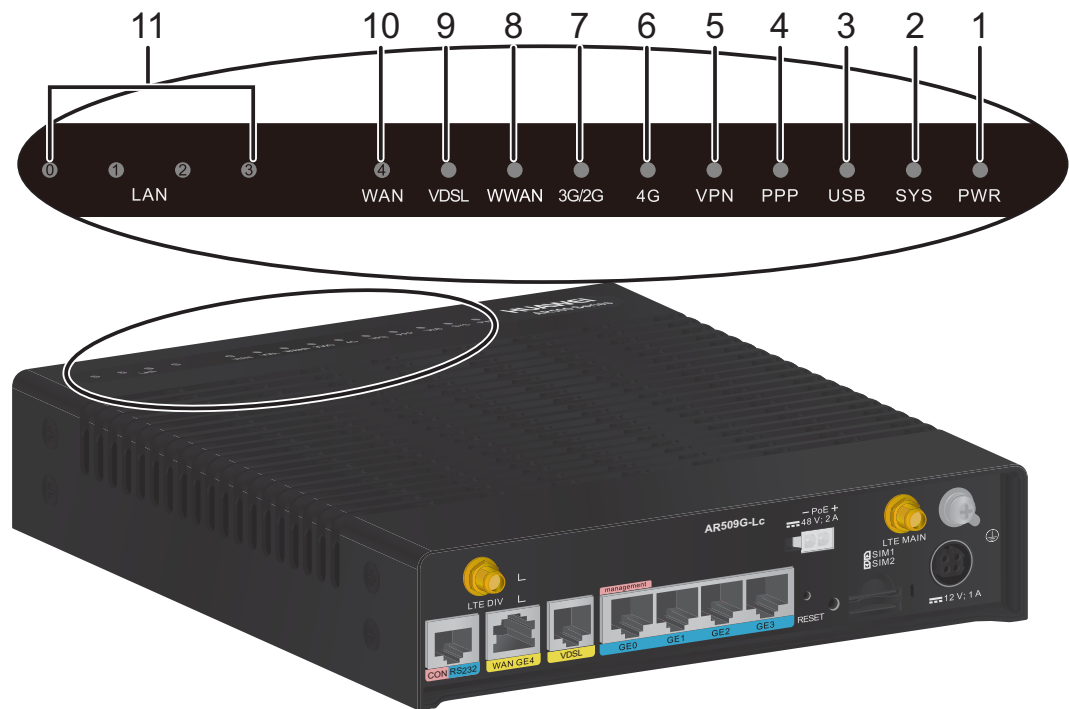
1	CON/RS232 interface	2	WAN interface: GE electrical interface
3	WAN interface: VDSL interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

5	<p>RESET button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● 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. ● Holding down the button for 10 seconds or longer will switch from the default CON mode to the RS232 mode or from RS232 to CON mode. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	6	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.
7	<p>Power jack</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.3 24 W Integrated Power Adapter or 4.5 60 W Industrial AC Power Module. ● Use a DC power cable to connect the router to an external power source. 	8	<p>LTE antenna interface</p>
9	<p>PoE power jack</p> <p>NOTE</p> <p>The PoE power jack connects to a 4.8 100 W PoE Power Adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.</p>	10	<p>Ground point</p> <p>NOTE</p> <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>
11	<p>USB interface (host)</p>	-	-

Indicator Description

Figure 3-57 shows the indicators on the AR509G-Lc router.

Figure 3-57 Indicators on the AR509G-Lc



Number	Indicator	Color	Description
1	PWR	Green	<ul style="list-style-type: none"> Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	<ul style="list-style-type: none"> Off: The system software is not running or is resetting. Slow blinking green: The system is running properly. Fast blinking green: The system is being powered on or is restarting. Steady red: A system fault has occurred and requires manual intervention.

Number	Indicator	Color	Description
3	USB	Red and green	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Steady on: A PPP connection has been established. ● Off: No PPP connection is established.
5	VPN	Green	<ul style="list-style-type: none"> ● Steady on: A VPN connection has been established. ● Off: No VPN connection is established.
6	4G	Green	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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.

Number	Indicator	Color	Description
10	WAN	Green	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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 3-213](#) lists attributes of the CON/RS232 interface.

Table 3-213 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 3-214](#) lists GE electrical interface attributes.

Table 3-214 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-215](#) lists attributes of a USB interface.

Table 3-215 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 3-216](#) lists LTE antenna interface attributes.

Table 3-216 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	6.3.2 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 3-217](#) lists attributes of a VDSL interface.

Table 3-217 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	6.9 Standard Telephone Cable

Heat Dissipation

The AR509G-Lc router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-218 lists the technical specifications of the AR509G-Lc router.

Table 3-218 AR509G-Lc technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	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.), 1 U height
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	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	

Item	Specification
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	<ul style="list-style-type: none"> ● 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 (16404.2 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
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010297

Related Documents

Video: [Introduction to Huawei AR509](#)

3.2.29 AR509GW-L-D-H

Version Mapping

Table 3-219 lists the mapping between the AR509GW-L-D-H router and software versions.

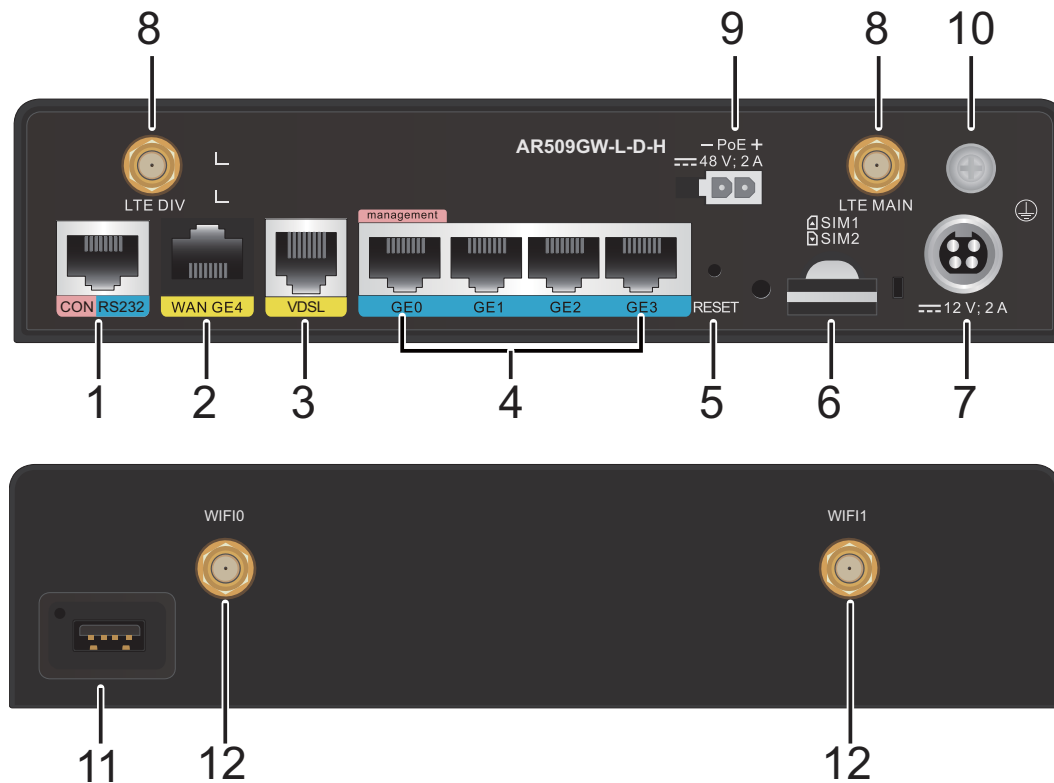
Table 3-219 Mapping between the AR509GW-L-D-H router and software version

Router Model	Software Version
AR509GW-L-D-H	V200R007C02, V200R008C50 and later versions

Appearance and Structure

Figure 3-58 shows the appearance of the AR509GW-L-D-H router.

Figure 3-58 AR509GW-L-D-H appearance



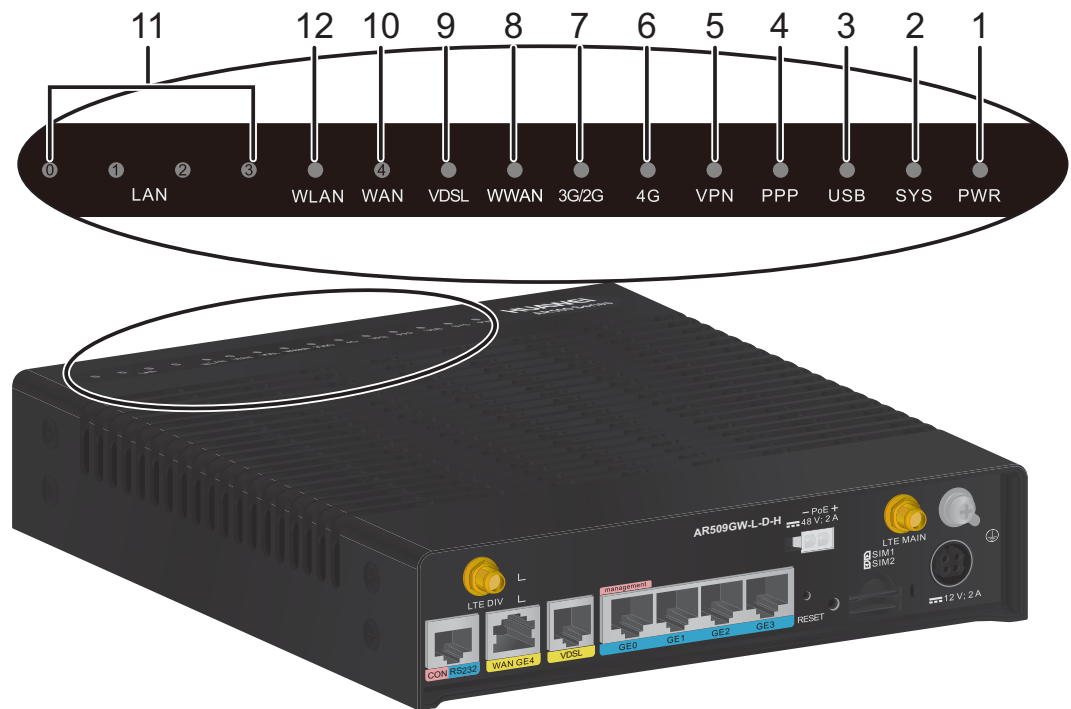
1	CON/RS232 interface	2	WAN interface: GE electrical interface
3	WAN interface: VDSL interface	4	LAN interfaces: four GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

5	<p>RESET button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● 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. ● Holding down the button for 10 seconds or longer will switch from the default CON mode to the RS232 mode or from RS232 to CON mode. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	6	<p>Two SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports double-card single-standby, and SIM1 is the default master card. ● If only one SIM card needs to be installed, install it in slot SIM1.
7	<p>Power jack</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports Huawei 4.3 24 W Integrated Power Adapter or 4.5 60 W Industrial AC Power Module. ● Use a DC power cable to connect the router to an external power source. 	8	<p>LTE antenna interface</p>
9	<p>PoE power jack</p> <p>NOTE</p> <p>The PoE power jack connects to a 4.8 100 W PoE Power Adapter to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to GE interfaces of the router.</p>	10	<p>Ground point</p> <p>NOTE</p> <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>
11	<p>USB interface (host)</p>	12	<p>Two Wi-Fi antenna interfaces</p>

Indicator Description

Figure 3-59 shows the indicators on the AR509GW-L-D-H router.

Figure 3-59 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 being powered on or is restarting. Steady red: A system fault has occurred and requires manual intervention.

Number	Indicator	Color	Description
3	USB	Red and green	<p>Off: No USB flash drive is connected to the router, the USB interface has failed, or the USB indicator has failed.</p> <p>Steady green: The system has been upgraded or configured using a USB flash drive.</p> <p>Blinking green: The system is reading data from the USB flash drive.</p> <p>Steady red: The router fails to connect to or register with the network management system.</p> <p>Blinking red: An error has occurred when the system is executing the configuration file or reading data from the USB flash drive.</p>
4	PPP	Green	<p>Steady on: A PPP connection has been established.</p> <p>Off: No PPP connection is established.</p>
5	VPN	Green	<p>Steady on: A VPN connection has been established.</p> <p>Off: No VPN connection is established.</p>
6	4G	Green	<p>Steady on: The 4G signal strength is high.</p> <p>Fast blinking: The 4G signal strength is medium.</p> <p>Slow blinking: The 4G signal strength is low.</p> <p>Off: No 4G signal is available.</p>
7	3G/2G	Green	<p>Steady on: The 3G/2G signal strength is high.</p> <p>Fast blinking: The 3G/2G signal strength is medium.</p> <p>Slow blinking: The 3G/2G signal strength is low.</p> <p>Off: No 3G/2G signal is available.</p>
8	WWAN	Green	<p>Steady on: A 4G/3G/2G connection has been established and is active.</p> <p>Blinking: Data is being transmitted or received over the 4G/3G/2G connection.</p> <p>Off: The 4G/3G/2G connection has not been established or is inactive.</p>
9	VDSL	Green	<p>Steady on: A link has been established on the VDSL interface.</p> <p>Blinking: Data is being transmitted or received on the VDSL interface.</p> <p>Off: No link is established on the VDSL interface.</p>

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 3-220](#) lists attributes of the CON/RS232 interface.

Table 3-220 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 3-221](#) lists GE electrical interface attributes.

Table 3-221 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-222](#) lists attributes of a USB interface.

Table 3-222 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 3-223](#) lists LTE antenna interface attributes.

Table 3-223 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)

Attribute	Description
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE FDD: bands 1/2/3/4/5/7/8/20 ● DC-HSPA+/HSPA+/HSPA/WCDMA: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	6.3.2 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 3-224](#) lists attributes of a VDSL interface.

Table 3-224 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	<ul style="list-style-type: none"> ● 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

Attribute	Description
Rate	<ul style="list-style-type: none"> ● 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	6.9 Standard Telephone Cable

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-225](#) lists attributes of a Wi-Fi antenna interface.

Table 3-225 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi/3.0 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.10 Wi-Fi Antenna

Heat Dissipation

The AR509GW-L-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-226](#) lists the technical specifications of the AR509GW-L-D-H router.

Table 3-226 AR509GW-L-D-H technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Flash	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.), 1 U height
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

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	<ul style="list-style-type: none"> ● 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 (16404.2 ft.)
Part number	50010255

Related Documents

Video: [Introduction to Huawei AR509](#)

3.3 AR510 Series

3.3.1 AR511GW-LAV2M3

Version Mapping

Table 3-227 lists the mapping between the AR511GW-LAV2M3 router and software versions.

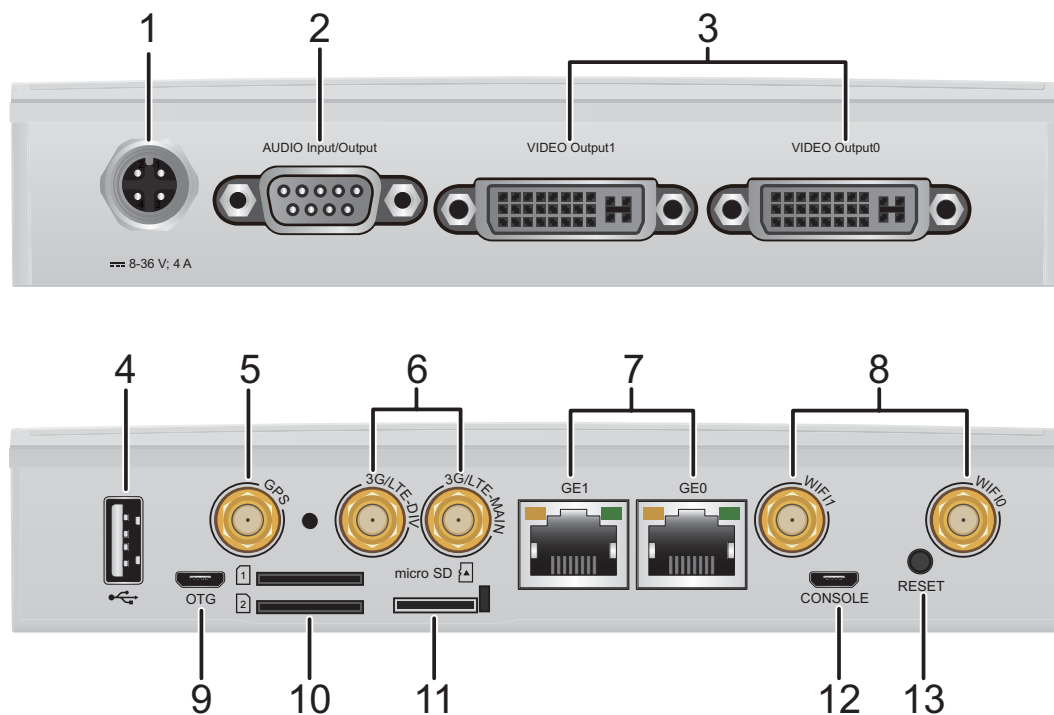
Table 3-227 Mapping between the AR511GW-LAV2M3 router and software versions

Router Model	Software Version
AR511GW-LAV2M3	V200R005C30 and later versions

Appearance and Structure

Figure 3-60 shows the appearance of the AR511GW-LAV2M3 router.

Figure 3-60 AR511GW-LAV2M3 appearance



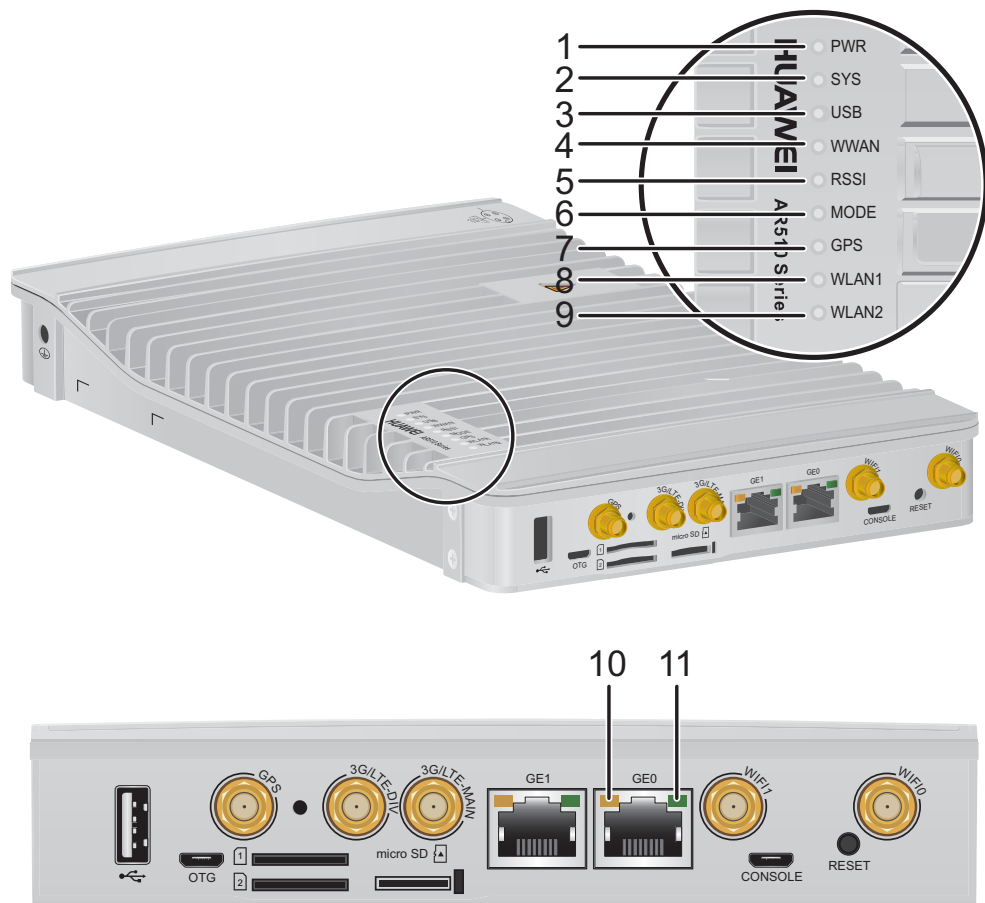
1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	Audio interface
3	Two video interfaces	4	USB interface (host)
5	GPS antenna interface	6	3G/LTE antenna interface
7	WAN interfaces: two GE electrical interfaces	8	Two Wi-Fi antenna interfaces
9	USB interface (OTG)	10	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● 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

13	<p>RESET button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	-	-
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Indicator Description

Figure 3-61 shows the indicators on the AR511GW-LAV2M3 router.

Figure 3-61 Indicators on the AR511GW-LAV2M3



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 being powered 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.

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: <ul style="list-style-type: none"> ● 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 3-228](#) lists attributes of an audio interface.

Table 3-228 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 3-229](#) lists attributes of a video interface.

Table 3-229 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	<ul style="list-style-type: none"> ● 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 3-230** lists attributes of the console interface.

Table 3-230 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 3-231** lists attributes of a 3G/LTE antenna interface.

Table 3-231 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/2/3/5/7/8/20 ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: 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	<ul style="list-style-type: none"> ● 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 3-232](#) lists attributes of a GPS antenna interface.

Table 3-232 GPS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
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 3-233](#) lists GE electrical interface attributes.

Table 3-233 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-234](#) lists attributes of a USB interface.

Table 3-234 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 3-235](#) lists attributes of a Micro USB interface.

Table 3-235 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 to transmit and receive data. [Table 3-236](#) lists attributes of a Wi-Fi antenna interface.

Table 3-236 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna

Heat Dissipation

The AR511GW-LAV2M3 router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-237](#) lists the technical specifications of the AR511GW-LAV2M3 router.

Table 3-237 AR511GW-LAV2M3 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand Flash	2 GB
EMMC Flash	4 GB
Micro SD card (default: sd1)	None
Hard disk	Not supported
Dimensions and weight	

Item	Specification
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.), 1 U height
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
Extended slots	Not supported
Environment parameters	

Item	Specification
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 (16404.2 ft.)
Part number	50010176

3.3.2 AR511CGW-LAV2M3

Version Mapping

Table 3-238 lists the mapping between the AR511CGW-LAV2M3 router and software versions.

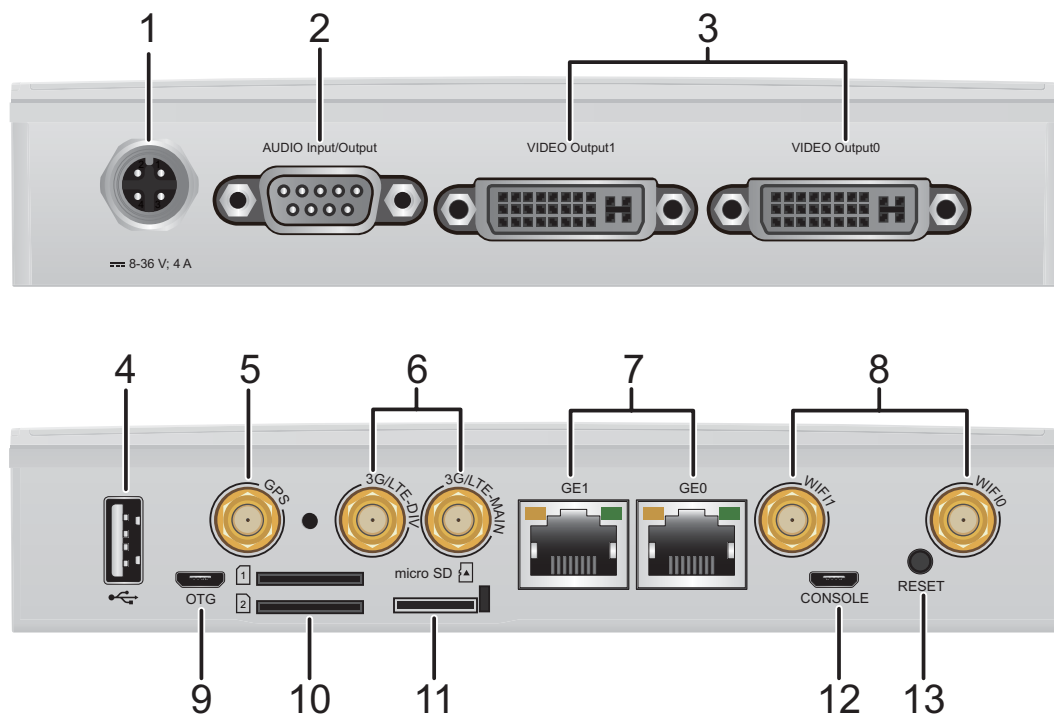
Table 3-238 Mapping between the AR511CGW-LAV2M3 router and software versions

Router Model	Software Version
AR511CGW-LAV2M3	V200R006C15 and later versions

Appearance and Structure

Figure 3-62 shows the appearance of the AR511CGW-LAV2M3 router.

Figure 3-62 AR511CGW-LAV2M3 appearance



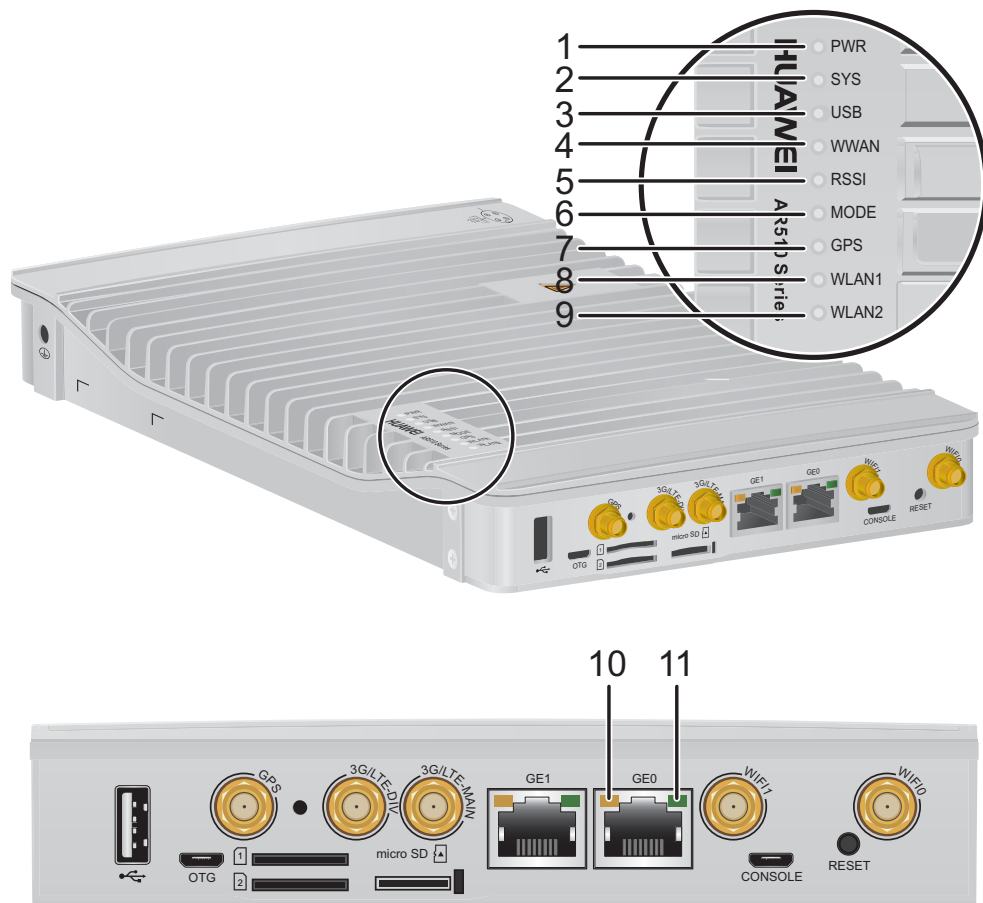
1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	Audio interface
3	Two video interfaces	4	USB interface (host)
5	GPS antenna interface	6	3G/LTE antenna interface
7	WAN interfaces: two GE electrical interfaces	8	Two Wi-Fi antenna interfaces
9	USB interface (OTG)	10	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● 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

13	<p>RESET button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	-	-
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Indicator Description

Figure 3-63 shows the indicators on the AR511CGW-LAV2M3 router.

Figure 3-63 Indicators on the AR511CGW-LAV2M3



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 being powered 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.

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: <ul style="list-style-type: none"> ● 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 3-239](#) lists attributes of an audio interface.

Table 3-239 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 3-240](#) lists attributes of a video interface.

Table 3-240 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	<ul style="list-style-type: none"> ● 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 3-241](#) lists attributes of the console interface.

Table 3-241 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 3-242](#) lists attributes of a 3G/LTE antenna interface.

Table 3-242 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● HSPA+: bands 1/2/5/8 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800/1900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 236.8 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	<ul style="list-style-type: none"> ● 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 3-243](#) lists attributes of a GPS antenna interface.

Table 3-243 GPS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
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 3-244](#) lists GE electrical interface attributes.

Table 3-244 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-245](#) lists attributes of a USB interface.

Table 3-245 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 3-246](#) lists attributes of a Micro USB interface.

Table 3-246 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 to transmit and receive data. [Table 3-247](#) lists attributes of a Wi-Fi antenna interface.

Table 3-247 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna

Heat Dissipation

The AR511CGW-LAV2M3 router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-248](#) lists the technical specifications of the AR511CGW-LAV2M3 router.

Table 3-248 AR511CGW-LAV2M3 technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand Flash	1 GB
EMMC Flash	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.), 1 U height
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

Item	Specification
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 (16404.2 ft.)
Part number	50010279

3.3.3 AR511GW-LM7

Version Mapping

[Table 3-249](#) lists the mapping between the AR511GW-LM7 router and software versions.

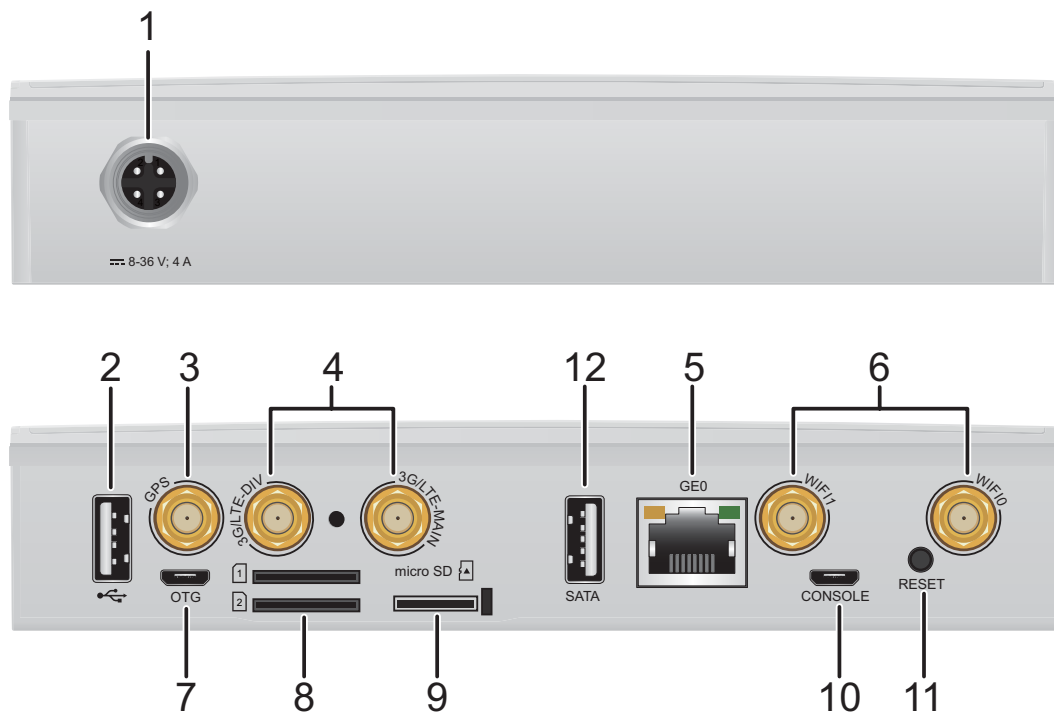
Table 3-249 Mapping between the AR511GW-LM7 router and software versions

Router Model	Software Version
AR511GW-LM7	V200R005C31 and later versions

Appearance and Structure

[Figure 3-64](#) shows the appearance of the AR511GW-LM7 router.

Figure 3-64 AR511GW-LM7 appearance



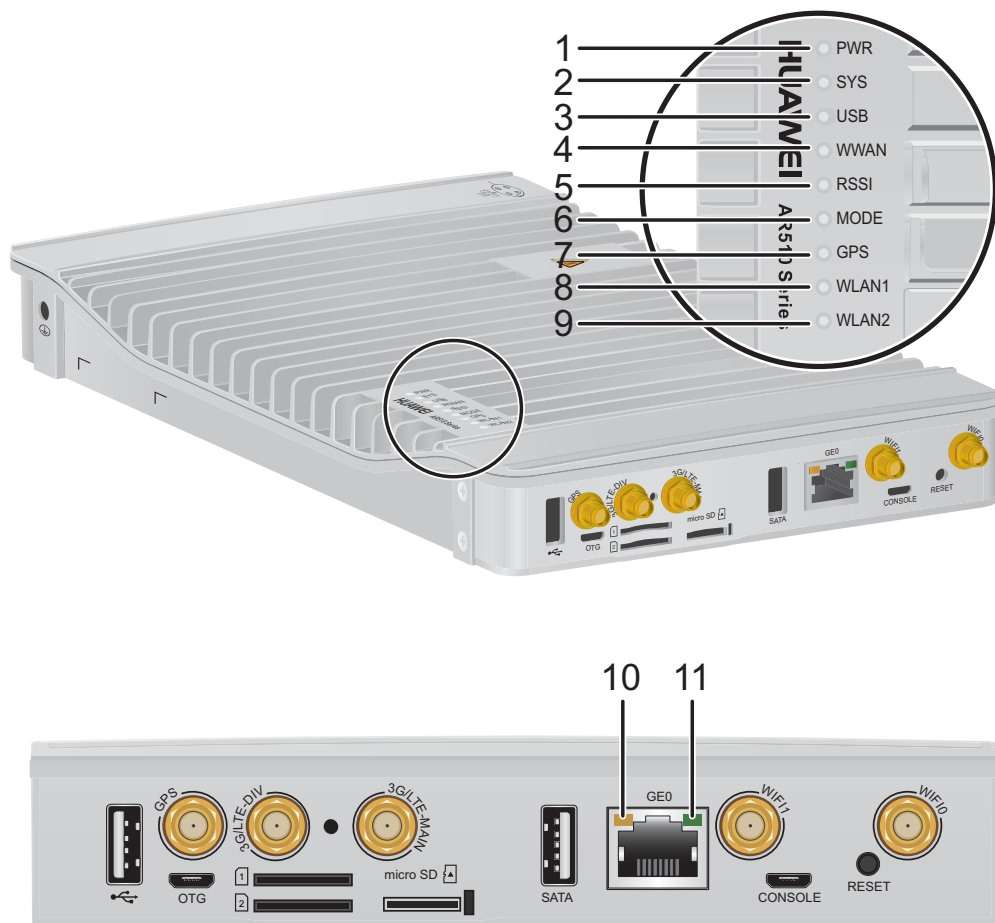
1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	USB interface (host)
3	GPS antenna interface	4	3G/LTE antenna interface
5	WAN interface: one GE electrical interface	6	Two Wi-Fi antenna interfaces
7	USB interface (OTG)	8	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● 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

<p>11 RESET button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	<p>12 mSATA Interface</p> <p>NOTE</p> <p>This interface can have a mini SATA (mSATA) hard disk connected but the mSATA hard disk is not hot swappable.</p>
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Indicator Description

Figure 3-65 shows the indicators on the AR511GW-LM7 router.

Figure 3-65 Indicators on the AR511GW-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 being powered 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.

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: <ul style="list-style-type: none"> ● 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 3-250](#) lists attributes of the console interface.

Table 3-250 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 3-251](#) lists attributes of a 3G/LTE antenna interface.

Table 3-251 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/2/3/5/7/8/20 ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: 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	<ul style="list-style-type: none"> ● 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 3-252](#) lists attributes of a GPS antenna interface.

Table 3-252 GPS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
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 3-253](#) lists GE electrical interface attributes.

Table 3-253 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-254](#) lists attributes of a USB interface.

Table 3-254 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 3-255](#) lists attributes of a Micro USB interface.

Table 3-255 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket
Standards compliance	USB2.0

Attribute	Description
Working mode	OTG

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-256](#) lists attributes of a Wi-Fi antenna interface.

Table 3-256 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod 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 3-257](#) lists attributes of the mSATA interface.

Table 3-257 mSATA interface attributes

Attribute	Description
Connector type	USB3.0
Standards compliance	<ul style="list-style-type: none"> ● AHCI ● NCQ
Hard disk type	mSATA hard disk

Heat Dissipation

The AR511GW-LM7 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-258 lists the technical specifications of the AR511GW-LM7 router.

Table 3-258 AR511GW-LM7 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand Flash	2 GB
EMMC Flash	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.), 1 U height
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

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 (16404.2 ft.)
Part number	50010193

3.3.4 AR511GW-L-B3

Version Mapping

[Table 3-259](#) lists the mapping between the AR511GW-L-B3 router and software versions.

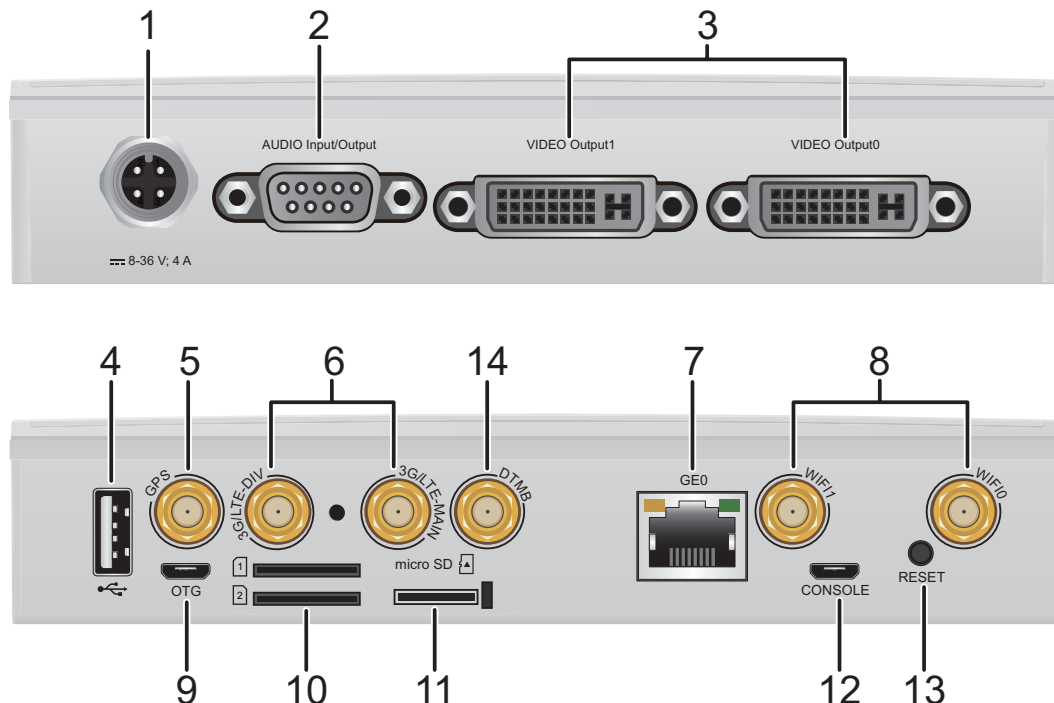
Table 3-259 Mapping between the AR511GW-L-B3 router and software versions

Router Model	Software Version
AR511GW-L-B3	V200R005C32 and later versions

Appearance and Structure

Figure 3-66 shows the appearance of the AR511GW-L-B3 router.

Figure 3-66 AR511GW-L-B3 appearance



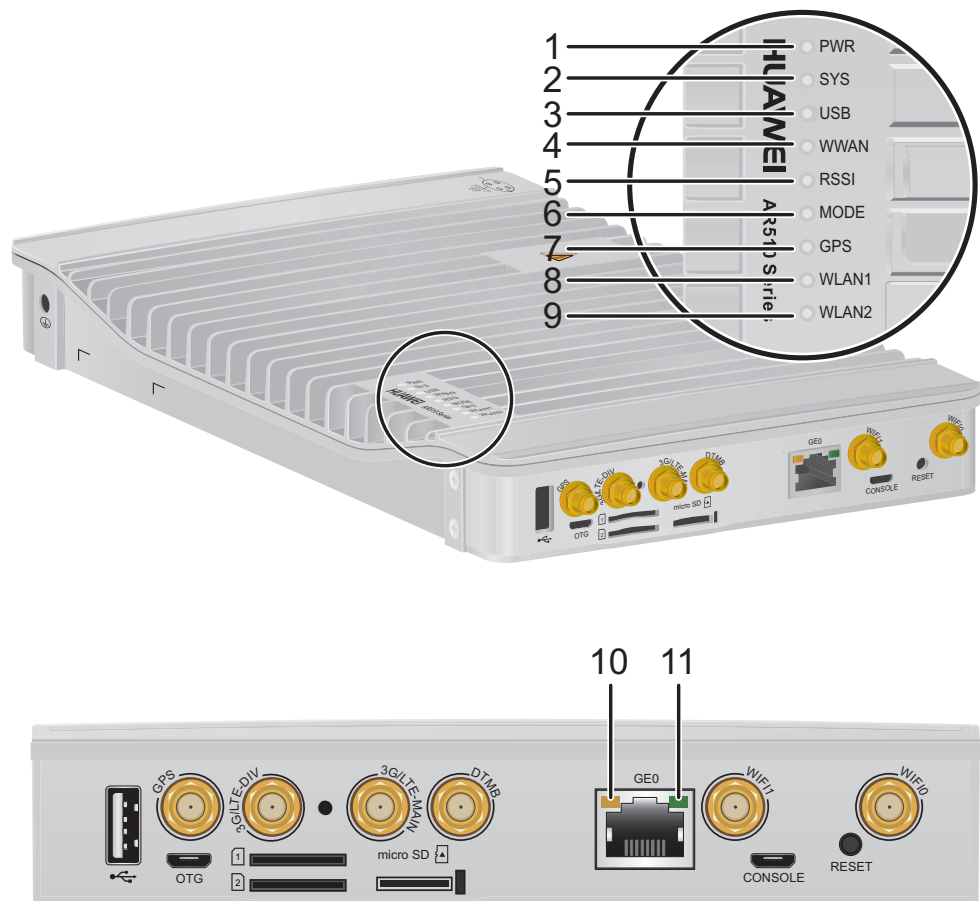
1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	Audio interface
3	Two video interfaces	4	USB interface (host)
5	GPS antenna interface	6	3G/LTE antenna interface
7	WAN interface: one GE electrical interface	8	Two Wi-Fi antenna interfaces
9	USB interface (OTG)	10	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● 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

<p>13 RESET button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	<p>14 DTMB interface</p>
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Indicator Description

Figure 3-67 shows the indicators on the AR511GW-L-B3 router.

Figure 3-67 Indicators on the AR511GW-L-B3



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 being powered 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.

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: <ul style="list-style-type: none"> ● 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 3-260](#) lists attributes of an audio interface.

Table 3-260 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 3-261](#) lists attributes of a video interface.

Table 3-261 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	<ul style="list-style-type: none"> ● 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 3-262](#) lists attributes of the console interface.

Table 3-262 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 3-263](#) lists attributes of a 3G/LTE antenna interface.

Table 3-263 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/2/3/5/7/8/20 ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: 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	<ul style="list-style-type: none"> ● 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 3-264](#) lists attributes of a GPS antenna interface.

Table 3-264 GPS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
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 3-265](#) lists GE electrical interface attributes.

Table 3-265 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-266](#) lists attributes of a USB interface.

Table 3-266 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 3-267](#) lists attributes of a Micro USB interface.

Table 3-267 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 to transmit and receive data. [Table 3-268](#) lists attributes of a Wi-Fi antenna interface.

Table 3-268 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna

DTMB Interface

A DTMB antenna interface connects to a DTMB remote antenna to receive and send digital TV signals. [Table 3-269](#) lists attributes of a DTMB antenna interface.

Table 3-269 DTMB antenna interface attributes

Attribute	Description
Connector type	SMA-K
Frequency bands supported	<ul style="list-style-type: none"> ● 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.

Technical Specifications

Table 3-270 lists the technical specifications of the AR511GW-L-B3 router.

Table 3-270 AR511GW-L-B3 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand Flash	1 GB
EMMC Flash	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.), 1 U height
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
Airflow (facing the front panel)	None

Item	Specification
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 (16404.2 ft.)
Part number	50010177

3.3.5 AR511EGW-LcAV2

Version Mapping

Table 3-271 describes the mapping between the AR511EGW-LcAV2 router and software versions.

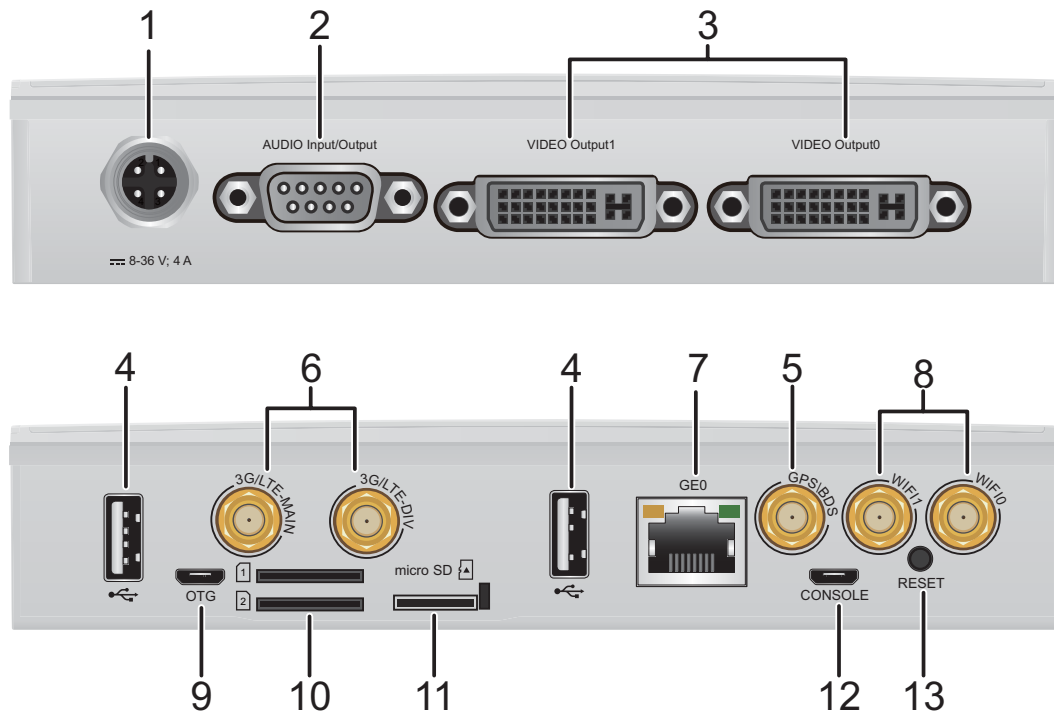
Table 3-271 Mapping between the AR511EGW-LcAV2 router and software versions

Router Model	Software Version
AR511EGW-LcAV2	V200R009C00 and later versions

Appearance and Structure

Figure 3-68 shows the appearance of the AR511EGW-LcAV2 router.

Figure 3-68 AR511EGW-LcAV2 appearance



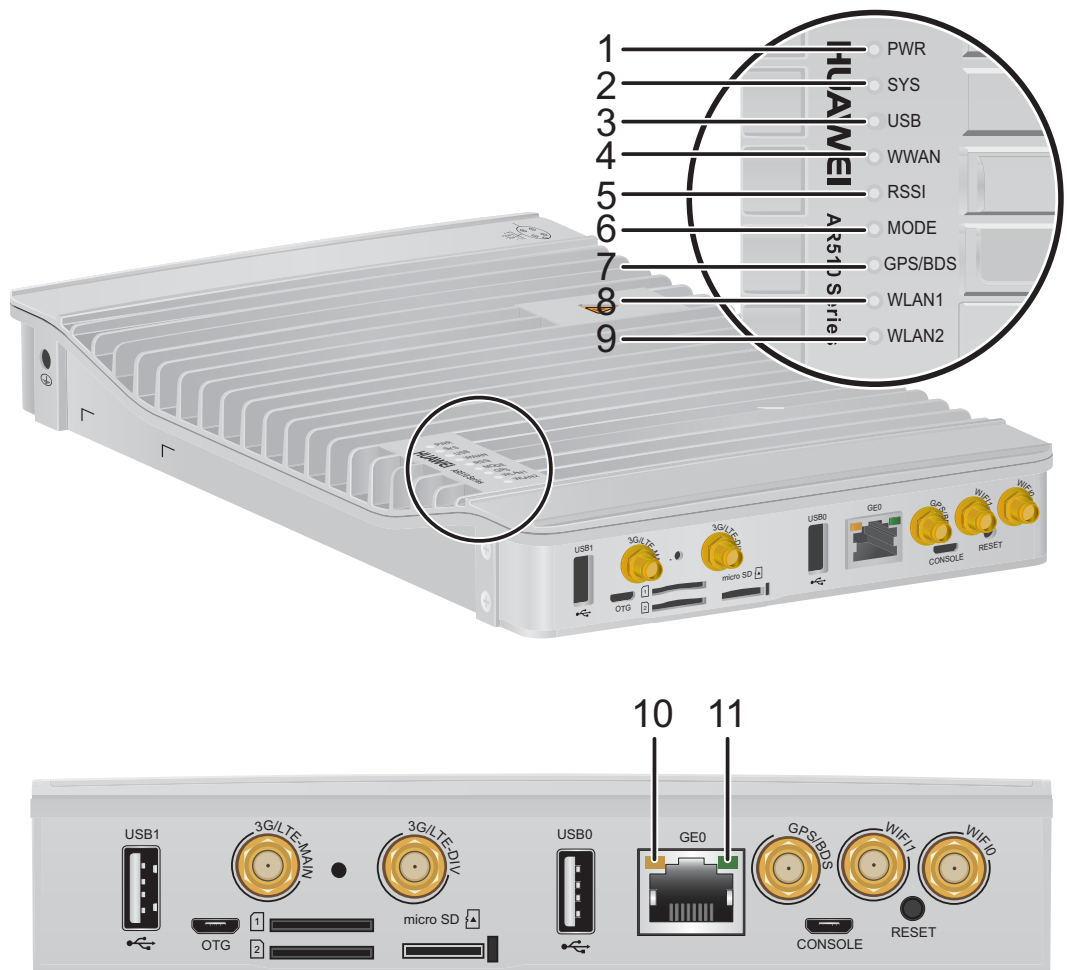
1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	Audio interface
3	Two video interfaces	4	Two USB interfaces (host)
5	GPS/BDS antenna interface	6	3G/LTE antenna interface
7	WAN interface: one GE electrical interface	8	Two Wi-Fi antenna interfaces
9	USB interface (OTG)	10	Two SIM card slots NOTE <ul style="list-style-type: none"> The SIM card slots support double-card single-standby. The router must use industrial SIM cards. 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

13	<p>RESET button</p> <p>NOTE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. <p>Resetting the router will interrupt services. Exercise caution when deciding to press this button.</p>	-	-	
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Indicator Description

Figure 3-69 shows indicators on the AR511EGW-LcAV2.

Figure 3-69 Indicators on the AR511EGW-LcAV2



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/2G connection is established.

Number	Indicator	Color	Description
7	GPS/BDS	Green	On: GPS or BeiDou services exist.
			Off: No GPS or BeiDou services exist.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Steady on: A WLAN link has been established.
			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	Steady on: A WLAN link has been established.
			Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: <ul style="list-style-type: none"> ● 10: ACT indicator ● 11: LINK indicator 	Yellow	ACT indicator blinking: Data is being transmitted or received on the interface. ACT indicator off: No data is being transmitted or received on the interface.
		Green	LINK indicator steady on: A link has been established on the interface. LINK indicator off: No link is established on the interface.

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 3-272](#) lists attributes of an audio interface.

Table 3-272 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 two formats of video outputs: HDMI and CVBS. [Table 3-273](#) lists video interface attributes.

Table 3-273 Video interface attributes

Attribute	Description
Connector type	DVI-I connector
Signal types supported	<ul style="list-style-type: none"> ● HDMI signal ● CVBS (composite video) signal
Cable type	Video cable

Console interface

The console interface of a router can connect to an operation terminal for onsite configuration. [Table 3-274](#) lists attributes of the console interface.

Table 3-274 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 LTE signals, and the diversity antenna interface helps improve quality of received LTE signals. [Table 3-275](#) lists 3G/LTE antenna interface attributes.

Table 3-275 3G/LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● LTE (FDD): bands 1/3/8; LTE (TDD): bands 39/40/41 (38), all bands with diversity ● DC-HSPA+: bands 1/9/5/8; TDS: bands 34/39, all bands with diversity ● GSM: 1800/900 (MHz)

Attribute	Description
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● High Speed Packet Access Plus (HSPA+): uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● Frequency Division Duplexing (FDD) LTE Cat 4: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE Cat 4: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s
Cable type	<ul style="list-style-type: none"> ● LTE primary antenna interface/LTE diversity antenna interface: 6.3.5 LTE Strip-shaped Remote Antenna

GPS antenna interface

A GPS/BDS antenna interface can connect to a GPS/BDS remote antenna to provide the GPS/BDS positioning function. [Table 3-276](#) lists the attributes of a GPS/BDS antenna interface.

Table 3-276 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Frequency bands supported	<ul style="list-style-type: none"> ● GPS: 1575.42 MHz ● BDS: 1561.098 MHz
Cable type	6.3.15 GPS/BDS Remote 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 3-277](#) lists GE electrical interface attributes.

Table 3-277 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-278](#) lists attributes of a USB interface.

Table 3-278 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 3-279](#) lists attributes of a Micro USB interface.

Table 3-279 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 to receive and transmit wireless data. LTE and Wi-Fi antennas should be installed as far as possible. [Table 3-280](#) lists Wi-Fi antenna interface attributes.

Table 3-280 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	<ul style="list-style-type: none"> ● 2.4GHz: 3.8dBi ● 5.0GHz: 3.2dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● Wireless security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna

Heat Dissipation

The AR511EGW-LcAV2 router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-281](#) lists technical specifications of the AR511EGW-LcAV2 router.

Table 3-281 AR511EGW-LcAV2 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand flash memory	1 GB
EMMC flash memory	32 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.), 1 U height
Weight	1.4 kg (3.09 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	5 A
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	
Maximum power consumption	40 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	

Item	Specification
Management interfaces	None
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	2
Service interfaces	WAN interfaces: one GE electrical interface and two 3G/LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia service interfaces: one GPS/BDS 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 1800-5000 m (5906-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) 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
Operating altitude	< 5000 m (16404 ft.)
Part number	50010378

3.3.6 AR513W-V3M8

Version Mapping

[Table 3-282](#) lists the mapping between the AR513W-V3M8 router and software versions.

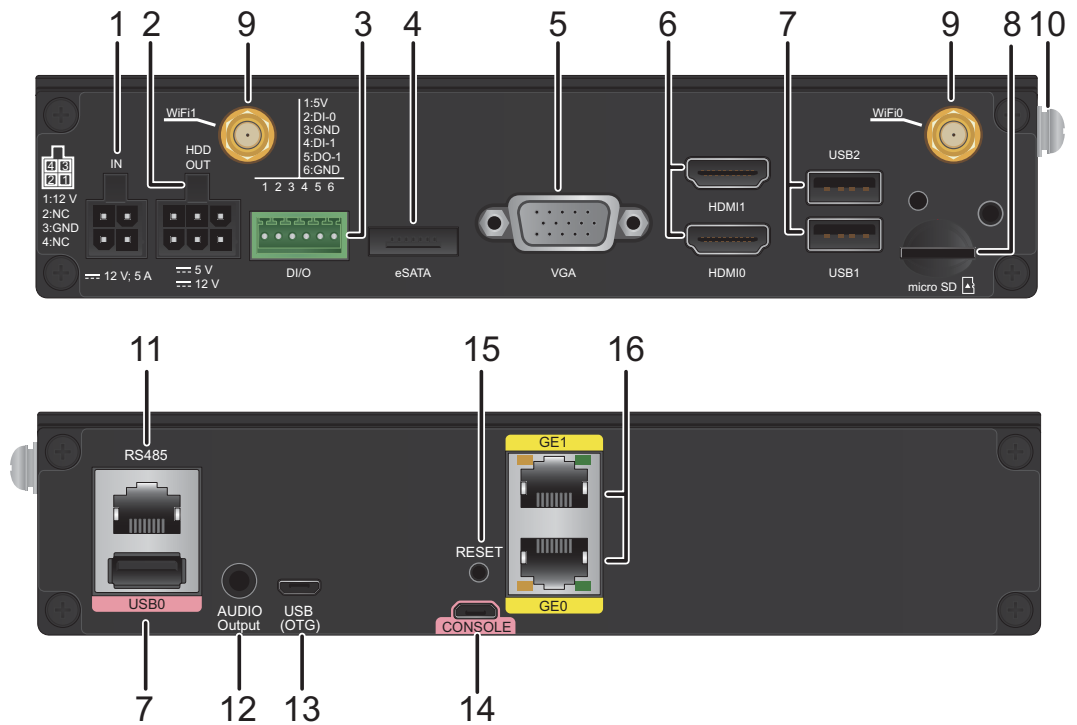
Table 3-282 Mapping between the AR513W-V3M8 router and software versions

Router Model	Software Version
AR513W-V3M8	V200R005C32 and later versions

Appearance and Structure

[Figure 3-70](#) shows the appearance of the AR513W-V3M8 router.

Figure 3-70 AR513W-V3M8 appearance



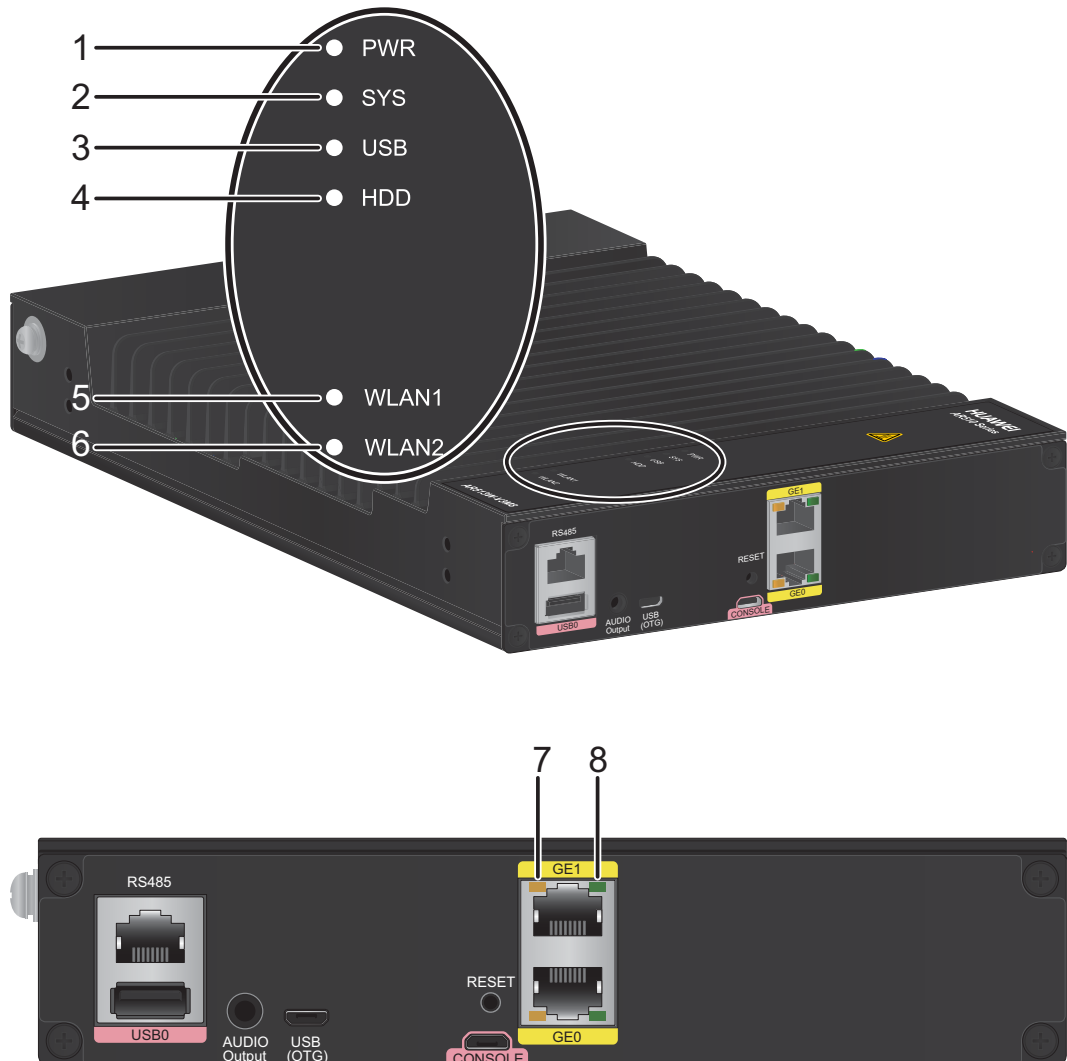
1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	SATA hard disk power jack
3	DI/DO interface NOTE Connect cables according to the signal types identified above the DI/O interfaces.	4	eSATA interface NOTE This interface can have an external SATA (eSATA) hard 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
9	Two Wi-Fi antenna interfaces	10	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
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	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> 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 3-71 shows the indicators on the AR513W-V3M8 router.

Figure 3-71 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 being powered 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	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	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.

Number	Indicator	Color	Description
	● 8: LINK indicator	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 3-283](#) lists attributes of DI/O interfaces.

Table 3-283 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 3-284](#) lists attributes of an eSATA interface.

Table 3-284 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 3-285](#) lists attributes of an audio interface.

Table 3-285 Audio interface attributes

Attribute	Description
Connector type	3.5 mm headset jack

Attribute	Description
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 3-286](#) lists HDMI interface attributes.

Table 3-286 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
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 3-287](#) lists attributes of the console interface.

Table 3-287 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 3-288](#) lists GE electrical interface attributes.

Table 3-288 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

VGA Interface

A video graphics array (VGA) interface provides VGA video output. [Table 3-289](#) lists attributes of a VGA interface.

Table 3-289 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 3-290](#) lists attributes of a USB interface.

Table 3-290 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 3-291](#) lists attributes of a Micro USB interface.

Table 3-291 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 to transmit and receive data. [Table 3-292](#) lists attributes of a Wi-Fi antenna interface.

Table 3-292 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna

Heat Dissipation

The AR513W-V3M8 router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-293](#) lists the technical specifications of the AR513W-V3M8 router.

Table 3-293 AR513W-V3M8 technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand Flash	1 GB
EMMC Flash	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.), 1 U height
Weight	2.3 kg (5.07 lb)
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

Item	Specification
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)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02350CQL

3.3.7 AR513GW-LcV1

Version Mapping

[Table 3-294](#) lists the mapping between the AR513GW-LcV1 router and software versions.

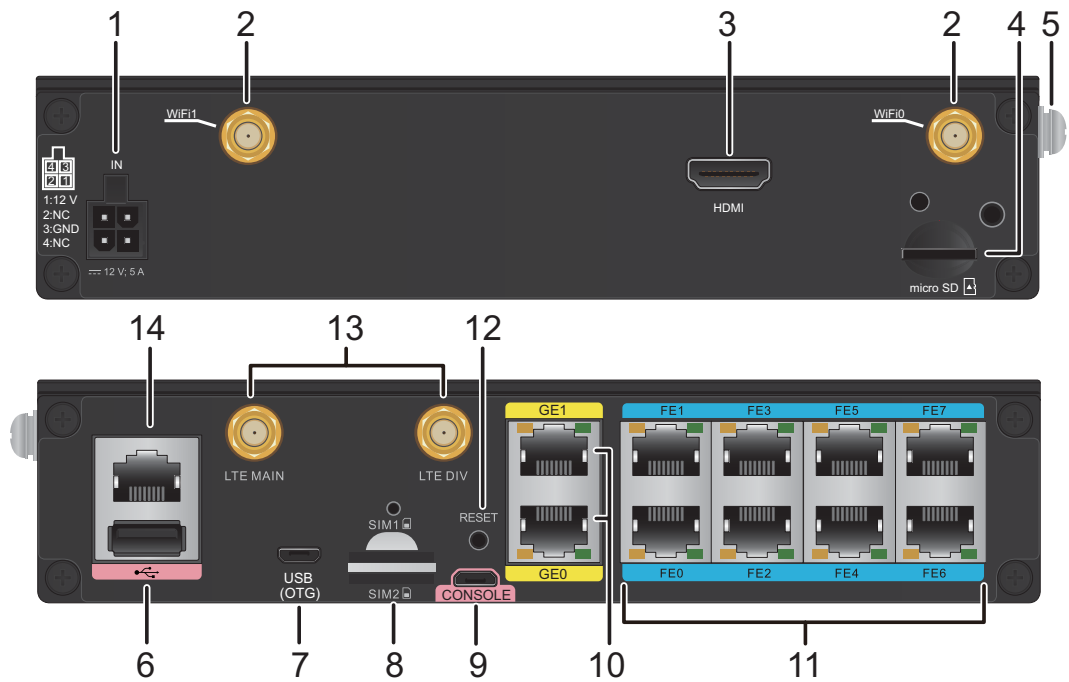
Table 3-294 Mapping between the AR513GW-LcV1 router and software versions

Router Model	Software Version
AR513GW-LcV1	V200R007C00

Appearance and Structure

[Figure 3-72](#) shows the appearance of the AR513GW-LcV1 router.

Figure 3-72 AR513GW-LcV1 appearance



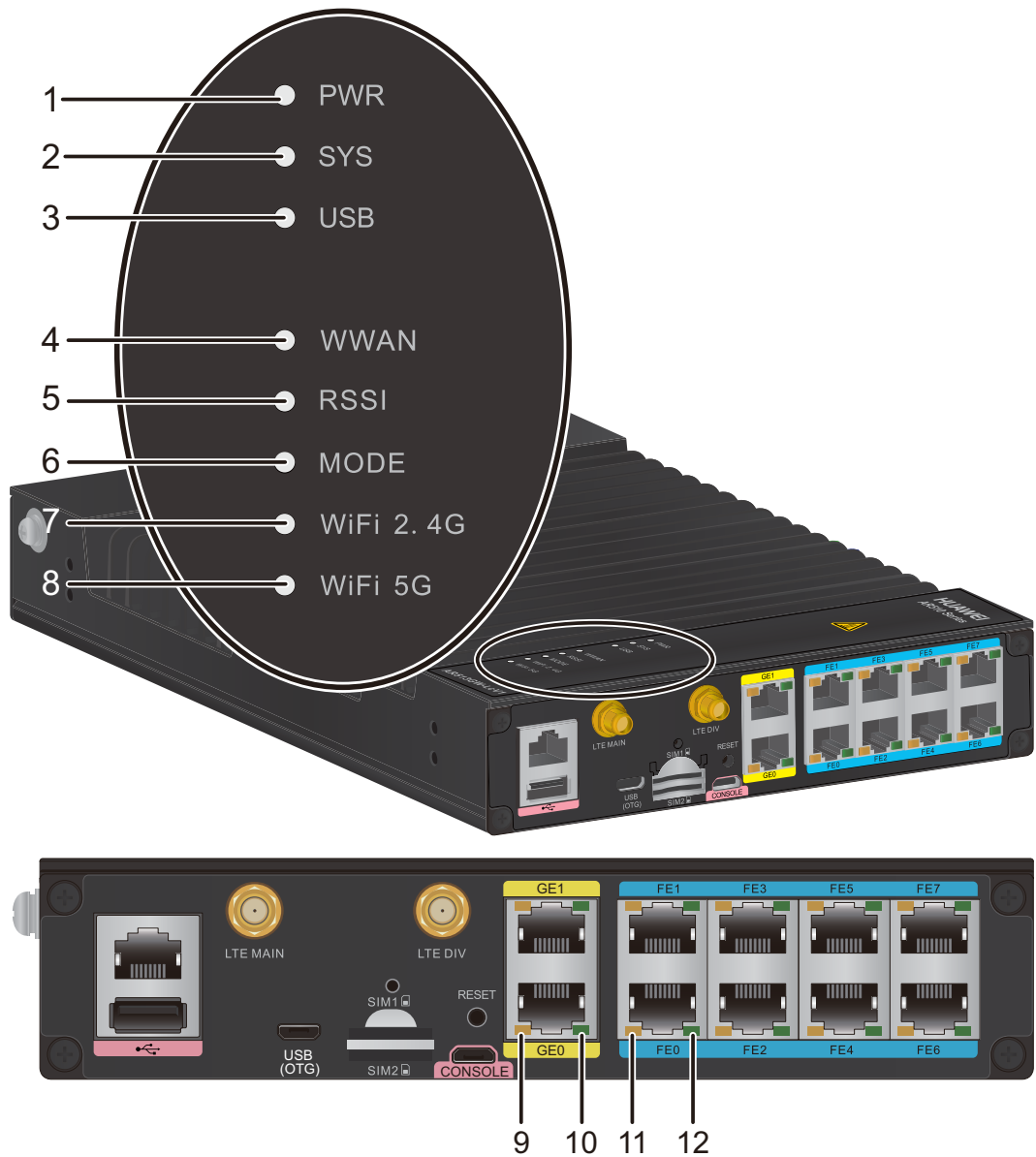
1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	Two Wi-Fi antenna interfaces
3	HDMI video interface	4	Micro SD card slot
5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	USB interface (host)
7	USB interface (OTG)	8	SIM card slot
9	CONSOLE interface	10	WAN interfaces: two GE electrical interfaces
11	LAN interfaces: eight FE electrical interfaces	12	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> 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.

13	LTE antenna interface	14	This interface is reserved for future use.
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Indicator Description

Figure 3-73 shows indicators on the AR513GW-LcV1.

Figure 3-73 Indicators on the AR513GW-LcV1



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/2G connection is established.

Number	Indicator	Color	Description
7	WiFi 2.4G	Green	Blinking: Data is being transmitted on the 2.4 GHz Wi-Fi link.
			Off: The 2.4 GHz Wi-Fi link is shut down.
8	WiFi 5G	Green	Blinking: Data is being transmitted on the 5 GHz Wi-Fi link.
			Off: The 5 GHz Wi-Fi link is shut down.
9 and 10	GE electrical interface indicators: <ul style="list-style-type: none"> ● 9: ACT indicator ● 10: LINK indicator 	Yellow	ACT indicator blinking: Data is being transmitted or received on the interface. ACT indicator off: No data is being transmitted or received on the interface.
		Green	LINK indicator steady on: A link has been established on the interface. LINK indicator off: No link is established on the interface.
11 and 12	FE electrical interface indicators: <ul style="list-style-type: none"> ● 11: ACT indicator ● 12: LINK indicator 	Yellow	ACT indicator blinking: Data is being transmitted or received on the interface. ACT indicator off: No data is being transmitted or received on the interface.
		Green	LINK indicator steady on: A link has been established on the interface. LINK indicator off: No link is established on the interface.

Interface Description

HDMI video interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. [Table 3-295](#) lists HDMI interface attributes.

Table 3-295 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
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 3-296](#) lists attributes of the console interface.

Table 3-296 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 3-297](#) lists GE electrical interface attributes.

Table 3-297 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

FE electrical interface

An FE electrical interface receives and transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-298](#) lists FE electrical interface attributes.

Table 3-298 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-299](#) lists attributes of a USB interface.

Table 3-299 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 3-300](#) lists attributes of a Micro USB interface.

Table 3-300 Micro USB interface attributes

Attribute	Description
Connector type	Micro USB, B socket

Attribute	Description
Standards compliance	USB2.0
Working mode	OTG

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-301](#) lists Wi-Fi antenna interface attributes.

Table 3-301 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna 6.3.11 Wi-Fi Remote Antenna (2x2)

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 3-302](#) lists LTE antenna interface attributes.

Table 3-302 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)

Attribute	Description
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/3/8 ● TDD LTE: bands 38/39/40/41 ● DC-HSPA+/HSPA+/HSPA/UMTS: bands 1/5/8/9 ● TD-SCDMA: bands 34/39 ● GSM/GPRS/EDGE: 900/1800 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s ● Time Division Duplexing (TDD) LTE: 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 ● 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 236.8 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	6.3.5 LTE Strip-shaped Remote Antenna

Heat dissipation

The AR513GW-LcV1 router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-303 lists technical specifications of the AR513GW-LcV1 router.

Table 3-303 AR513GW-LcV1 technical specifications

Item	Specification
System parameters	

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 180.0 mm x 40.0 mm (10.9 in. x 7.1 in. x 1.6 in.), 1 U height
Weight	1.7 kg (3.75 lb)
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	21.5 W
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None

Item	Specification
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	1
Service interfaces	WAN interfaces: two GE electrical interfaces and two LTE antenna interfaces LAN interfaces: eight FE electrical interfaces and two Wi-Fi antenna interfaces Multimedia service interface: one HDMI video 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.)
Part number	02351GEX

3.3.8 AR513W-V1

Version Mapping

[Table 3-304](#) lists the mapping between the AR513W-V1 router and software versions.

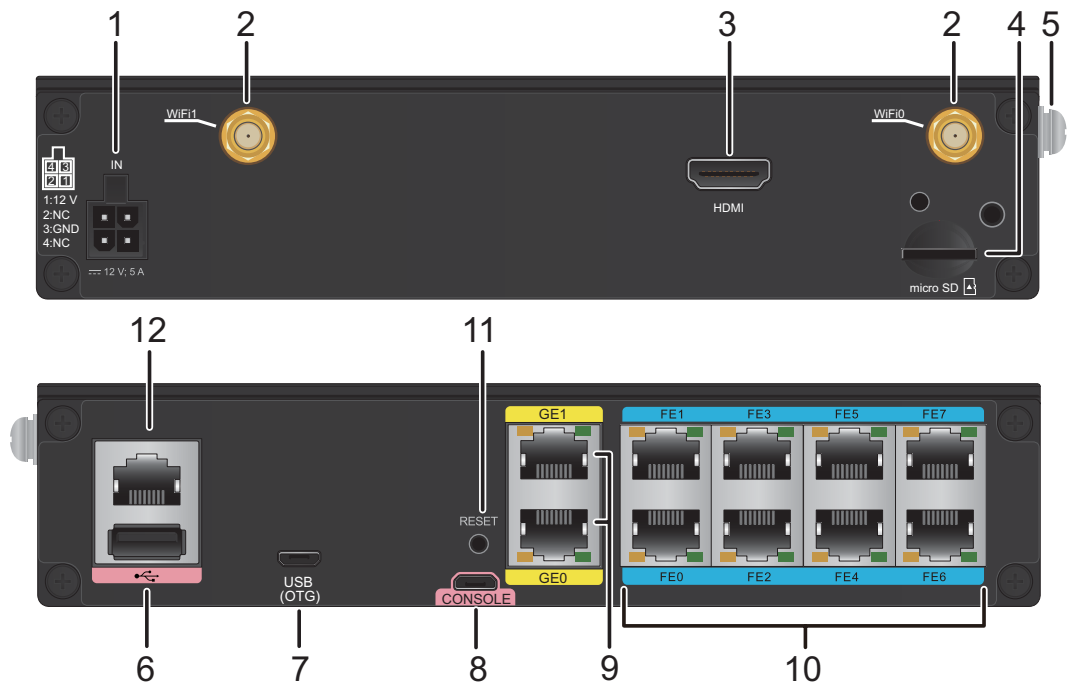
Table 3-304 Mapping between the AR513W-V1 router and software versions

Router Model	Software Version
AR513W-V1	V200R007C00

Appearance and Structure

[Figure 3-74](#) shows the appearance of the AR513W-V1 router.

Figure 3-74 AR513W-V1 appearance

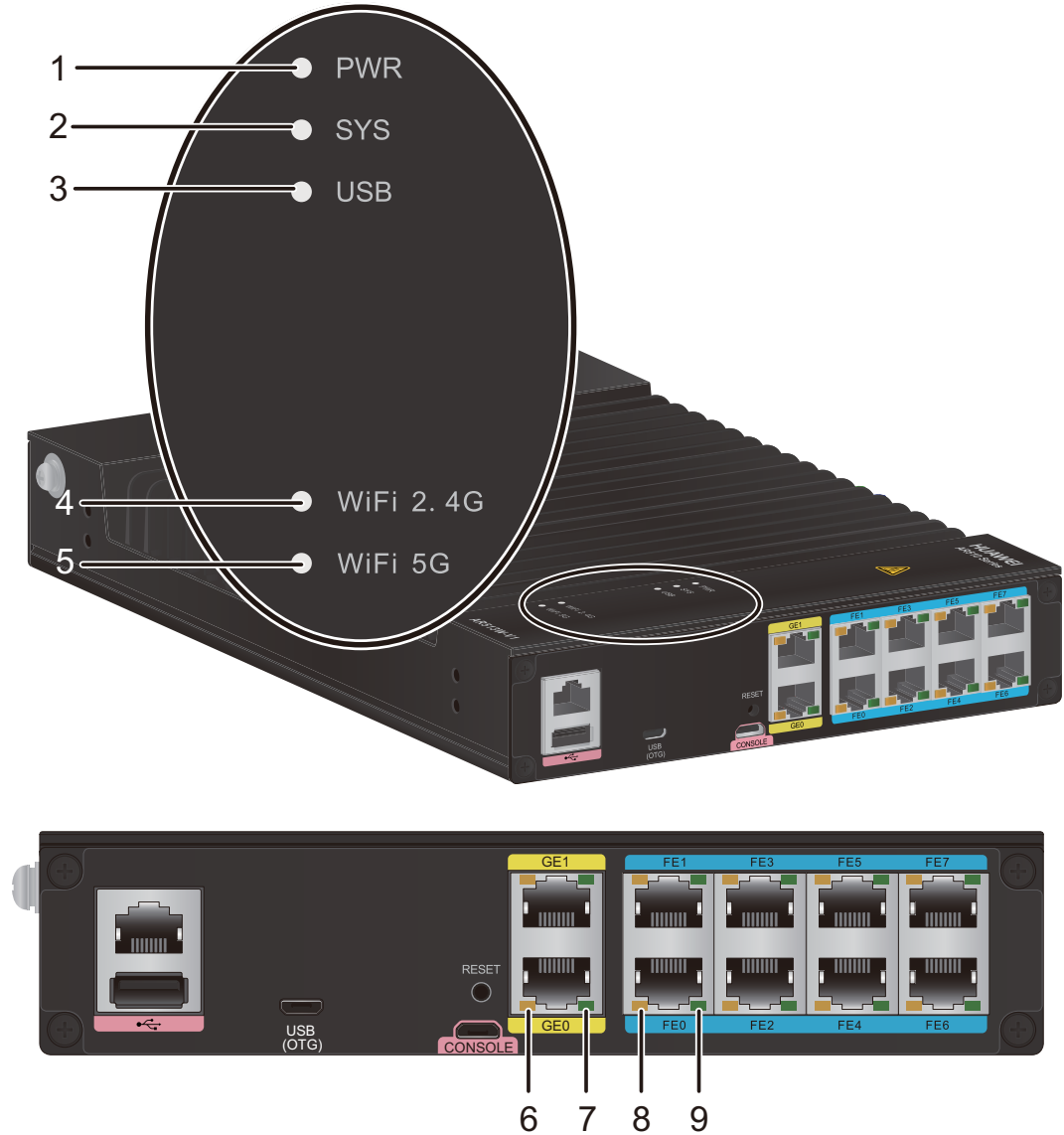


1	Power jack NOTE Use a DC power cable to connect the router to an external power source.	2	Two Wi-Fi antenna interfaces
3	HDMI video interface	4	Micro SD card slot
5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	USB interface (host)
7	USB interface (OTG)	8	CONSOLE interface
9	WAN interfaces: two GE electrical interfaces	10	LAN interfaces: eight FE electrical interfaces
11	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> 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	This interface is reserved for future use.

Indicator Description

Figure 3-75 shows indicators on the AR513W-V1 router.

Figure 3-75 Indicators on the AR513W-V1



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.

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	WiFi 2.4G	Green	Blinking: Data is being transmitted on the 2.4 GHz Wi-Fi link.
			Off: The 2.4 GHz Wi-Fi link is shut down.
5	WiFi 5G	Green	Blinking: Data is being transmitted on the 5 GHz Wi-Fi link.
			Off: The 5 GHz Wi-Fi link is shut down.
6 and 7	GE electrical interface indicators: ● 6: ACT indicator ● 7: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received on the interface. ACT indicator off: No data is being transmitted or received on the interface.
		Green	LINK indicator steady on: A link has been established on the interface. LINK indicator off: No link is established on the interface.
8 and 9	FE electrical interface indicators: ● 8: ACT indicator ● 9: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received on the interface. ACT indicator off: No data is being transmitted or received on the interface.
		Green	LINK indicator steady on: A link has been established on the interface. LINK indicator off: No link is established on the interface.

Interface Description

HDMI video interface

A high definition multimedia interface (HDMI) interface provides HDMI video output. [Table 3-305](#) lists HDMI interface attributes.

Table 3-305 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
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 3-306](#) lists attributes of the console interface.

Table 3-306 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 3-307](#) lists GE electrical interface attributes.

Table 3-307 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

FE electrical interface

An FE electrical interface receives and transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-308](#) lists FE electrical interface attributes.

Table 3-308 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-309](#) lists attributes of a USB interface.

Table 3-309 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 3-310](#) lists attributes of a Micro USB interface.

Table 3-310 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 to transmit and receive data. [Table 3-311](#) lists Wi-Fi antenna interface attributes.

Table 3-311 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi

Attribute	Description
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.13 Wi-Fi Rod Remote Antenna 6.3.11 Wi-Fi Remote Antenna (2x2)

Heat dissipation

The AR513W-V1 router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-312](#) lists technical specifications of the AR513W-V1 router.

Table 3-312 AR513W-V1 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 180.0 mm x 40.0 mm (10.9 in. x 7.1 in. x 1.6 in.), 1 U height
Weight	1.6 kg (3.53 lb)
Power specifications	
Rated input voltage (DC)	12 V
Maximum input voltage (DC)	11.4 V DC to 12.6 V DC

Item	Specification
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	18.5 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	WAN interfaces: two GE electrical interfaces LAN interfaces: eight FE electrical interfaces and two Wi-Fi antenna interfaces Multimedia service interface: one HDMI video 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.)
Part number	02351GEY

3.3.9 AR515GW-LM9-D

Version Mapping

Table 3-313 lists the mapping between the AR515GW-LM9-D series routers and software versions.

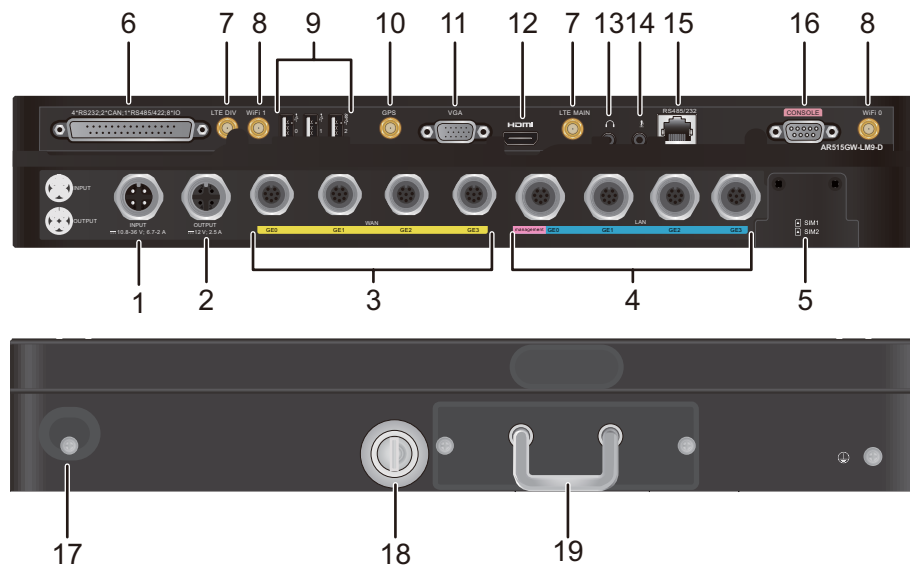
Table 3-313 Matching between AR515GW-LM9-D series routers and software versions

Router Model	Software Version
AR515GW-LM9-D	V200R008C20 and later versions

Appearance and Structure

Figure 3-76 shows the appearance of the AR515GW-LM9-D router.

Figure 3-76 AR515GW-LM9-D appearance



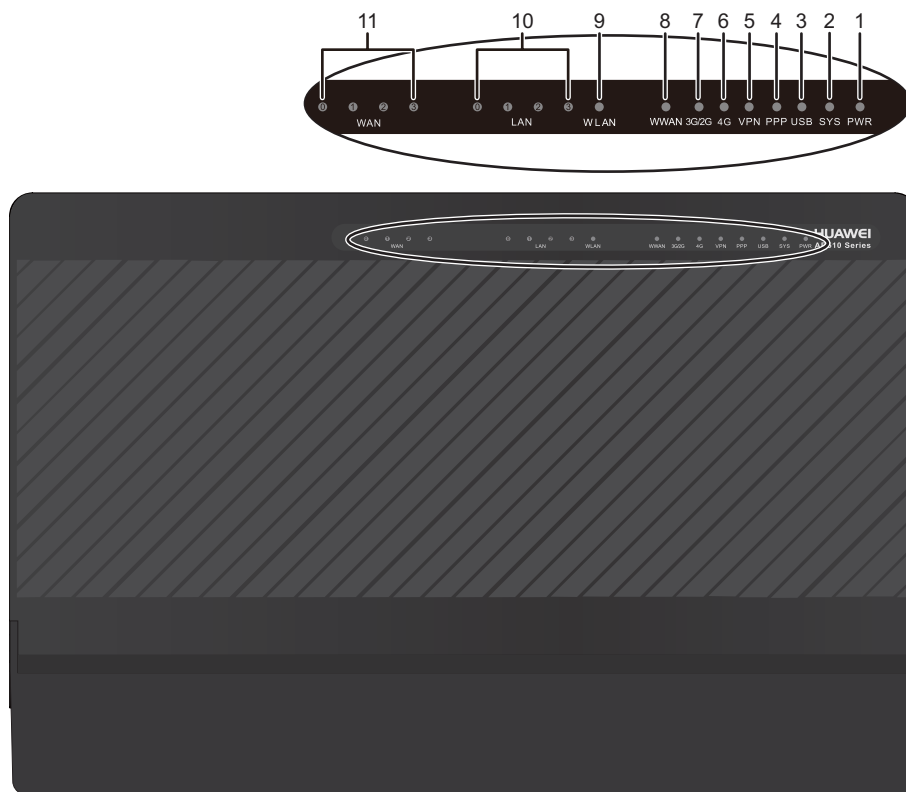
1	Power input jack NOTE Use a DC power cable to connect the router to an external power source.	2	Power output jack NOTE It can be connected to a powered device (PD) using a DC power cable to supply power to the PD.
3	WAN interfaces: four GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	4	LAN interfaces: four GE electrical interfaces

5	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw. 	6	DB37 interface NOTE It can have a DB37 adapter cable connected to provide any of the following interfaces: <ul style="list-style-type: none"> ● 4*RS232 ● 2*CAN ● 1*RS485/RS422 ● 8*I/O (3*DI/DO 5 V level; 2*DI 5 V level; 3*AI 24 V level) ● 5V/GND
7	LTE antenna interface	8	Two Wi-Fi antenna interfaces
9	Three USB interfaces (host)	10	GPS antenna interface
11	VGA interface	12	HDMI video interface
13	Earphone jack	14	Microphone jack
15	RS485/232 interface	16	Console interface
17	USB interface (host)	18	Hard disk lock
19	Pluggable disk enclosure	-	-

Indicator Description

Figure 3-77 shows the indicators on the AR515GW-LM9-D series routers.

Figure 3-77 Indicators on the AR515GW-LM9-D



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 being powered 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.

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	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-GE3)	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.
11	WAN (GE0-GE3)	Green	Steady on: A link is connected on the WAN interface. Blinking: The WAN interface is transmitting or receiving data. Off: No link is connected on the WAN interface.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. [Table 3-314](#) lists attributes of the console interface.

Table 3-314 Console interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

LTE Antenna Interface

LTE antenna interfaces of a router include a primary antenna interface and a diversity antenna interface. The primary antenna interface receives and transmits LTE signals, and the diversity

antenna interface helps improve quality of received LTE signals. [Table 3-315](#) lists attributes of an LTE antenna interface.

Table 3-315 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● FDD LTE: bands 1/2/3/5/7/8/20 ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/2/5/8 ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz)
Rate	<ul style="list-style-type: none"> ● Frequency Division Duplexing (FDD) LTE: 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	<ul style="list-style-type: none"> ● 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 3-316](#) lists attributes of a GPS antenna interface.

Table 3-316 GPS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
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 3-317](#) lists attributes of a GE electrical interface.

Table 3-317 GE electrical interface attributes

Attribute	Description
Connector type	M12
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters 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	M12 Cable

VGA Interface

A video graphics array (VGA) interface provides VGA video output. [Table 3-318](#) lists attributes of a VGA interface.

Table 3-318 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 3-319](#) lists HDMI interface attributes.

Table 3-319 HDMI interface attributes

Attribute	Description
Connector type	HDMI connector
Signal types supported	HDMI signal
Cable type	HDMI Video Cable

USB Interface (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-320](#) lists attributes of a USB interface.

Table 3-320 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 to transmit and receive data. [Table 3-321](#) lists attributes of a Wi-Fi antenna interface.

Table 3-321 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	6.3.14 Wi-Fi Strip-Shaped Remote Antenna

Heat Dissipation

The AR515GW-LM9-D router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-322](#) lists the technical specifications of the AR515GW-LM9-D routers.

Table 3-322 AR515GW-LM9-D series routers technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1 GHz
Memory	512 MB
Nand Flash	512 MB
Micro SD card	None
Hard disk	Supported
Dimensions and weight	
Dimensions (W x D x H)	406.0 mm x 270.0 mm x 68.0 mm (15.98 in. x 10.63 in. x 2.68 in.), 2 U height
Weight	6.9 kg
Power	
Rated input voltage (DC)	24 V
Maximum input voltage (DC)	10.8 V DC to 36 V DC
RPS	Not supported
PoE	Not supported
Power consumption	
Maximum power consumption	72 W NOTE The maximum power consumption is 42 W and the output voltage is 30W (12 V, 2.5 A).
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (M12)
Console interfaces	1 (DB9)
USB 2.0 interfaces	3
USB 3.0 interfaces	1

Item	Specification
Service interfaces (standard configuration)	WAN interfaces: 4 GE electrical, 2 LTE LAN interfaces: 2 Wi-Fi, 1 GPS, 4 GE electrical Multimedia service interfaces: 1 earphone jack, 1 microphone jack, 1 HDMI, 1 VGA, 1 pluggable hard disk cartridge
Extended slots	Not supported
Environment	
Operating temperature	<ul style="list-style-type: none"> ● With a Hard Disk Drive (HDD) installed: 0°C to +45°C (32°F to 113°F) ● With a Solid State Drives (SSD) installed: - 25°C to +60°C (-13°F to 140°F) ● With no hard disk installed: - 25°C to +60°C (-13°F to 140°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 +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010246

3.3.10 AR515CGW-L

Version Mapping

[Table 3-323](#) describes the mapping between the AR515CGW-L router and software versions.

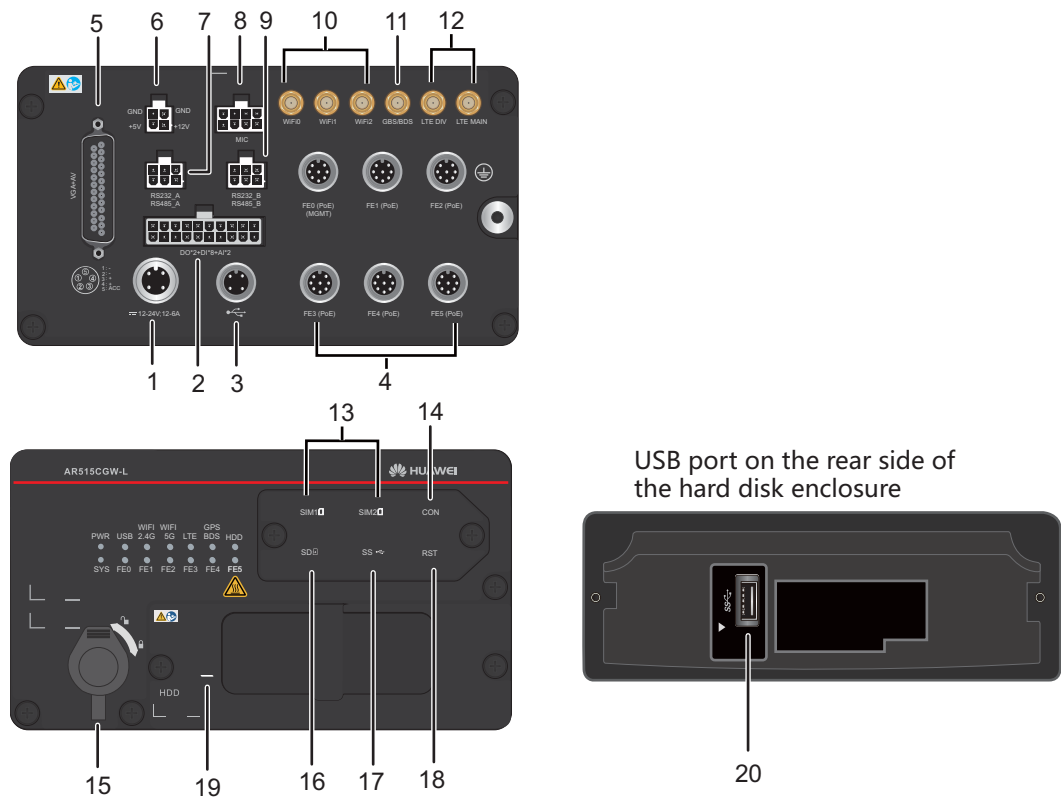
Table 3-323 Mapping between the AR515CGW-L router and software versions

Router Model	Software Version
AR515CGW-L	V200R009C00SPC301 and later versions

Appearance and Structure

[Figure 3-78](#) shows the appearance of the AR515CGW-L router.

Figure 3-78 AR515CGW-L appearance



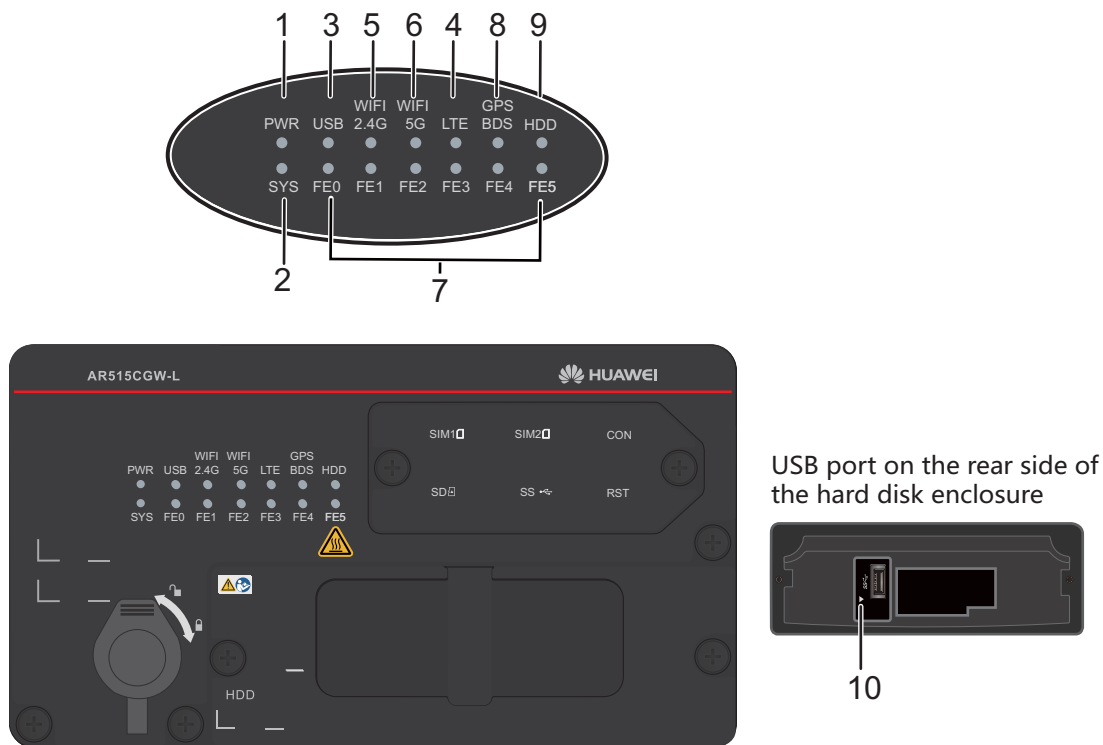
<p>1 Power input jack</p> <p>NOTE</p> <p>Use a DC power cable to connect the router to an external power source. Select a proper power cable based on the current.</p>	<p>2 20-pin Mini fit interface</p> <p>NOTE</p> <ul style="list-style-type: none"> ● 2*DO ● 8*DI ● 2*AI
<p>3 USB interface: using M12 A Code connector</p> <p>NOTE</p> <ul style="list-style-type: none"> ● To ensure that the shielding layer of the USB 2.0 cable is properly connected to the M12 terminal, use the M12 and USB 2.0 cables with shielding effects. ● The M12 USB interface is not hot swappable. 	<p>4 LAN interfaces: six FE electrical interfaces</p> <p>NOTE</p> <p>Ports FE0 to FE5 support PoE and provide a maximum output power of 60 W in total.</p>
<p>5 DB25 interface</p> <p>NOTE</p> <p>It can have a DB25 adapter cable connected to provide any of the following interfaces:</p> <ul style="list-style-type: none"> ● VAG ● AV audio/video interface 	<p>6 4-pin Mini fit interface</p> <p>NOTE</p> <ul style="list-style-type: none"> ● 12 V output ● 5 V output

7	6-pin Mini fit interface NOTE <ul style="list-style-type: none"> ● RS232 ● RS485 ● 12 V output 	8	8-pin Mini fit interface: Mic NOTE <ul style="list-style-type: none"> ● Speaker ● 12 V output
9	6-pin Mini fit interface NOTE <ul style="list-style-type: none"> ● RS232 ● RS485 ● 12 V output 	10	Wi-Fi interface
11	GPS/BDS interface	12	LTE antenna interface
13	Two SIM card slots NOTE <ul style="list-style-type: none"> ● The router supports double-card single-standby. ● The router must use industrial SIM cards. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw. 	14	Micro USB interface
15	Hard disk lock	16	SD card slot
17	USB interface (host)	18	Reset button NOTE The router can be reset.
19	Pluggable disk enclosure	20	USB port on the rear side of the hard disk enclosure NOTE This port is used to connect to a PC through a double USB cable to transmit hard disk data.

Indicator Description

[Figure 3-79](#) shows indicators on the AR515CGW-L router.

Figure 3-79 Indicators on the AR515CGW-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.

Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	LTE	Green	Steady on: The LTE/3G/2G signal strength is high. Off: No LTE/3G/2G signal is available.
5	WiFi 2.4G	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.
6	WiFi 5G	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.
7	FE0 to FE5	Green	Steady on: A link has been established. Blinking: The interface is transmitting or receiving data. Off: No link is established.
8	GPS	Green	Steady on: GPS/BeiDou Navigation Satellite System is working properly. Off: GPS/BeiDou Navigation Satellite System is not working.
9	HDD	Red and green	Steady on: The hard disk is working and cannot be removed. Blinking: The hard disk is reading or writing data. Off: No hard disk is available or no data is being transmitted.
10	Hard disk running status indicator	Green	Steady on: The hard disk is connected but no data is transmitted. Blinking: The hard disk is reading or writing data. Off: No hard disk is connected to the router.

Interface Description

Console interface

The console interface of a router can connect to an operation terminal for onsite configuration. [Table 3-324](#) lists attributes of the console interface.

Table 3-324 Console interface attributes

Attribute	Description
Connector type	Micro usb
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

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 3-325](#) lists LTE antenna interface attributes.

Table 3-325 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	<ul style="list-style-type: none"> ● GSM/GPRS/EDGE: 850/900/1800/1900 (MHz) ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/2/5/8 ● FDD LTE: bands 1/2/3/4/5/7/8/20
Rate	<ul style="list-style-type: none"> ● 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 236.8 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 ● 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 ● Frequency Division Duplex-Long Term Evolution (FDD LTE): uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Cable type	6.3.5 LTE Strip-shaped Remote Antenna

GPS/BDS antenna interface

A GPS/BDS antenna interface can connect to a GPS/BDS remote antenna to provide the GPS/BDS positioning function. [Table 3-326](#) lists the attributes of a GPS/BDS antenna interface.

Table 3-326 GPS/BDS antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Frequency bands supported	<ul style="list-style-type: none"> ● GPS: 1575.42 MHz ● BDS: 1561.098 MHz
Cable type	6.3.15 GPS/BDS Remote Antenna

FE electrical interface

An FE electrical interface transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-327](#) lists FE electrical interface attributes.

Table 3-327 FE electrical interface attributes

Attribute	Description
Connector type	M12
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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	IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocols	IP
Cable type	M12 cable

VGA interface

A video graphics array (VGA) interface provides VGA video output. [Table 3-328](#) lists VGA interface attributes.

Table 3-328 VGA interface attributes

Attribute	Description
Connector type	DB25 connector
Signal types supported	VGA signal
Cable type	6.12 DB25 Audio and Video Cable

AV audio interface

An AV interface provides CVBS video output. [Table 3-329](#) lists CVBS interface attributes.

Table 3-329 CVBS interface attributes

Attribute	Description
Connector type	DB25 connector
Signal types supported	CVBS signal
Cable type	6.12 DB25 Audio and Video Cable

USB interface: using M12 A Code connector

This USB interface provides up to 480 Mbit/s upload and download rates. [Table 3-330](#) lists USB interface attributes.

Table 3-330 USB interface attributes

Attribute	Description
Connector type	M12 A-code
Standards compliance	USB2.0
Working mode	Host

Wi-Fi antenna interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. [Table 3-331](#) lists Wi-Fi antenna interface attributes.

Table 3-331 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	802.11a/b/g/n/ac

Attribute	Description
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● Wireless security
Cable type	6.3.12 Wi-Fi Remote Antenna (3x3)

Heat Dissipation

The AR515CGW-L router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-332](#) lists technical specifications of the AR515CGW-L router.

Table 3-332 AR515CGW-L technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.4 GHz Single-core, 900 MHz
Memory	2 GB
NAND flash memory	1 GB (SLC)
Micro SD card	Supported
Hard disk	Supported (7 mm high 2.5-inch hard disk) NOTE The hard disk can work properly only in the following situations: <ul style="list-style-type: none"> ● The frequency is in the range from 5 Hz to 200 Hz, and the acceleration is 2.0 g (0 to peak). ● The frequency is in the range from 201 Hz to 500 Hz, and the acceleration is 1.0 g (0 to peak).
Dimensions and weight	
Dimensions (W x D x H)	217.0 mm x 178.0 mm x 100.0 mm (8.54 in. x 7.01 in. x 3.94 in.)

Item	Specification
Weight	4.5 kg (10.14 lb)
Power specifications	
Rated input voltage (DC)	12 V DC to 24 V DC
Maximum input voltage (DC)	9 V DC to 36 V DC
RPS power supply	Not supported
PoE power supply	Supported
Power consumption	
Maximum power consumption	120 W NOTE The maximum power consumption is 60 W and the output voltage is 60 W (POE+ 12 V/5 V).
Heat dissipation	
Fans	None
Airflow (facing the front panel)	None
Interface density	
Management interfaces	1 (M12)
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	1
USB 3.0 interfaces	2 (including pluggable hard disk cartridge)
Service interfaces	WAN interfaces: four FE electrical interfaces and two LTE antenna interfaces LAN interfaces: three Wi-Fi antenna interfaces and one GPS antenna interface Multimedia service interfaces: one VGA interface, one MIC interface, one AV audio/video interface, one pluggable hard disk cartridge
Extended slots	Not supported
Environment parameters	

Item	Specification
Operating temperature	Without hard disks: - 25°C to +55°C (- 13°F to +131°F) With hard disks: <ul style="list-style-type: none"> ● Minimum operating temperature: higher one between the hard disk's minimum operating temperature and - 25°C (- 13°F) ● Maximum operating temperature: lower one between the hard disk's maximum operating temperature minus 15°C (59°F) and 55°C (131°F) NOTE When the altitude is 1800-5000 m (5906-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) 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
Operating altitude	< 5000 m (16404 ft.)
Part number	02351JVT

3.4 AR530 Series

3.4.1 AR531-2C-H

Version Mapping

[Table 3-333](#) describes the mapping between the AR531-2C-H router and software versions.

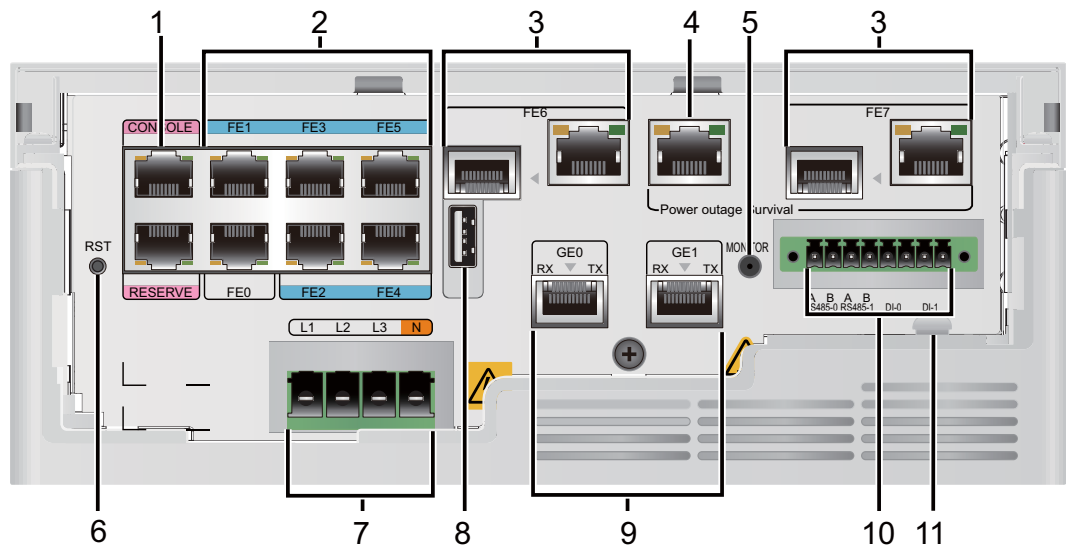
Table 3-333 Mapping between the AR531-2C-H router and software versions

Device Model	Software Version
AR531-2C-H	V200R005C60 and later versions NOTE This model does not match V200R008C00.

Appearance and Structure

[Figure 3-80](#) shows the appearance of the AR531-2C-H router.

Figure 3-80 AR531-2C-H appearance



1	Console interface NOTE The interface marked RESERVE is a reserved console interface.	2	LAN interfaces: six FE electrical interfaces NOTE FE0 can be used as a WAN interface.
3	FE combo interface	4	Power outage survival interface NOTE It is the survival interface for FE7 combo interface.
5	Cover open sensor	6	RST NOTICE This button is used to reset the router. <ul style="list-style-type: none"> ● Holding down the button for 10 seconds will restore the factory settings. ● Pressing the button will reset the system. Resetting the system will interrupt services. Exercise caution when performing this operation.
7	AC power socket NOTE <ul style="list-style-type: none"> ● It is connected to an AC power supply device using a 4-pin AC power cable. ● The router supports Huawei 4.9 180 W PoE Midspan. 	8	USB interface

9	Two GE optical interfaces NOTE The two interfaces GE0 and GE1 can be used as WAN interfaces.	10	Two RS485 interfaces and two DI interfaces NOTE <ul style="list-style-type: none">● RS485 interfaces: connected to meters or other devices with RS485 interfaces● DI interfaces: connected to digital input devices
11	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	-	-

Indicator Description

Figure 3-81 shows indicators on the AR531-2C-H.

Figure 3-81 Indicators on the AR531-2C-H

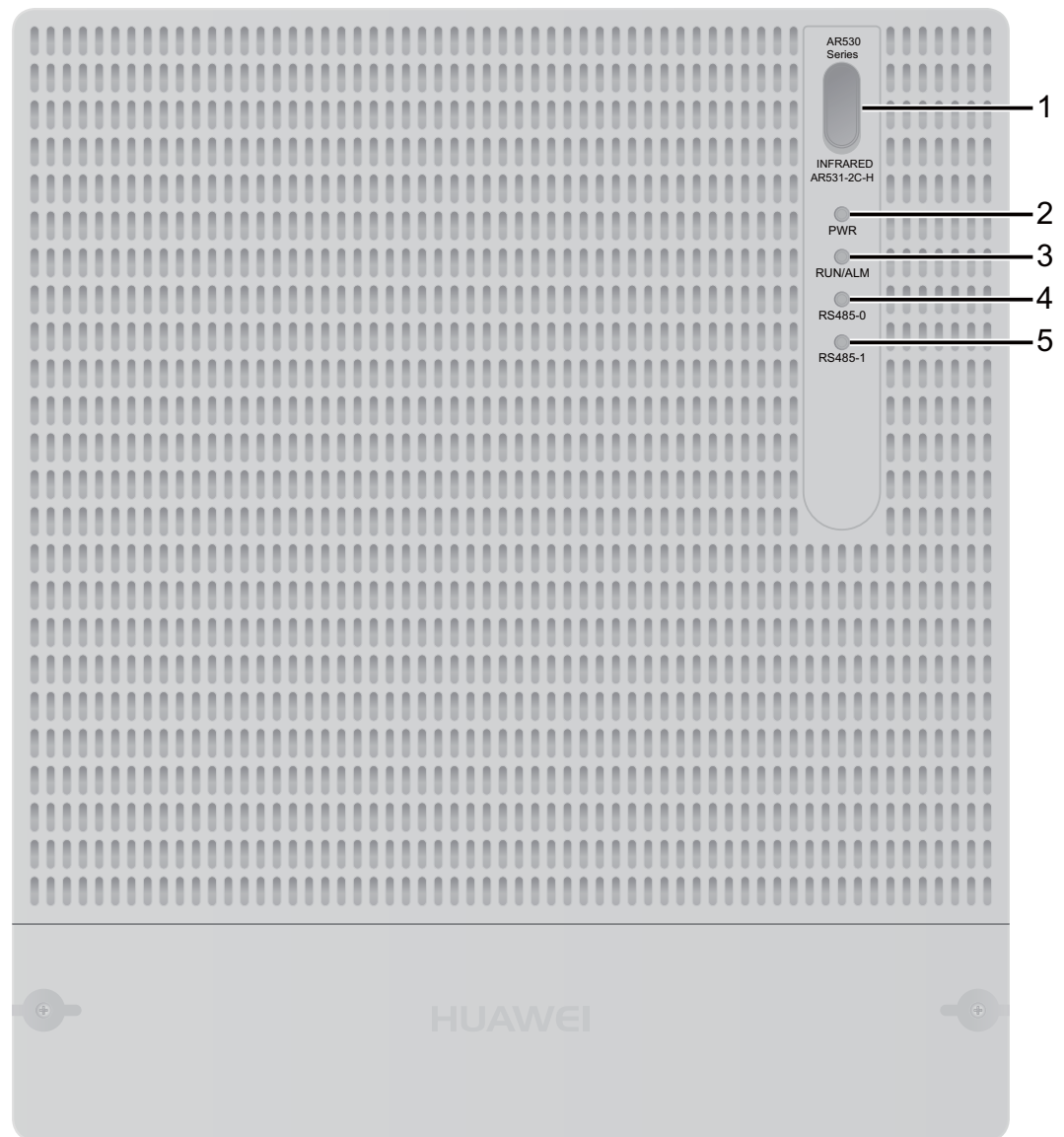


Table 3-334 Description of indicators on the AR531-2C-H

Number	Indicator/Button	Color	Description
1	Infrared communication interface	—	This interface is used to transmit and receive infrared signals (invisible light).
2	PWR	Green	Steady on: The router is powered on. Off: The router is powered off.

Number	Indicator/Button	Color	Description
3	RUN/ALM	Red and green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Slow blinking green: The system is running properly. - Fast blinking green: The system is loading or upgrading the software. - Steady red: A fault or alarm that affects services has occurred and must be handled immediately. - Off: The system software is not running or is resetting. ● When a USB flash drive is connected to the router, the RUN/ALM indicator works as the USB indicator: <ul style="list-style-type: none"> - After the USB flash drive starts, the RUN/ALM indicator fast blinks for 3 seconds, indicating that it enters the USB indicator mode. - In the USB indicator mode: <ul style="list-style-type: none"> - Steady green: The system has been upgraded or configured using a the USB flash drive. - Fast blinking: The system is being upgraded or configured using the USB flash drive. - Steady red: The system fails to be upgraded or configured using the USB flash drive. - After the USB flash drive is removed, the RUN/ALM indicator slow blinks for 3 seconds, indicating that it enters the system indicator mode.
4	RS485-0	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-0 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-0 link is available and is transmitting and receiving data. ● Off: The RS485-0 link is not configured or has failed.
5	RS485-1	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-1 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-1 link is available and is transmitting and receiving data. ● Off: The RS485-1 link is not configured or has failed.

Interface Description

Console interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-335](#) lists console interface attributes.

Table 3-335 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	6.18 Console Cable

FE electrical interface

An FE electrical interface receives and transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-336](#) lists FE electrical interface attributes.

Table 3-336 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

FE combo interface

An FE 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 FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s or 100 Mbit/s.
- The FE optical interface (100 Mbit/s) transmits and receives services at 100 Mbit/s.

 **NOTE**

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE optical interface

A GE optical interface transmits and receives Ethernet services at 1000 Mbit/s. [Table 3-337](#) lists GE optical interface attributes.

Table 3-337 GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Rate	1000 Mbit/s
Cable type	<ul style="list-style-type: none"> ● Optical fiber (inserted in an optical module) and GE Optical Module ● 6.6 Ethernet Cable and GE Copper Module

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-338](#) lists USB interface attributes.

Table 3-338 USB interface attributes

Attribute	Description
Connector type	TYPE-A

Attribute	Description
Standards compliance	USB 2.0
Working mode	Host

RS485 interface

RS485 interfaces are used for data collection. [Table 3-339](#) lists the RS485 interface attributes.

Table 3-339 RS485 interface attributes

Attribute	Description
Connector type	8-pin connector (leftmost 4 pins for RS485 interfaces)
Standards compliance	RS485
Working mode	Half-duplex
Rate	1200-115200 bit/s
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

DI interface

DI interfaces are used to observe remote communication input and voltage level signals. [Table 3-340](#) lists DI interface attributes.

Table 3-340 DI interface attributes

Attribute	Description
Connector type	8-pin connector (rightmost 4 pins for DI interfaces)
Signal type	Passive DI signals, Boolean value (short circuit and open circuit)
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

Heat Dissipation

The AR531-2C-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-341](#) lists technical specifications of the AR531-2C-H router.

Table 3-341 AR531-2C-H technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	220 mm x 250 mm x 88 mm (8.7 in. x 9.8 in. x 3.5 in.), 2 U height
Weight	≤ 5 kg (11.0 lb)
Power consumption	
Maximum power consumption	17 W
Power specifications	
AC power input	<ul style="list-style-type: none"> ● Rated voltage range: 100 V to 240 V (single-phase) or 345 V to 415 V (three-phase) ● Maximum voltage range: 90 V to 290 V (single-phase) or 304 V to 456 V (three-phase)
Interface density	
Console interfaces	2
USB 2.0 interfaces	1
RS485 interfaces	2
DI interfaces	2
Service interfaces	<ul style="list-style-type: none"> ● LAN interfaces: six FE electrical interfaces ● Two GE optical interfaces ● One FE combo interface
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)

Item	Specification
Part number	50010172

3.4.2 AR531-F2C-H

Version Mapping

Table 3-342 lists the mapping between the AR531-F2C-H router and software versions.

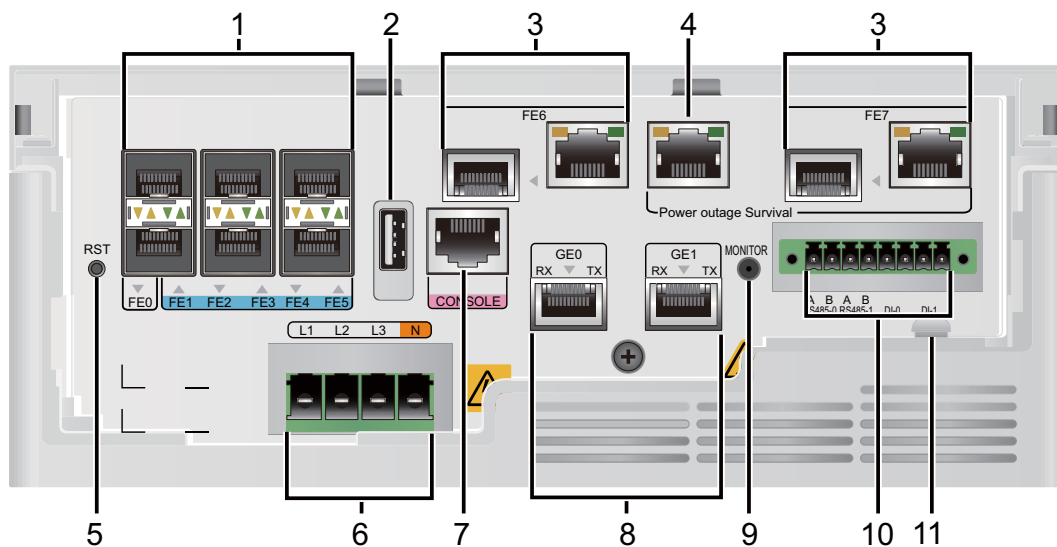
Table 3-342 Mapping between the AR531-F2C-H router and software versions

Router Model	Software Version
AR531-F2C-H	V200R005C60 and later versions NOTE V200R008C00 does not support this model.

Appearance and Structure

Figure 3-82 shows the panel of the AR531-F2C-H.

Figure 3-82 AR531-F2C-H panel



1	LAN interfaces: six FE optical interfaces	2	USB interface
---	---	---	---------------

3	FE combo interface	4	Power outage survival interface NOTE It is the survival interface for FE7 combo interface.
5	RST NOTICE This button is used to reset the router. <ul style="list-style-type: none"> ● Holding down the button for 10 seconds will restore the factory settings. ● Pressing the button will reset the system. Resetting the system will interrupt services. Exercise caution when performing this operation.	6	AC power socket NOTE <ul style="list-style-type: none"> ● It is connected to an AC power supply device using a 4-pin AC power cable. ● The router supports Huawei 4.9 180 W PoE Midspan.
7	Console interface NOTE The interface marked RESERVE is a reserved console interface.	8	Two GE optical interfaces NOTE The two interfaces GE0 and GE1 can be used as WAN interfaces.
9	Cover open sensor	10	Two RS485 interfaces and two DI interfaces NOTE <ul style="list-style-type: none"> ● RS485 interfaces: connected to meters or other devices with RS485 interfaces ● DI interfaces: connected to digital input devices
11	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	-	-

Indicator Description

Figure 3-83 shows the indicators on the AR531-F2C-H router.

Figure 3-83 Indicators on the AR531-F2C-H

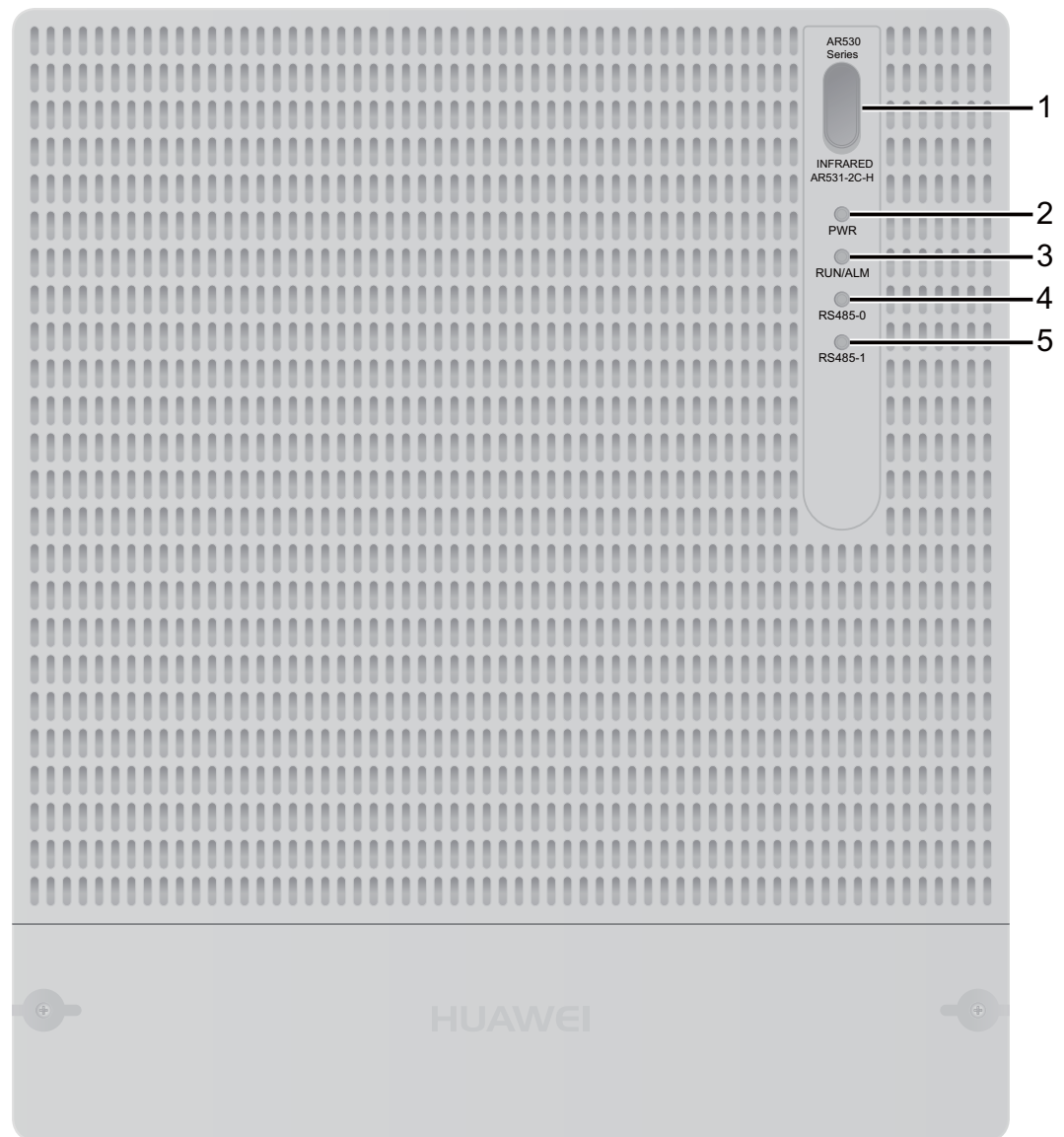


Table 3-343 Description of the indicators on the AR531-F2C-H

Number	Indicator/Button	Color	Description
1	Infrared communication port	-	This port is used to transmit and receive infrared signals (invisible light).
2	PWR	Green	Steady on: The router is powered on. Off: The router is powered off.

Number	Indicator/Button	Color	Description
3	RUN/ALM	Red and green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Slow blinking green: The system is running properly. - Fast blinking green: The system is loading or upgrading the software. - Steady red: A fault or alarm that affects services has occurred and must be handled immediately. - Off: The system software is not running or is resetting. ● When a USB flash drive is connected to the router, the RUN/ALM indicator works as the USB indicator: <ul style="list-style-type: none"> - After the USB flash drive starts, the RUN/ALM indicator fast blinks for 3 seconds, indicating that it enters the USB indicator mode. - In USB indicator mode: <ul style="list-style-type: none"> - Steady green: The system has been upgraded using the USB flash drive. - Fast blinking: The system is being upgraded using the USB flash drive. - Steady red: The system failed to be upgraded using the USB flash drive. - After the USB flash drive is removed, the RUN/ALM indicator slow blinks for 3 seconds, indicating that it enters the system indicator mode.
4	RS485-0	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-0 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-0 link is available and is transmitting and receiving data. ● Off: The RS485-0 link is not configured or has failed.
5	RS485-1	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-1 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-1 link is available and is transmitting and receiving data. ● Off: The RS485-1 link is not configured or has failed.

Interface Description

Console Interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-344](#) lists console interface attributes.

Table 3-344 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	6.18 Console Cable

FE Combo Interface

An FE 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 FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s or 100 Mbit/s.
- The FE optical interface (100 Mbit/s) transmits and receives services at 100 Mbit/s.

NOTE

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE Optical Interface

A GE optical interface transmits and receives Ethernet services at 1000 Mbit/s. [Table 3-345](#) lists GE optical interface attributes.

Table 3-345 GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Rate	1000 Mbit/s

Attribute	Description
Cable type	<ul style="list-style-type: none"> ● Optical fiber (inserted in an optical module) and GE Optical Module ● 6.6 Ethernet Cable and GE Copper Module

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-346](#) lists USB interface attributes.

Table 3-346 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

RS485 Interface

RS485 interfaces are used for data collection. [Table 3-347](#) lists the RS485 interface attributes.

Table 3-347 RS485 interface attributes

Attribute	Description
Connector type	8-pin connector (leftmost 4 pins for RS485 interfaces)
Standards compliance	RS485
Working mode	Half-duplex
Rate	1200-115200 bit/s
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

DI Interface

DI interfaces are used to observe remote communication input and voltage level signals. [Table 3-348](#) lists DI interface attributes.

Table 3-348 DI interface attributes

Attribute	Description
Connector type	8-pin connector (rightmost 4 pins for DI interfaces)
Signal type	Passive DI signals, Boolean value (short circuit and open circuit)
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

FE optical interface

An FE optical interface transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-349](#) lists FE optical interface attributes.

Table 3-349 FE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3 100Base-FX
Frame format	Ethernet_II, 802.3
Network protocol	IP
Cable type	Optical fiber (inserted in an optical module)
Cable type	6.6 Ethernet Cable and FE Optical Module

Heat Dissipation

The AR531-F2C-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-350](#) lists technical specifications of the AR531-F2C-H router.

Table 3-350 AR531-F2C-H technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	220 mm x 250 mm x 88 mm (8.7 in. x 9.8 in. x 3.5 in.), 2 U height
Weight	≤ 5 kg (11.0 lb)
Power consumption	
Maximum power consumption	21 W
Power specifications	
AC power input	<ul style="list-style-type: none"> ● Rated voltage range: 100 V to 240 V (single-phase) or 345 V to 415 V (three-phase) ● Maximum voltage range: 90 V to 290 V (single-phase) or 304 V to 456 V (three-phase)
Interface density	
Console interfaces	2
USB 2.0 interfaces	1
RS485 interfaces	2
DI interface	2
Service interfaces (standard configuration)	<ul style="list-style-type: none"> ● LAN interfaces: six FE optical interfaces ● Two GE optical interfaces ● One FE combo interface
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)
Part number	50010173

3.4.3 AR531GPe-U-H

Version Mapping

Table 3-351 lists the mapping between the AR531GPe-U-H router and software versions.

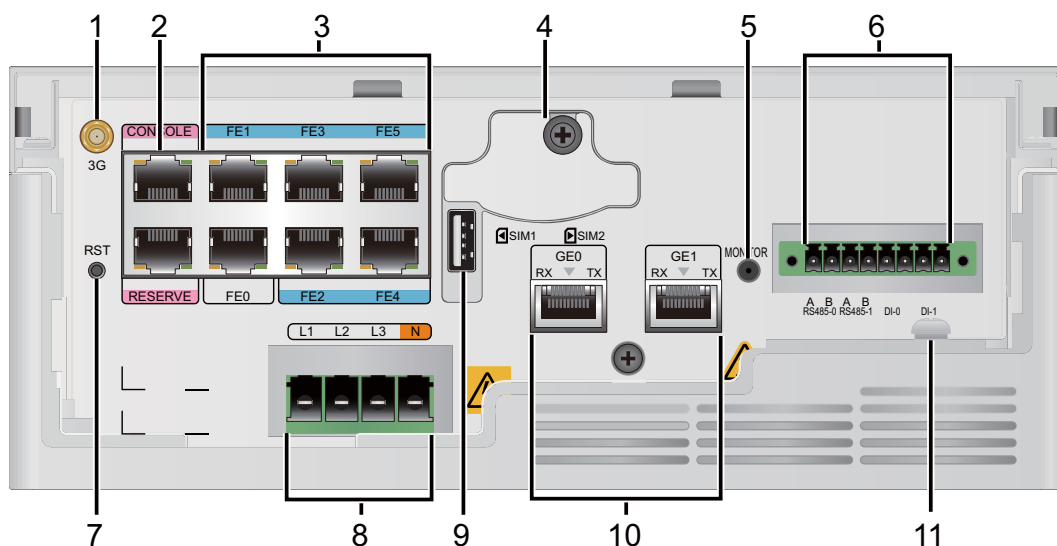
Table 3-351 Mapping between the AR531GPe-U-H router and software versions

Router Model	Software Version
AR531GPe-U-H	V200R005C60 and later versions

Appearance and Structure

Figure 3-84 shows the panel of the AR531GPe-U-H.

Figure 3-84 AR531GPe-U-H panel



1	3G antenna interface	2	Console interface NOTE The interface marked RESERVE is a reserved console interface.
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3	LAN interfaces: six FE electrical interfaces NOTE FE0 can be used as a WAN interface.	4	Double SIM card slots NOTE <ul style="list-style-type: none"> ● The router supports double-card single-standby. ● The router must use industrial SIM cards. If only one SIM card needs to be installed, install it in slot SIM1.
5	Cover open sensor	6	Two RS485 interfaces and two DI interfaces NOTE <ul style="list-style-type: none"> ● RS485 interfaces: connected to meters or other devices with RS485 interfaces ● DI interfaces: connected to digital input devices
7	RST NOTICE This button is used to reset the router. <ul style="list-style-type: none"> ● Holding down the button for 10 seconds will restore the factory settings. ● Pressing the button will reset the system. Resetting the system will interrupt services. Exercise caution when performing this operation.	8	AC power socket NOTE <ul style="list-style-type: none"> ● It is connected to an AC power supply device using a 4-pin AC power cable. ● The router supports Huawei 4.9 180 W PoE Midspan. ● It can also be used as a PLC interface.
9	USB interface	10	Two GE optical interfaces NOTE The two interfaces GE0 and GE1 can be used as WAN interfaces.
11	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	-	-

Indicator Description

Figure 3-85 shows the indicators on the AR531GPe-U-H router.

Figure 3-85 Indicators on the AR531GPe-U-H

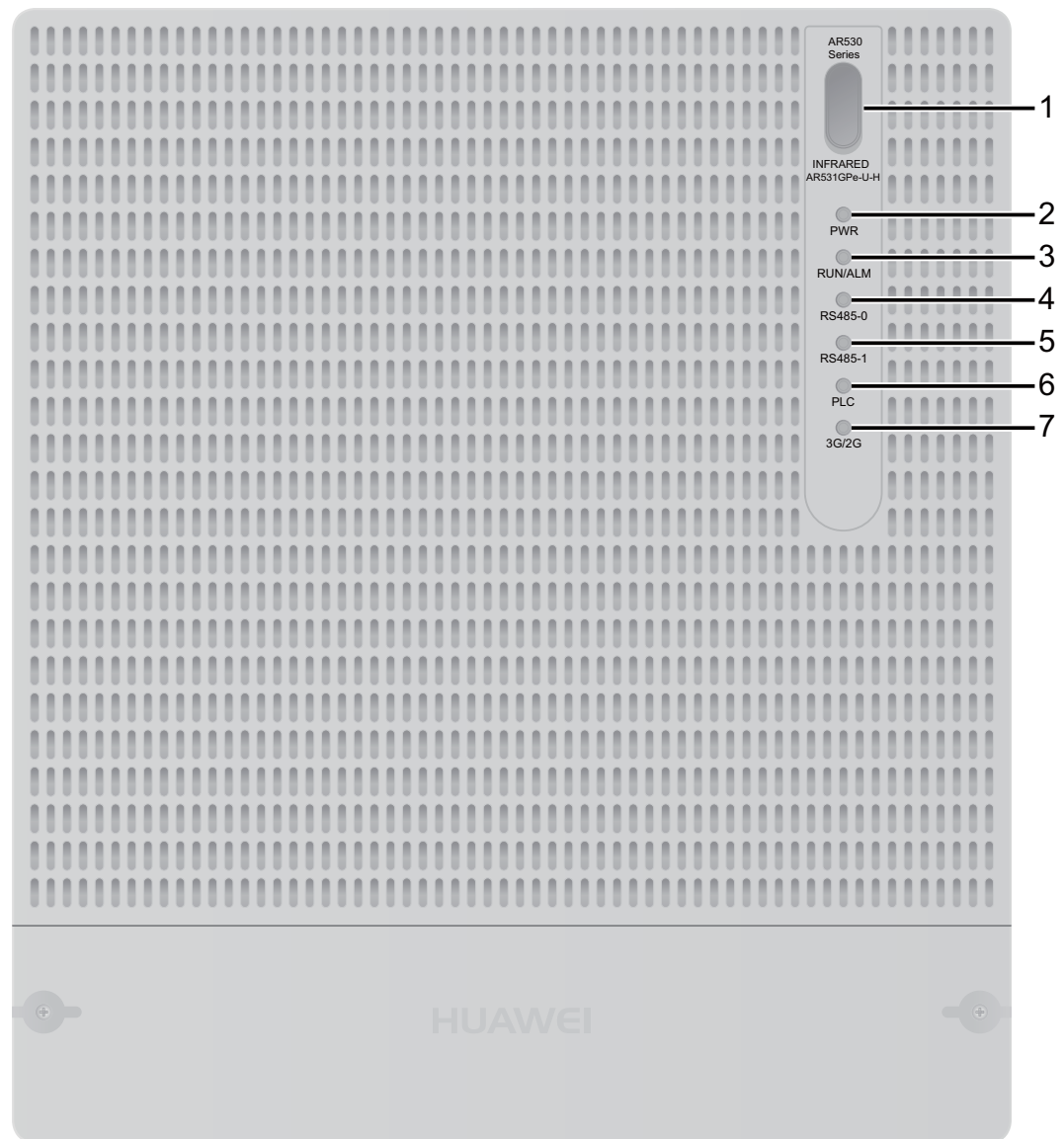


Table 3-352 Description of the indicators on the AR531GPe-U-H

Number	Indicator/Button	Color	Description
1	Infrared communication port	-	This port is used to transmit and receive infrared signals (invisible light).
2	PWR	Green	Steady on: The router is powered on. Off: The router is powered off.

Number	Indicator/Button	Color	Description
3	RUN/ALM	Red and green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Slow blinking green: The system is running properly. - Fast blinking green: The system is loading or upgrading the software. - Steady red: A fault or alarm that affects services has occurred and must be handled immediately. - Off: The system software is not running or is resetting. ● When a USB flash drive is connected to the router, the RUN/ALM indicator works as the USB indicator: <ul style="list-style-type: none"> - After the USB flash drive starts, the RUN/ALM indicator fast blinks for 3 seconds, indicating that it enters the USB indicator mode. - In USB indicator mode: <ul style="list-style-type: none"> - Steady green: The system has been upgraded using the USB flash drive. - Fast blinking: The system is being upgraded using the USB flash drive. - Steady red: The system failed to be upgraded using the USB flash drive. - After the USB flash drive is removed, the RUN/ALM indicator slow blinks for 3 seconds, indicating that it enters the system indicator mode.
4	RS485-0	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-0 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-0 link is available and is transmitting and receiving data. ● Off: The RS485-0 link is not configured or has failed.
5	RS485-1	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-1 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-1 link is available and is transmitting and receiving data. ● Off: The RS485-1 link is not configured or has failed.

Number	Indicator/Button	Color	Description
6	PLC	Green	Steady on: The PLC link is connected and has received the registration information from the slave node, but is not transmitting or receiving data. Fast blinking: The PLC link is transmitting and receiving data. Off: The PLC link is inactive.
7	3G/2G	Green	Steady on: The 3G/2G link has been connected and is active (dialup succeeded). Fast blinking: The 3G/2G link is transmitting and receiving data. Off: The 3G/2G link is not connected and is inactive.

Interface Description

Console Interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-353](#) lists console interface attributes.

Table 3-353 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	6.18 Console Cable

FE electrical interface

An FE electrical interface receives and transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-354](#) lists FE electrical interface attributes.

Table 3-354 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

GE Optical Interface

A GE optical interface transmits and receives Ethernet services at 1000 Mbit/s. [Table 3-355](#) lists GE optical interface attributes.

Table 3-355 GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Rate	1000 Mbit/s
Cable type	<ul style="list-style-type: none"> ● Optical fiber (inserted in an optical module) and GE Optical Module ● 6.6 Ethernet Cable and GE Copper Module

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-356](#) lists USB interface attributes.

Table 3-356 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

RS485 Interface

RS485 interfaces are used for data collection. [Table 3-357](#) lists the RS485 interface attributes.

Table 3-357 RS485 interface attributes

Attribute	Description
Connector type	8-pin connector (leftmost 4 pins for RS485 interfaces)
Standards compliance	RS485
Working mode	Half-duplex
Rate	1200-115200 bit/s
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

DI Interface

DI interfaces are used to observe remote communication input and voltage level signals. [Table 3-358](#) lists DI interface attributes.

Table 3-358 DI interface attributes

Attribute	Description
Connector type	8-pin connector (rightmost 4 pins for DI interfaces)
Signal type	Passive DI signals, Boolean value (short circuit and open circuit)
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

3G-WCDMA antenna interface

The 3G-WCDMA antenna interface connects to a 3G-WCDMA antenna to receive and transmit 3G signals. [Table 3-359](#) lists 3G-WCDMA antenna interface attributes.

Table 3-359 3G-WCDMA antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance	<ul style="list-style-type: none"> ● UMTS ● EDGE/GPRS/GSM
Frequency bands supported	UMTS: 2100/900 (MHz) EDGE/GPRS/GSM: 1900/1800/900/850 (MHz)
Rate	GSM CS: <ul style="list-style-type: none"> ● Uplink: 9.6 kbit/s ● Downlink: 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: <ul style="list-style-type: none"> ● Uplink: 64 kbit/s ● Downlink: 64 kbit/s WCDMA PS: <ul style="list-style-type: none"> ● Uplink: 384 kbit/s ● Downlink: 384 kbit/s HSDPA: downlink rate of 3.6 Mbit/s
Network protocol	GSM/GPRS/EDGE/WCDMA/HSDPA
Antenna type	6.3.1 3G Whip Antenna

Heat Dissipation

The AR531GPe-U-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-360](#) lists technical specifications of the AR531GPe-U-H router.

Table 3-360 AR531GPe-U-H technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	220 mm x 250 mm x 88 mm (8.7 in. x 9.8 in. x 3.5 in.), 2 U height
Weight	≤ 5 kg (11.0 lb)
Power consumption	
Maximum power consumption	25.50 W
Power specifications	
AC power input	<ul style="list-style-type: none"> ● Rated voltage range: 100 V to 240 V (single-phase) or 345 V to 415 V (three-phase) ● Maximum voltage range: 90 V to 290 V (single-phase) or 304 V to 456 V (three-phase)
Interface density	
Console interfaces	2
USB 2.0 interfaces	1
RS485 interfaces	2
DI interfaces	2
3G antenna interfaces	1
Service interfaces (standard configuration)	<ul style="list-style-type: none"> ● LAN interfaces: six FE electrical interfaces ● Two GE optical interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +60°C (-40°F to +140°F) NOTE If the router has been placed in a low-temperature environment (below -20°C) for more than 1.5 hours before they are powered on, the 3G module can work normally 20 minutes after startup.
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)

Item	Specification
Storage altitude	≤ 5000 m (16404 ft.)
Part number	50010169

3.4.4 AR531GR-U-H

Version Mapping

Table 3-361 lists the mapping between the AR531GR-U-H router and software versions.

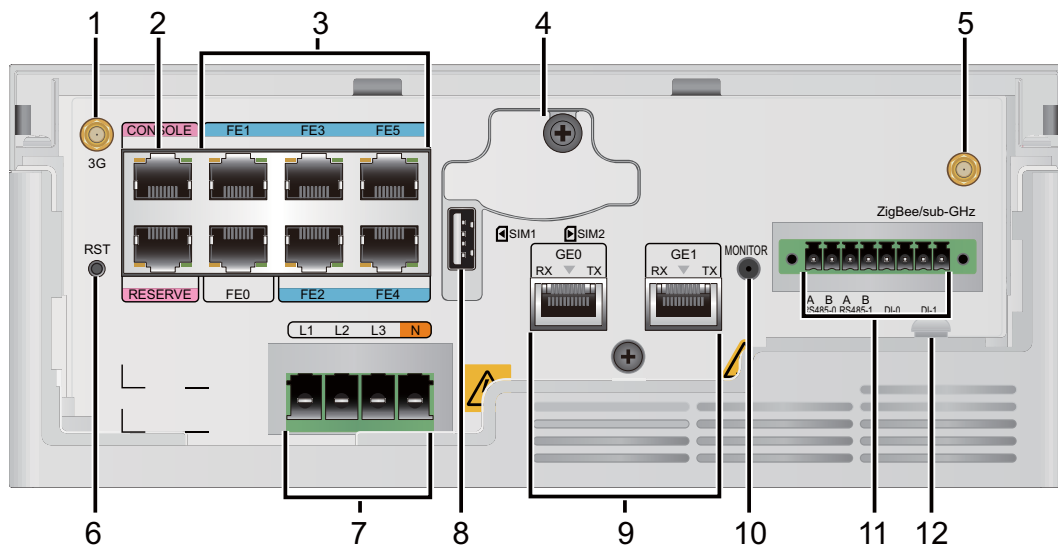
Table 3-361 Mapping between the AR531GR-U-H router and software versions

Router Model	Software Version
AR531GR-U-H	V200R005C60 and later versions

Appearance and Structure

Figure 3-86 shows the panel of the AR531GR-U-H.

Figure 3-86 AR531GR-U-H panel



1	3G antenna interface	2	Console interface NOTE The interface marked RESERVE is a reserved console interface.
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3	<p>LAN interfaces: six FE electrical interfaces</p> <p>NOTE FE0 can be used as a WAN interface.</p>	4	<p>Double SIM card slots</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The router supports double-card single-standby. ● The router must use industrial SIM cards. If only one SIM card needs to be installed, install it in slot SIM1.
5	<p>ZigBee antenna interface/sub-GHz antenna interface</p>	6	<p>RST</p> <p>NOTICE</p> <p>This button is used to reset the router.</p> <ul style="list-style-type: none"> ● Holding down the button for 10 seconds will restore the factory settings. ● Pressing the button will reset the system. Resetting the system will interrupt services. Exercise caution when performing this operation.
7	<p>AC power socket</p> <p>NOTE</p> <ul style="list-style-type: none"> ● It is connected to an AC power supply device using a 4-pin AC power cable. ● The router supports Huawei 4.9 180 W PoE Midspan. ● It can also be used as a PLC interface. 	8	<p>USB interface</p>
9	<p>Two GE optical interfaces</p> <p>NOTE The two interfaces GE0 and GE1 can be used as WAN interfaces.</p>	10	<p>Cover open sensor</p>
11	<p>Two GE optical interfaces</p> <p>NOTE The two interfaces GE0 and GE1 can be used as WAN interfaces.</p>	12	<p>Ground point</p> <p>NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.</p>

Indicator Description

Figure 3-87 shows the indicators on the AR531GR-U-H router.

Figure 3-87 Indicators on the AR531GR-U-H

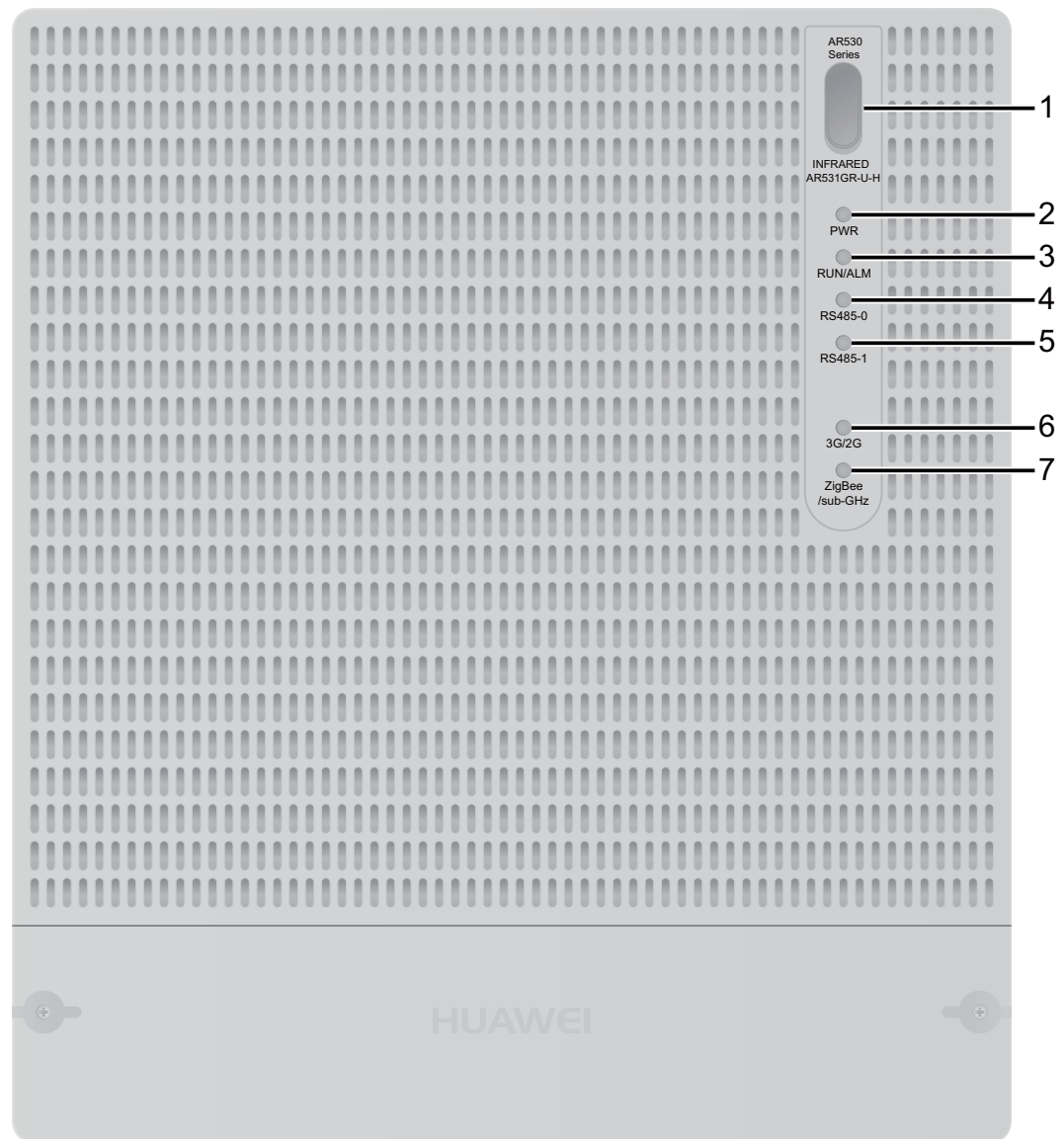


Table 3-362 Description of the indicators on the AR531GR-U-H

Number	Indicator/Button	Color	Description
1	Infrared communication port	-	This port is used to transmit and receive infrared signals (invisible light).
2	PWR	Green	Steady on: The router is powered on. Off: The router is powered off.

Number	Indicator/Button	Color	Description
3	RUN/ALM	Red and green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Slow blinking green: The system is running properly. - Fast blinking green: The system is loading or upgrading the software. - Steady red: A fault or alarm that affects services has occurred and must be handled immediately. - Off: The system software is not running or is resetting. ● When a USB flash drive is connected to the router, the RUN/ALM indicator works as the USB indicator: <ul style="list-style-type: none"> - After the USB flash drive starts, the RUN/ALM indicator fast blinks for 3 seconds, indicating that it enters the USB indicator mode. - In USB indicator mode: <ul style="list-style-type: none"> - Steady green: The system has been upgraded using the USB flash drive. - Fast blinking: The system is being upgraded using the USB flash drive. - Steady red: The system failed to be upgraded using the USB flash drive. - After the USB flash drive is removed, the RUN/ALM indicator slow blinks for 3 seconds, indicating that it enters the system indicator mode.
4	RS485-0	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-0 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-0 link is available and is transmitting and receiving data. ● Off: The RS485-0 link is not configured or has failed.
5	RS485-1	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-1 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-1 link is available and is transmitting and receiving data. ● Off: The RS485-1 link is not configured or has failed.

Number	Indicator/Button	Color	Description
6	3G/2G	Green	Steady on: The 3G/2G link has been connected and is active (dialup succeeded). Fast blinking: The 3G/2G link is transmitting and receiving data. Off: The 3G/2G link is not connected and is inactive.
7	ZigBee/sub-GHz	Green	Steady on: The ZigBee network has been established successfully or the sub-GHz antenna interface has successfully connected to the peer end. Fast blinking: The ZigBee/sub-GHz antenna is transmitting and receiving data. Off: <ul style="list-style-type: none"> ● The ZigBee/sub-GHz function is not configured or no ZigBee/sub-GHz antenna is connected to the antenna interface. ● The ZigBee/sub-GHz module does not work normally. ● The ZigBee network fails to be established or the sub-GHz antenna interface fails to connect to the peer end.

Interface Description

Console Interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-363](#) lists console interface attributes.

Table 3-363 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	6.18 Console Cable

FE Electrical Interface

An FE electrical interface receives and transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-364](#) lists FE electrical interface attributes.

Table 3-364 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

GE Optical Interface

A GE optical interface transmits and receives Ethernet services at 1000 Mbit/s. [Table 3-365](#) lists GE optical interface attributes.

Table 3-365 GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Rate	1000 Mbit/s
Cable type	<ul style="list-style-type: none"> ● Optical fiber (inserted in an optical module) and GE Optical Module ● 6.6 Ethernet Cable and GE Copper Module

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-366](#) lists USB interface attributes.

Table 3-366 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

RS485 Interface

RS485 interfaces are used for data collection. [Table 3-367](#) lists the RS485 interface attributes.

Table 3-367 RS485 interface attributes

Attribute	Description
Connector type	8-pin connector (leftmost 4 pins for RS485 interfaces)
Standards compliance	RS485
Working mode	Half-duplex
Rate	1200-115200 bit/s
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

DI Interface

DI interfaces are used to observe remote communication input and voltage level signals. [Table 3-368](#) lists DI interface attributes.

Table 3-368 DI interface attributes

Attribute	Description
Connector type	8-pin connector (rightmost 4 pins for DI interfaces)

Attribute	Description
Signal type	Passive DI signals, Boolean value (short circuit and open circuit)
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

3G-WCDMA antenna interface

The 3G-WCDMA antenna interface connects to a 3G-WCDMA antenna to receive and transmit 3G signals. [Table 3-369](#) lists 3G-WCDMA antenna interface attributes.

Table 3-369 3G-WCDMA antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance	<ul style="list-style-type: none"> ● UMTS ● EDGE/GPRS/GSM
Frequency bands supported	UMTS: 2100/900 (MHz) EDGE/GPRS/GSM: 1900/1800/900/850 (MHz)
Rate	GSM CS: <ul style="list-style-type: none"> ● Uplink: 9.6 kbit/s ● Downlink: 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: <ul style="list-style-type: none"> ● Uplink: 64 kbit/s ● Downlink: 64 kbit/s WCDMA PS: <ul style="list-style-type: none"> ● Uplink: 384 kbit/s ● Downlink: 384 kbit/s HSDPA: downlink rate of 3.6 Mbit/s
Network protocol	GSM/GPRS/EDGE/WCDMA/HSDPA
Antenna type	6.3.1 3G Whip Antenna

ZigBee antenna interface

The ZigBee antenna interface connects to a ZigBee antenna to transmit and receive wireless data. [Table 3-370](#) lists ZigBee antenna interface attributes.

Table 3-370 ZigBee antenna interface attributes

Attribute	Description
Connector type	RP-SMA female connector
Standards compliance	IEEE802.15.4
Frequency bands supported	2.4 GHz
Rate	250 kbit/s
Services provided	<ul style="list-style-type: none"> ● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Antenna type	<ul style="list-style-type: none"> ● 6.3.8 ZigBee Whip Antenna ● 6.3.9 Outdoor ZigBee Antenna

Sub-GHz antenna interface

The sub-GHz antenna interface connects to a sub-GHz antenna to receive and transmit wireless data. [Table 3-371](#) lists sub-GHz antenna interface attributes.

Table 3-371 Sub-GHz antenna interface attributes

Attribute	Description
Connector type	RP-SMA female connector
Standards compliance	ETSI EN 300 220-1
Frequency bands supported	170 MHz
Rate	4.8 kbit/s
Services provided	Data transmission
Antenna type	6.3.22 sub-GHz Antenna

Heat Dissipation

The AR531GR-U-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-372](#) lists technical specifications of the AR531GR-U-H router.

Table 3-372 AR531GR-U-H technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	220 mm x 250 mm x 88 mm (8.7 in. x 9.8 in. x 3.5 in.), 2 U height
Weight	≤ 5 kg (11.0 lb)
Power consumption	
Maximum power consumption	20.25 W
Power specifications	
AC power input	<ul style="list-style-type: none"> ● Rated voltage range: 100 V to 240 V (single-phase) or 345 V to 415 V (three-phase) ● Maximum voltage range: 90 V to 290 V (single-phase) or 304 V to 456 V (three-phase)
Interface density	
Console interfaces	2
USB 2.0 interfaces	1
RS485 interfaces	2
DI interfaces	2
3G antenna interfaces	1
ZigBee/Sub-GHz antenna interfaces	1
Service interfaces (standard configuration)	<ul style="list-style-type: none"> ● LAN interfaces: six FE electrical interfaces ● Two GE optical interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)

Item	Specification
Operating temperature	-40°C to +60°C (-40°F to +140°F) NOTE If the router has been placed in a low-temperature environment (below -20°C) for more than 1.5 hours before they are powered on, the 3G module can work normally 20 minutes after startup.
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)
Part number	50010170

3.4.5 AR531G-U-D-H

Version Mapping

Table 3-373 lists the mapping between the AR531G-U-D-H router and software versions.

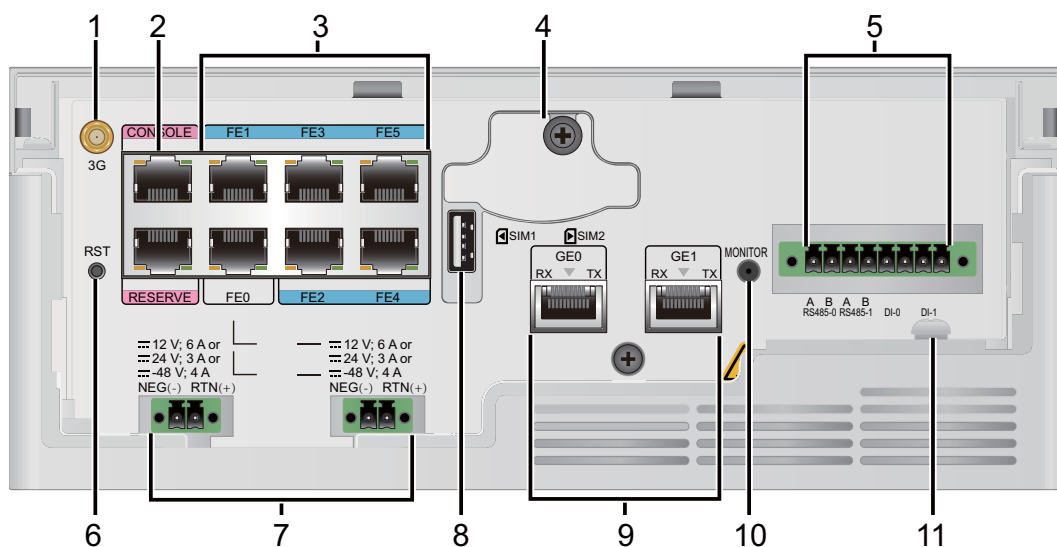
Table 3-373 Mapping between the AR531G-U-D-H router and software versions

Router Model	Software Version
AR531G-U-D-H	V200R005C60 and later versions

Appearance and Structure

Figure 3-88 shows the panel of the AR531G-U-D-H.

Figure 3-88 AR531G-U-D-H panel



1	3G antenna interface	2	Console interface NOTE The interface marked RESERVE is a reserved console interface.
3	LAN interfaces: six FE electrical interfaces NOTE FE0 can be used as a WAN interface.	4	Double SIM card slots NOTE <ul style="list-style-type: none"> ● The router supports double-card single-standby. ● The router must use industrial SIM cards. If only one SIM card needs to be installed, install it in slot SIM1.
5	Two RS485 interfaces and two DI interfaces NOTE <ul style="list-style-type: none"> ● RS485 interfaces: connected to meters or other devices with RS485 interfaces ● DI interfaces: connected to digital input devices 	6	Cover open sensor
7	Double DC power sockets NOTE <ul style="list-style-type: none"> ● The router can run normally when it receives power from either DC power socket. ● Each DC power socket is connected to a DC power supply device using a 2-pin DC power cable. ● The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.9 180 W PoE Midspan. 	8	USB interface
9	Two GE optical interfaces NOTE The two interfaces GE0 and GE1 can be used as WAN interfaces.	10	RST NOTICE This button is used to reset the router. <ul style="list-style-type: none"> ● Holding down the button for 10 seconds will restore the factory settings. ● Pressing the button will reset the system. Resetting the system will interrupt services. Exercise caution when performing this operation.
11	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	-	-

Indicator Description

Figure 3-89 shows the indicators on the AR531G-U-D-H router.

Figure 3-89 Indicators on the AR531G-U-D-H

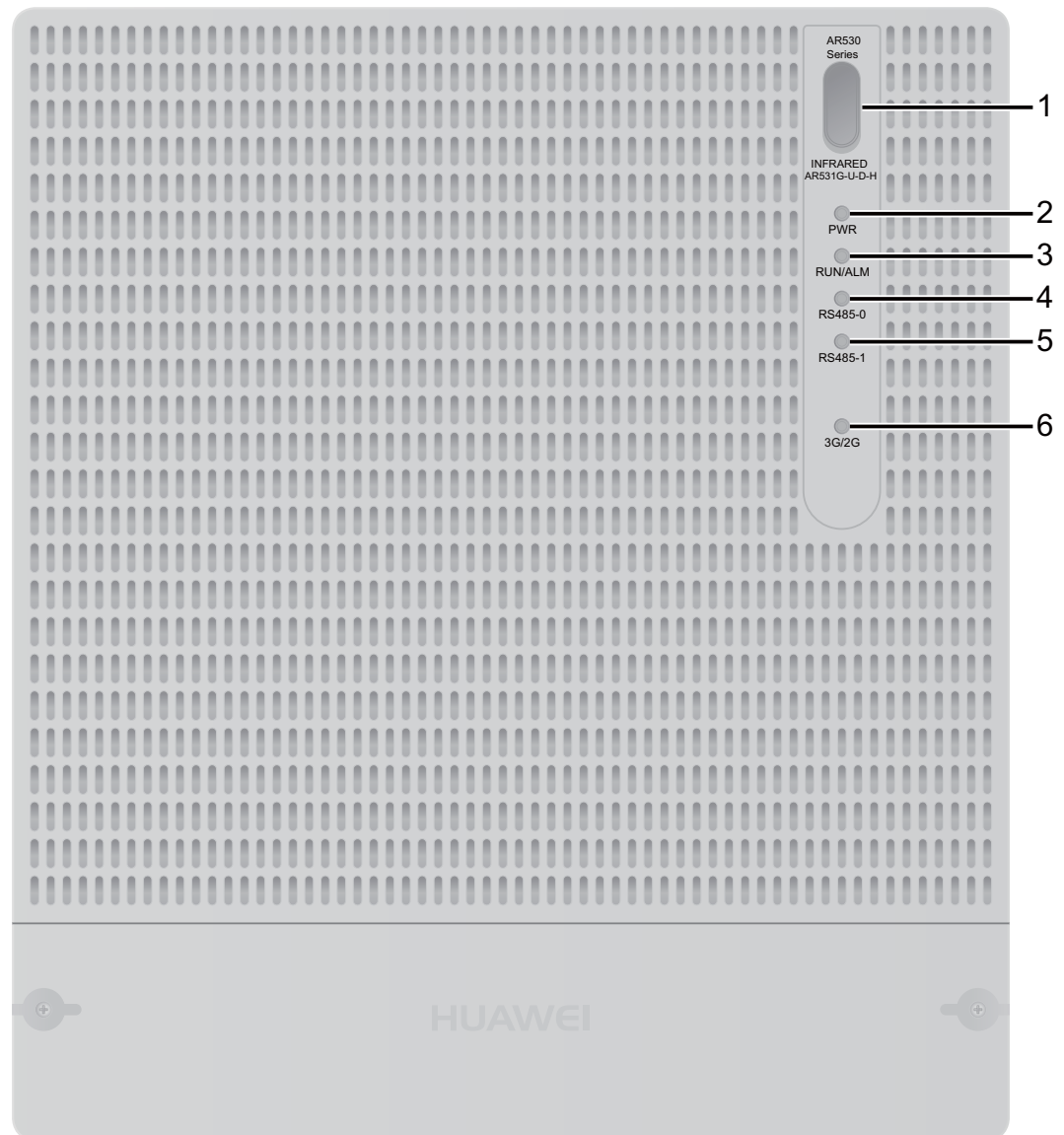


Table 3-374 Description of the indicators on the AR531G-U-D-H

Number	Indicator/Button	Color	Description
1	Infrared communication port	-	This port is used to transmit and receive infrared signals (invisible light).

Number	Indicator/Button	Color	Description
2	PWR	Green	Steady on: The router is powered on. Off: The router is powered off.
3	RUN/ALM	Red and green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Slow blinking green: The system is running properly. - Fast blinking green: The system is loading or upgrading the software. - Steady red: A fault or alarm that affects services has occurred and must be handled immediately. - Off: The system software is not running or is resetting. ● When a USB flash drive is connected to the router, the RUN/ALM indicator works as the USB indicator: <ul style="list-style-type: none"> - After the USB flash drive starts, the RUN/ALM indicator fast blinks for 3 seconds, indicating that it enters the USB indicator mode. - In USB indicator mode: <ul style="list-style-type: none"> - Steady green: The system has been upgraded using the USB flash drive. - Fast blinking: The system is being upgraded using the USB flash drive. - Steady red: The system failed to be upgraded using the USB flash drive. - After the USB flash drive is removed, the RUN/ALM indicator slow blinks for 3 seconds, indicating that it enters the system indicator mode.
4	RS485-0	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-0 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-0 link is available and is transmitting and receiving data. ● Off: The RS485-0 link is not configured or has failed.

Number	Indicator/Button	Color	Description
5	RS485-1	Green	<ul style="list-style-type: none"> ● Steady on: The RS485-1 link is available, but the interface is not connected or is not transmitting or receiving data. ● Fast blinking: The RS485-1 link is available and is transmitting and receiving data. ● Off: The RS485-1 link is not configured or has failed.
6	3G/2G	Green	Steady on: The 3G/2G link has been connected and is active (dialup succeeded). Fast blinking: The 3G/2G link is transmitting and receiving data. Off: The 3G/2G link is not connected and is inactive.

Interface Description

Console Interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-375](#) lists console interface attributes.

Table 3-375 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	6.18 Console Cable

FE Electrical Interface

An FE electrical interface receives and transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-376](#) lists FE electrical interface attributes.

Table 3-376 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

GE Optical Interface

A GE optical interface transmits and receives Ethernet services at 1000 Mbit/s. [Table 3-377](#) lists GE optical interface attributes.

Table 3-377 GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Rate	1000 Mbit/s
Cable type	<ul style="list-style-type: none"> ● Optical fiber (inserted in an optical module) and GE Optical Module ● 6.6 Ethernet Cable and GE Copper Module

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-378](#) lists USB interface attributes.

Table 3-378 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

RS485 Interface

RS485 interfaces are used for data collection. [Table 3-379](#) lists the RS485 interface attributes.

Table 3-379 RS485 interface attributes

Attribute	Description
Connector type	8-pin connector (leftmost 4 pins for RS485 interfaces)
Standards compliance	RS485
Working mode	Half-duplex
Rate	1200-115200 bit/s
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

DI Interface

DI interfaces are used to observe remote communication input and voltage level signals. [Table 3-380](#) lists DI interface attributes.

Table 3-380 DI interface attributes

Attribute	Description
Connector type	8-pin connector (rightmost 4 pins for DI interfaces)
Signal type	Passive DI signals, Boolean value (short circuit and open circuit)
Cable type	6.2.11 8-Pin Phoenix Connector (RS485/DI)

3G-WCDMA antenna interface

The 3G-WCDMA antenna interface connects to a 3G-WCDMA antenna to receive and transmit 3G signals. [Table 3-381](#) lists 3G-WCDMA antenna interface attributes.

Table 3-381 3G-WCDMA antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance	<ul style="list-style-type: none"> ● UMTS ● EDGE/GPRS/GSM
Frequency bands supported	UMTS: 2100/900 (MHz) EDGE/GPRS/GSM: 1900/1800/900/850 (MHz)
Rate	GSM CS: <ul style="list-style-type: none"> ● Uplink: 9.6 kbit/s ● Downlink: 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: <ul style="list-style-type: none"> ● Uplink: 64 kbit/s ● Downlink: 64 kbit/s WCDMA PS: <ul style="list-style-type: none"> ● Uplink: 384 kbit/s ● Downlink: 384 kbit/s HSDPA: downlink rate of 3.6 Mbit/s
Network protocol	GSM/GPRS/EDGE/WCDMA/HSDPA
Antenna type	6.3.1 3G Whip Antenna

Heat Dissipation

The AR531G-U-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-382](#) lists technical specifications of the AR531G-U-D-H.

Table 3-382 AR531G-U-D-H technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	220 mm x 250 mm x 88 mm (8.7 in. x 9.8 in. x 3.5 in.), 2 U height
Weight	≤ 5 kg (11.0 lb)
Power consumption	
Maximum power consumption	18.24 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V/24 V/-48 V ● Maximum voltage range: 9.6 V to 36 V; -38.4 V to -60 V
Interface density	
Console interfaces	2
USB 2.0 interfaces	1
RS485 interfaces	2
DI interfaces	2
3G antenna interfaces	1
Service interfaces (standard configuration)	<ul style="list-style-type: none"> ● LAN interfaces: six FE electrical interfaces ● Two GE optical interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	--40°C to +60°C (-40°F to +140°F) NOTE If the router has been placed in a low-temperature environment (below -20°C) for more than 1.5 hours before they are powered on, the 3G module can work normally 20 minutes after startup.
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)

Item	Specification
Part number	50010171

3.5 AR550 Series

3.5.1 AR550-8FE-D-H

Version Mapping

Table 3-383 lists the mapping between the AR550-8FE-D-H router and software versions.

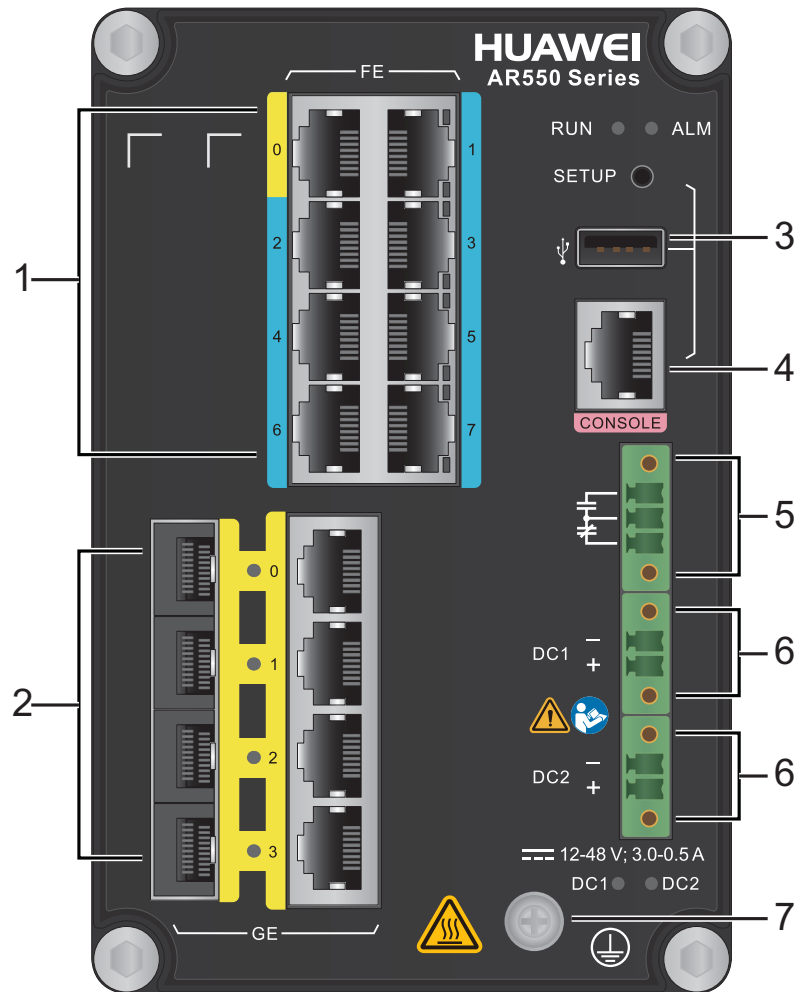
Table 3-383 Mapping between the AR550-8FE-D-H router and software versions

Router Model	Software Version
AR550-8FE-D-H	V200R005C70, V200R009C00 and later versions

Appearance and Structure

Figure 3-90 shows the panel of the AR550-8FE-D-H.

Figure 3-90 AR550-8FE-D-H panel



1	LAN interfaces: eight FE electrical interfaces NOTE FE0 is an uplink interface.	2	LAN interfaces: four GE combo interfaces NOTE GE0 through GE3 are uplink interfaces.
3	USB interface	4	Console interface
5	DO interface	6	Two DC power sockets NOTE The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.9 180 W PoE Midspan .

7	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	-	-
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Indicator Description

Figure 3-91 shows the indicators on the AR550-8FE-D-H router.

Figure 3-91 Indicators on the AR550-8FE-D-H

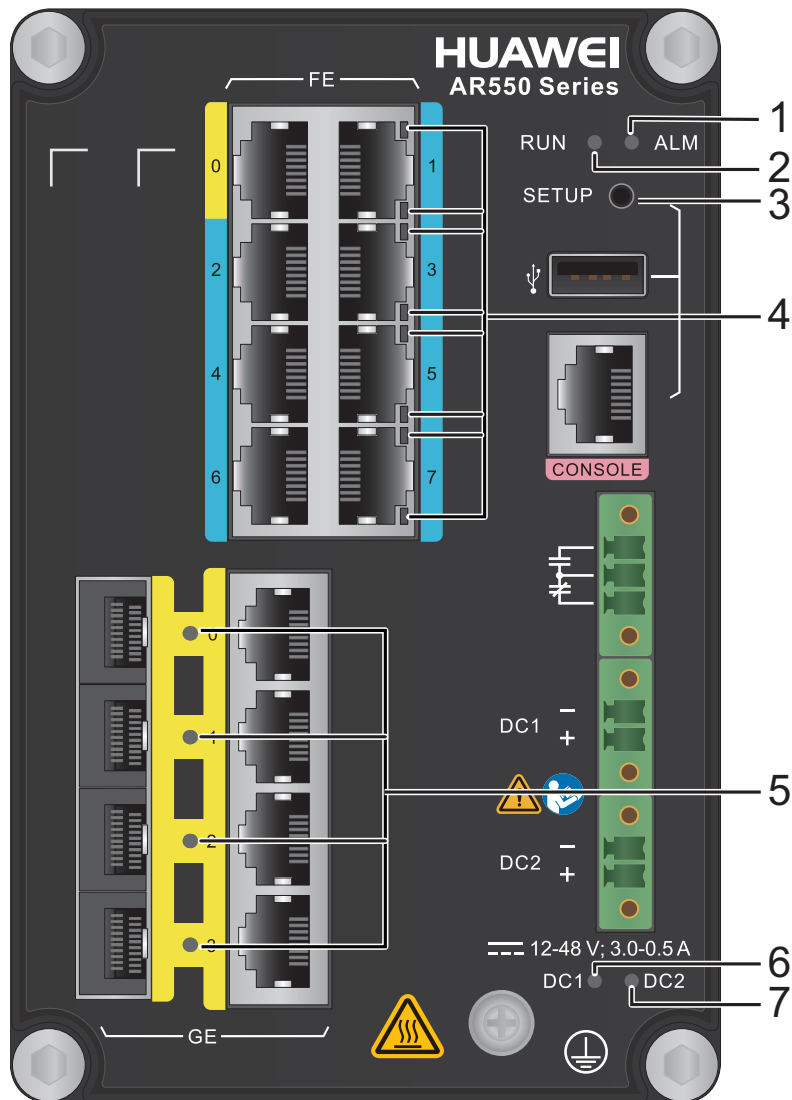


Table 3-384 Description of the indicators on the AR550-8FE-D-H

Number	Indicator /Button	Color	Description
1	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: <ul style="list-style-type: none"> Steady red: The system failed to be upgraded using the USB flash drive.
2	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded using the USB flash drive. - Fast blinking: The system is being upgraded using the USB flash drive.
3	SETUP NOTE This is a reserved hardware interface and cannot be used as a button now.	-	-
4	LAN FE interface indicators	Green	<ul style="list-style-type: none"> ● Steady on: The corresponding LAN FE interface is in Link-Up state. ● Off: The corresponding LAN FE interface is in Link-Down state. ● Blinking: The corresponding LAN FE interface is transmitting or receiving data.

Number	Indicator/Button	Color	Description
5	WAN GE combo interface indicators	Green	<ul style="list-style-type: none"> ● Steady on: The corresponding WAN GE interface is in Link-Up state. ● Steady off: The corresponding WAN GE interface is in Link-Down state. ● Blinking: The corresponding WAN GE interface is transmitting or receiving data.
6	DC1	Green	<ul style="list-style-type: none"> ● Steady on: The router is receiving power normally from the power source connected to power socket 1. ● Off: The router cannot be powered by the power source connected to power socket 1, or power socket 1 is not connected to any power source. <p>NOTE If the input voltage is lower than the minimum operating voltage required for the router, there is a possibility that the DC1 indicator is steady on but the router does not work normally.</p>
7	DC2	Green	<ul style="list-style-type: none"> ● Steady on: The router is receiving power normally from the power source connected to power socket 2. ● Off: The router cannot be powered by the power source connected to power socket 2, or power socket 2 is not connected to any power source. <p>NOTE If the input voltage is lower than the minimum operating voltage required for the router, there is a possibility that the DC2 indicator is steady on but the router does not work normally.</p>

Interface Description

Console Interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-385](#) lists console interface attributes.

Table 3-385 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.18 Console Cable

FE Electrical Interface

An FE electrical interface receives and transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-386](#) lists FE electrical interface attributes.

Table 3-386 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-387](#) lists USB interface attributes.

Table 3-387 USB interface attributes

Attribute	Description
Connector type	Type-A
Standards compliance	Supports USB 2.0 devices
Working mode	Host

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.

- A 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

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

DO Interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-388](#) describes DO interface attributes.

Table 3-388 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

Heat Dissipation

The AR550-8FE-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-389](#) lists technical specifications of the AR550-8FE-D-H router.

Table 3-389 AR550-8FE-D-H technical specification

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	128 MB
Dimensions and weight	
Dimensions (W x D x H)	97 mm x 133 mm x 150 mm (3.8 in. x 5.2 in. x 5.9 in.), 3 U height
Weight	1.6 kg (3.5 lb)
Power consumption	
Maximum power consumption	21 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V to 48 V ● Maximum voltage range: 9.6 V to 60 V
DO attributes	<ul style="list-style-type: none"> ● Input withstand voltage: 30 V DC ● Current rating: 1.0 A
Interface density	
Console interfaces	1
USB interfaces	1
DO interfaces	1
Service interfaces (standard configuration)	<ul style="list-style-type: none"> ● LAN interfaces: eight FE electrical interfaces ● Four GE combo interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +70°C (-40°F to +158°F) NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -45°C to +75°C (-31°F to +167°F).
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)

Item	Specification
Environment parameters	50010208

Related Documents

Video:[Introduction to Huawei AR550](#)

3.5.2 AR550-24FE-D-H

Version Mapping

Table 3-390 lists the mapping between the AR550-24FE-D-H router and software versions.

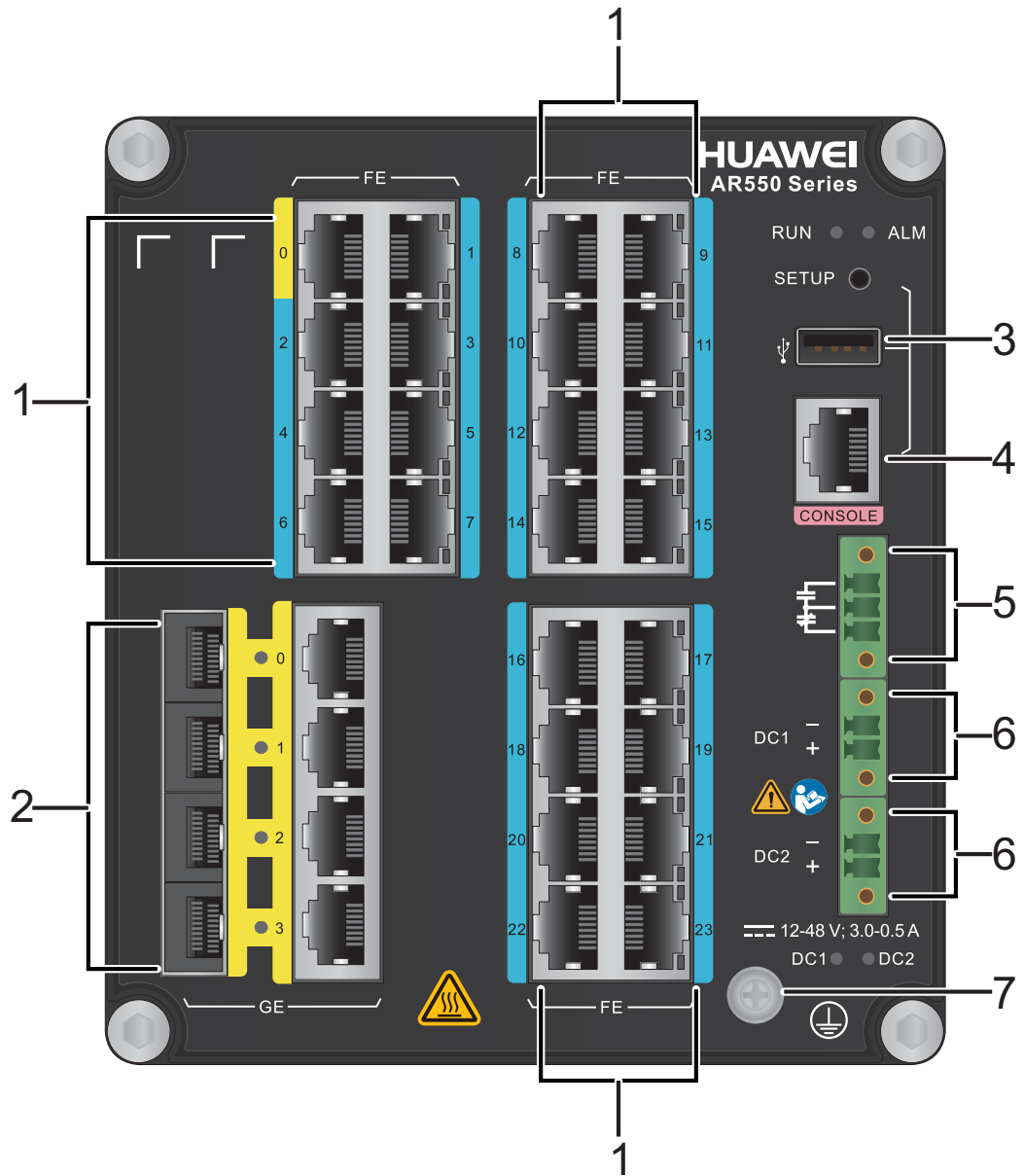
Table 3-390 Mapping between the AR550-24FE-D-H router and software versions

Router Model	Software Version
AR550-24FE-D-H	V200R005C70, V200R009C00 and later versions

Appearance and Structure

Figure 3-92 shows the panel of the AR550-24FE-D-H.

Figure 3-92 Panel of the AR550-24FE-D-H



1	LAN interfaces: 24 FE electrical interfaces NOTE FE0 is an uplink interface.	2	LAN interfaces: four GE combo interfaces NOTE GE0 through GE3 are uplink interfaces.
3	USB interface	4	Console interface

5	DO interface	6	Two DC power sockets NOTE The router supports Huawei 4.5 60 W Industrial AC Power Module .
7	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	-	-

Indicator Description

Figure 3-93 shows the indicators on the AR550-24FE-D-H router.

Figure 3-93 Indicators on the AR550-24FE-D-H

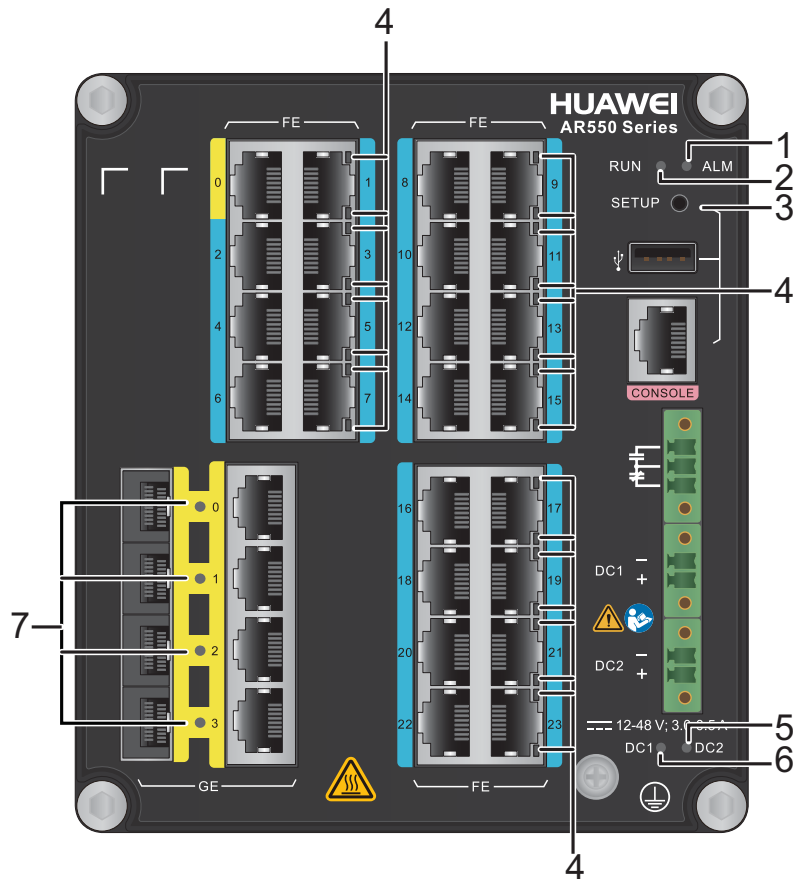


Table 3-391 Description of the indicators on the AR550-24FE-D-H

Number	Indicator/Button	Color	Description
1	ALM	Red	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> - Steady red: A system fault has occurred and requires manual intervention. - Off: The system is running properly. ● When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: <ul style="list-style-type: none"> Steady red: The system failed to be upgraded using the USB flash drive.
2	RUN	Green	<ul style="list-style-type: none"> ● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> - 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. ● When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> - Steady green: The system has been upgraded using the USB flash drive. - Fast blinking: The system is being upgraded using the USB flash drive.
3	SETUP NOTE This is a reserved hardware interface and cannot be used as a button now.	-	-
4	LAN FE interface indicators	Green	<ul style="list-style-type: none"> ● Steady on: The corresponding LAN FE interface is in Link-Up state. ● Off: The corresponding LAN FE interface is in Link-Down state. ● Blinking: The corresponding LAN FE interface is transmitting or receiving data.

Number	Indicator/Button	Color	Description
5	DC1	Green	<ul style="list-style-type: none"> ● Steady on: The router is receiving power normally from the power source connected to power socket 1. ● Off: The router cannot be powered by the power source connected to power socket 1, or power socket 1 is not connected to any power source. <p>NOTE If the input voltage is lower than the minimum operating voltage required for the router, there is a possibility that the DC1 indicator is steady on but the router does not work normally.</p>
6	DC2	Green	<ul style="list-style-type: none"> ● Steady on: The router is receiving power normally from the power source connected to power socket 2. ● Off: The router cannot be powered by the power source connected to power socket 2, or power socket 2 is not connected to any power source. <p>NOTE If the input voltage is lower than the minimum operating voltage required for the router, there is a possibility that the DC2 indicator is steady on but the router does not work normally.</p>
7	WAN GE combo interface indicators	Green	<ul style="list-style-type: none"> ● Steady on: The corresponding WAN GE interface is in Link-Up state. ● Steady off: The corresponding WAN GE interface is in Link-Down state. ● Blinking: The corresponding WAN GE interface is transmitting or receiving data.

Interface Description

Console Interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-392](#) lists console interface attributes.

Table 3-392 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

Attribute	Description
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.18 Console Cable

FE Electrical Interface

An FE electrical interface receives and transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-393](#) lists FE electrical interface attributes.

Table 3-393 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-394](#) lists USB interface attributes.

Table 3-394 USB interface attributes

Attribute	Description
Connector type	Type-A
Standards compliance	Supports USB 2.0 devices
Working mode	Host

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.

- A 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

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

DO Interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-395](#) describes DO interface attributes.

Table 3-395 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

Heat Dissipation

The AR550-24FE-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-396](#) lists technical specifications of the AR550-24FE-D-H router.

Table 3-396 AR550-24FE-D-H technical specification

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	512 MB
Flash	128 MB
Dimensions and weight	
Dimensions (W x D x H)	133 mm x 133 mm x 150 mm (5.2 in x 5.2 in. x 5.9 in.), 3 U height
Weight	2.1 kg (4.6 lb)
Power consumption	
Maximum power consumption	28 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V to 48 V ● Maximum voltage range: 9.6 V to 60 V
DO attributes	<ul style="list-style-type: none"> ● Input withstand voltage: 30 V DC ● Current rating: 1.0 A
Interface density	
Console interfaces	1
USB interfaces	1
DO interfaces	1
Service interfaces (standard configuration)	<ul style="list-style-type: none"> ● LAN interfaces: 24 FE electrical interfaces ● 4 GE combo interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +70°C (-40°F to +158°F) NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -45°C to +75°C (-31°F to +167°F).
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)

Item	Specification
Part number	50010209

Related Documents

Video:[Introduction to Huawei AR550](#)

3.5.3 AR550C-4GE

Version Mapping

Table 3-397 lists the mapping between the AR550C-4GE routers and software versions.

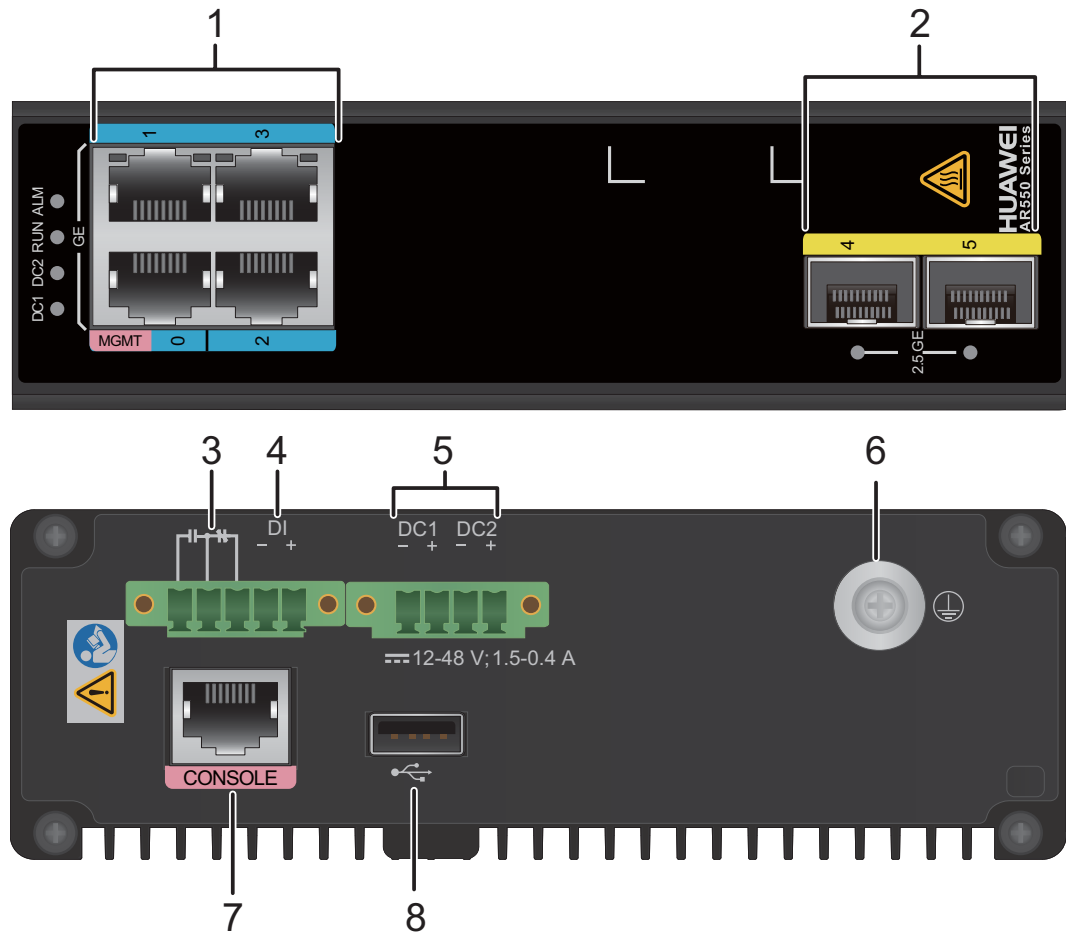
Table 3-397 Mapping between the AR550C-4GE router and software versions

Router Model	Software Version
AR550C-4GE	V200R008C30 and later versions

Appearance and Structure

Figure 3-94 shows the appearance of the AR550C-4GE router.

Figure 3-94 AR550C-4GE appearance

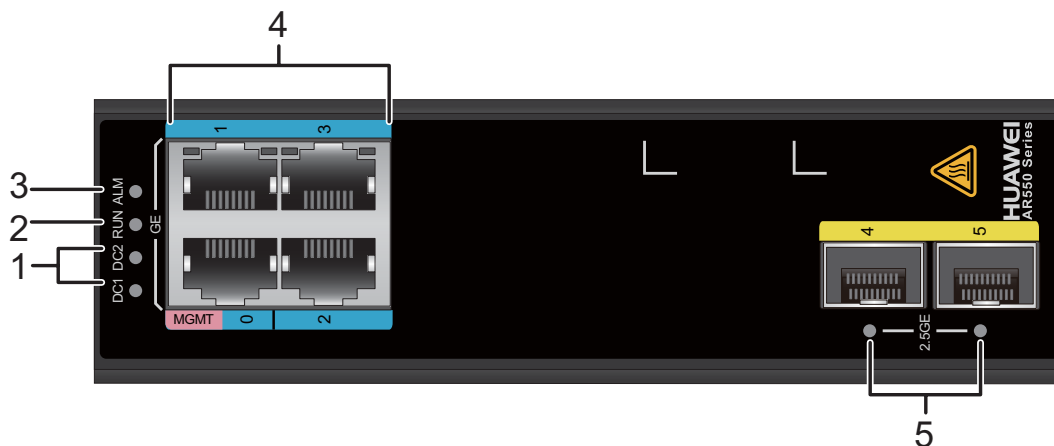


1	LAN interfaces: four GE electrical interfaces NOTE GE0 is a management interface and is used to upgrade the router.	2	LAN interface: two 2.5GE optical interfaces NOTE 2.5GE4 and 2.5GE5 are uplink interfaces.
3	DO interface	4	DI interface
5	Two DC power sockets NOTE The router supports Huawei 4.5 60 W Industrial AC Power Module or 4.10 240 W AC PoE Power Module .	6	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
7	Console interface	8	USB interface

Indicator Description

Figure 3-95 shows indicators on the AR550C-4GE.

Figure 3-95 Indicators on the AR550C-4GE



Number	Indicator/ Button	Color	Description
1	DC1/DC2	Green	Steady on: DC power socket DC1/DC2 is receiving power supply normally. Off: DC power socket DC1/DC2 cannot receive power supply normally or the router is not powered on.
2	RUN	Green	When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> ● 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. When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> ● Steady on: USB-based deployment has been completed. ● Fast blinking: The system is being upgraded using the USB flash drive.

Number	Indicator/Button	Color	Description
3	ALM	Red	<p>When no USB flash drive is connected to the router, the ALM indicator works as the system indicator:</p> <ul style="list-style-type: none"> ● Steady on: A system fault has occurred and requires manual intervention. ● Off: The system is running properly. <p>When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady on: USB-based deployment has failed.</p>
4	LAN GE electrical interface indicators (GE0 to GE3)	Green	<p>Steady on: A link has been established on the interface.</p> <p>Off: No link is established on the interface.</p>
		Yellow	<p>Blinking: Data is being transmitted or received on the interface.</p> <p>Off: No data is being transmitted or received on the interface.</p>
5	LAN 2.5GE optical interface indicators (GE4 to GE5)	Green	<p>Steady on: A link has been established on the interface.</p> <p>Blinking: Data is being transmitted or received on the interface.</p> <p>Off: No link is established or no data is being transmitted or received on the interface.</p>

Interface Description

Console interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-398](#) lists console interface attributes.

Table 3-398 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	6.18 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 3-399](#) lists GE electrical interface attributes.

Table 3-399 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-400](#) lists USB interface attributes.

Table 3-400 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

2.5GE optical interface

A 2.5GE optical interface supports GE/2.5GE auto-sensing and is used for data transmission and receiving at over 1 Gbit/s. [Table 3-401](#) lists the attributes of a 2.5GE optical interface.

Table 3-401 2.5GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Cable type	Optical fiber (inserted in an optical module) and GE Optical Module

DI/DO interface

A DI interface receives alarm input (9.6-60 V), and a DO interface sends output signals to instruct an external device to perform required actions. [Table 3-402](#) lists the DI/DO interface attributes.

Table 3-402 DI/DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	<ul style="list-style-type: none"> ● DI: 9.6-60 V DC power input ● DO: Boolean value (short circuit and open circuit)

Heat Dissipation

The AR550C-4GE router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-403](#) lists technical specifications of the AR550C-4GE router.

Table 3-403 AR550C-4GE technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash	512 MB

Item	Specification
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 133 mm x 44 mm (5.91 in. x 5.24 in. x 1.73 in.), 1 U height
Weight	1.5 kg (3.31 lb)
Power consumption	
Maximum power consumption	16.5 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC to 48 V DC ● Maximum voltage range: 9.6 V DC to 60 V DC
DO attributes	<ul style="list-style-type: none"> ● Input withstand voltage: 60 V DC ● Current rating: 1.0 A
DI attributes	Rated voltage: 9.6 V DC to 60 V DC
Interface density	
Console interfaces	1
USB interfaces	1
RS485 interfaces	1
DO interfaces	1
DI interfaces	1
Service interfaces	LAN interfaces: four GE electrical interfaces and two 2.5GE electrical interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Part number	50010300

3.5.4 AR550C-2C6GE

Version Mapping

Table 3-404 describes the mapping between the AR550C-2C6GE router and software versions.

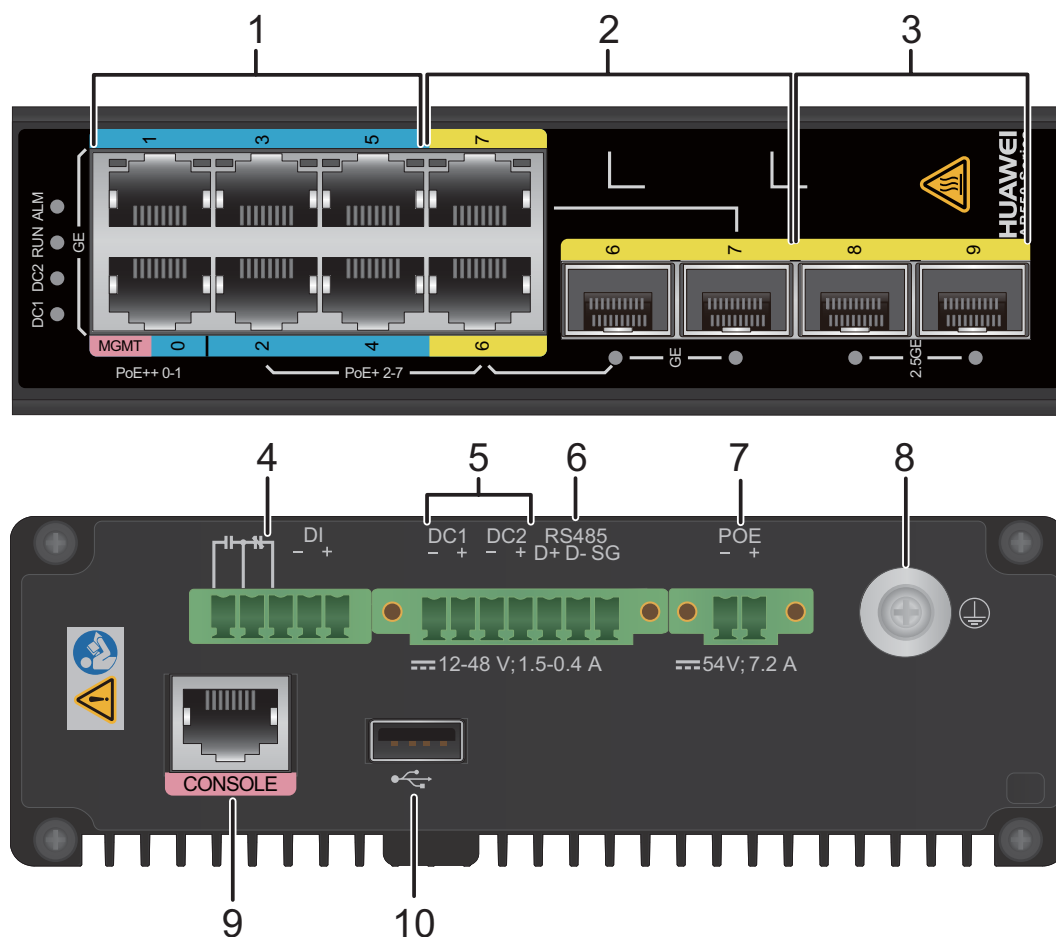
Table 3-404 Mapping between the AR550C-2C6GE router and software versions

Router Model	Software Version
AR550C-2C6GE	V200R008C20 and later versions

Appearance and Structure

Figure 3-96 shows the appearance of the AR550C-2C6GE router.

Figure 3-96 AR550C-2C6GE appearance

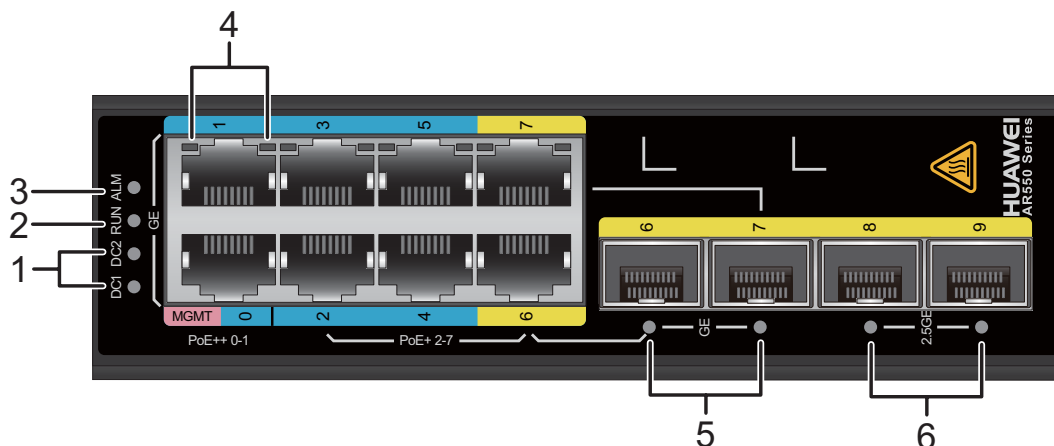


1	<p>LAN interfaces: six GE electrical interfaces</p> <p>NOTE</p> <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● Interfaces GE0 and GE1 support PoE++, and interfaces GE2 to GE5 support PoE+. <p>NOTE</p> <p>The maximum output power of PoE++ ports is 60 W, and that of PoE+ ports is 30 W.</p>	2	<p>LAN interfaces: two GE combo interface</p> <p>NOTE</p> <ul style="list-style-type: none"> ● Electrical interfaces GE6 and GE7 support PoE+. ● GE6 and GE7 are uplink interfaces.
3	<p>LAN interface: two 2.5GE optical interfaces</p> <p>NOTE</p> <p>2.5GE8 and 2.5GE9 are uplink interfaces.</p>	4	DO interface and DI interface
5	<p>Two DC power sockets</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The two DC power supply sockets are the input sockets of the device power supply. ● The router supports Huawei 4.5 60 W Industrial AC Power Module. 	6	RS485 interface
7	<p>PoE power socket</p> <p>NOTE</p> <ul style="list-style-type: none"> ● The PoE power supply socket is the power input socket of the PoE power supply. ● The router supports Huawei 4.10 240 W AC PoE Power Module. 	8	<p>Ground point</p> <p>NOTE</p> <p>To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable.</p>
9	Console interface	10	USB interface

Indicator Description

Figure 3-97 shows indicators on the AR550C-2C6GE.

Figure 3-97 Indicators on the AR550C-2C6GE



Number	Indicator/Button	Color	Description
1	DC1/DC2	Green	Steady on: DC power socket DC1/DC2 is receiving power supply normally. Off: DC power socket DC1/DC2 cannot receive power supply normally or the router is not powered on.
2	RUN	Green	When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> ● 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. When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> ● Steady on: USB-based deployment has been completed. ● Fast blinking: The system is being upgraded or configured using the USB flash drive.

Number	Indicator/ Button	Color	Description
3	ALM	Red	<p>When no USB flash drive is connected to the router, the ALM indicator works as the system indicator:</p> <ul style="list-style-type: none"> ● Steady on: A system fault has occurred and requires manual intervention. ● Off: The system is running properly. <p>When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady on: USB-based deployment has failed.</p>
4	GE electrical interface indicators (GE0 to GE7)	Green	<p>Steady on: A link has been established on the interface.</p> <p>Blinking: Data is being transmitted or received on the interface.</p> <p>Off: No link is established or no data is being transmitted or received on the interface.</p>
5	GE optical interface indicators (GE6 to GE7)	Green	<p>Steady on: A link has been established on the interface.</p> <p>Blinking: Data is being transmitted or received on the interface.</p> <p>Off: No link is established or no data is being transmitted or received on the interface.</p>
6	2.5GE optical interface indicators (GE8 to GE9)	Green	<p>Steady on: A link has been established on the interface.</p> <p>Blinking: Data is being transmitted or received on the interface.</p> <p>Off: No link is established or no data is being transmitted or received on the interface.</p>

Interface Description

Console interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-405](#) lists console interface attributes.

Table 3-405 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.18 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 3-406](#) lists GE electrical interface attributes.

Table 3-406 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-407](#) lists USB interface attributes.

Table 3-407 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

GE optical interface

A GE optical interface transmits and receives Ethernet services at 1000 Mbit/s. [Table 3-408](#) lists GE optical interface attributes.

Table 3-408 GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Rate	1000 Mbit/s
Cable type	Optical fiber (inserted in an optical module) and GE Optical Module

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.

- A 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

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

2.5GE optical interface

A 2.5GE optical interface supports GE/2.5GE auto-sensing and is used for data transmission and receiving at over 1 Gbit/s. [Table 3-409](#) lists the attributes of a 2.5GE optical interface.

Table 3-409 2.5GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Cable type	Optical fiber (inserted in an optical module) and GE Optical Module

DI/DO interface

A DI interface receives alarm input (9.6-60 V), and a DO interface sends output signals to instruct an external device to perform required actions. **Table 3-410** lists the DI/DO interface attributes.

Table 3-410 DI/DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	<ul style="list-style-type: none"> ● DI: 9.6-60 V DC power input ● DO: Boolean value (short circuit and open circuit)

Heat Dissipation

The AR550C-2C6GE router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-411 lists technical specifications of the AR550C-2C6GE router.

Table 3-411 AR550C-2C6GE technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 133 mm x 44 mm (5.91 in. x 5.24 in. x 1.73 in.), 1 U height

Item	Specification
Weight	1.1 kg (2.43 lb)
Power consumption	
Maximum power consumption	17.5 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V DC to 48 V DC ● Maximum voltage range: 9.6 V DC to 60 V DC
PoE power input	Rated voltage range: 54 V DC to 57 V DC
DO attributes	<ul style="list-style-type: none"> ● Input withstand voltage: 60 V DC ● Current rating: 1.0 A
DI attributes	Rated voltage: 9.6 V DC to 60 V DC
Interface density	
Console interfaces	1
USB interfaces	1
RS485 interfaces	1
DO interfaces	1
DI interfaces	1
Service interfaces	<ul style="list-style-type: none"> ● LAN interfaces: six GE electrical interfaces ● Two GE combo interfaces and two 2.5GE optical interfaces LAN interfaces: six GE electrical interfaces, two GE combo interfaces and two 2.5GE optical interface
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)
Part number	50010301

3.5.5 AR550C-2C6GE-2D

Version Mapping

Table 3-412 describes the mapping between the AR550C-2C6GE-2D router and software versions.

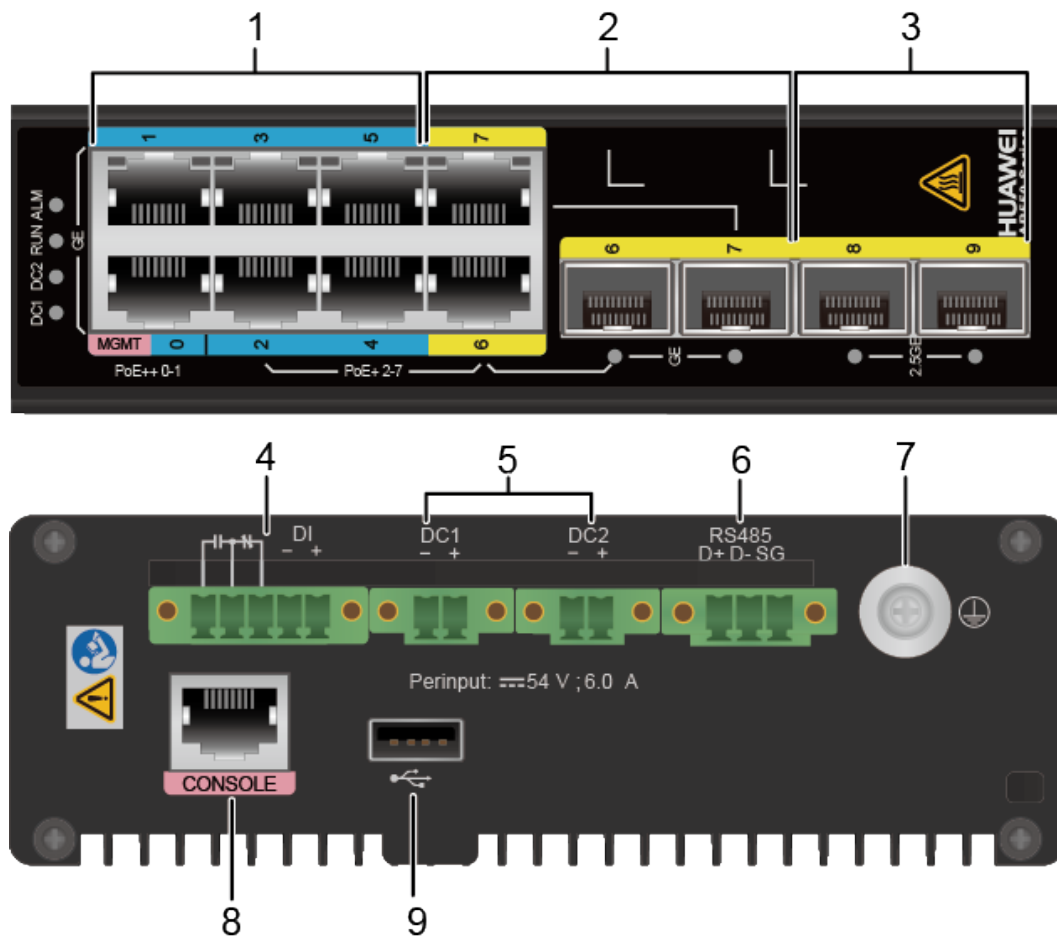
Table 3-412 Mapping between the AR550C-2C6GE-2D router and software versions

Device Model	Software Version
AR550C-2C6GE-2D	V200R009C00 and later versions

Appearance and Structure

Figure 3-98 shows the appearance of the AR550C-2C6GE-2D router.

Figure 3-98 AR550C-2C6GE-2D appearance

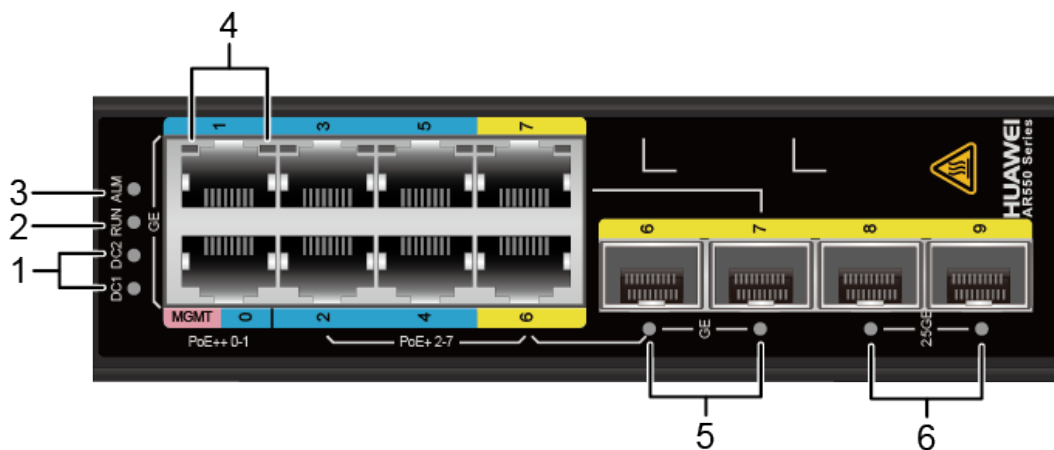


1	LAN interfaces: six GE electrical interfaces NOTE <ul style="list-style-type: none"> ● GE0 is a management interface and is used to upgrade the router. ● Interfaces GE0 and GE1 support PoE++, and interfaces GE2 to GE5 support PoE+. 	2	LAN interfaces: two GE combo interface NOTE <ul style="list-style-type: none"> ● Electrical interfaces GE6 and GE7 support PoE+. ● GE6 and GE7 are uplink interfaces.
3	LAN interface: two 2.5GE optical interfaces NOTE 2.5GE8 and 2.5GE9 are uplink interfaces.	4	DO interface and DI interface
5	Two power sockets The router supports Huawei 4.10 240 W AC PoE Power Module .	6	RS485 interface
7	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	8	Console interface
9	USB interface	10	-

Indicator Description

Figure 3-99 shows indicators on the AR550C-2C6GE-2D.

Figure 3-99 Indicators on the AR550C-2C6GE-2D



Number	Indicator/ Button	Color	Description
1	DC1/DC2	Green	Steady on: DC power socket DC1/DC2 is receiving power supply normally. Off: DC power socket DC1/DC2 cannot receive power supply normally or the router is not powered on.
2	RUN	Green	When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: <ul style="list-style-type: none"> ● 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. When a USB flash drive is connected to the router, the RUN indicator works as the USB indicator: <ul style="list-style-type: none"> ● Steady on: USB-based deployment has been completed. ● Fast blinking: The system is being upgraded or configured using the USB flash drive.
3	ALM	Red	When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: <ul style="list-style-type: none"> ● Steady on: A system fault has occurred and requires manual intervention. ● Off: The system is running properly. When a USB flash drive is connected to the router, the ALM indicator works as the USB indicator: Steady on: USB-based deployment has failed.
4	GE electrical interface indicators (GE0 to GE7)	Green	Steady on: A link has been established. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.
5	GE optical interface indicators (GE6 to GE7)	Green	Steady on: A link has been established. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.

Number	Indicator/ Button	Color	Description
6	2.5GE optical interface indicators (GE8 to GE9)	Green	Steady on: A link has been established. Blinking: Data is being transmitted over the link. Off: No link is established or no data is being transmitted on the link.

Interface Description

Console interface

A console interface connects to an operation terminal for onsite configuration. [Table 3-413](#) lists console interface attributes.

Table 3-413 Console 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 3-414](#) lists GE electrical interface attributes.

Table 3-414 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-415](#) lists USB interface attributes.

Table 3-415 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

GE optical interface

A GE optical interface transmits and receives Ethernet services at 1000 Mbit/s. [Table 3-416](#) lists GE optical interface attributes.

Table 3-416 GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Rate	1000 Mbit/s
Cable type	Optical fiber (inserted in an optical module) and GE Optical Module

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.

- A 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

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

2.5GE optical interface

A 2.5GE optical interface supports GE/2.5GE auto-sensing and is used for data transmission and receiving at over 1 Gbit/s. [Table 3-417](#) lists the attributes of a 2.5GE optical interface.

Table 3-417 2.5GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Cable type	Optical fiber (inserted in an optical module) and GE Optical Module

DI/DO interface

A DI interface receives alarm input (9.6-60 V), and a DO interface sends output signals to instruct an external device to perform required actions. [Table 3-418](#) lists the DI/DO interface attributes.

Table 3-418 DI/DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	<ul style="list-style-type: none"> ● DI: 9.6-60 V DC power input ● DO: Boolean value (short circuit and open circuit)

Heat Dissipation

The AR550C-2C6GE-2D router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-419 lists technical specifications of the AR550C-2C6GE-2D router.

Table 3-419 AR550C-2C6GE-2D technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	256 MB
Flash	512 MB
Dimensions and weight	
Dimensions (W x D x H)	150 mm x 133 mm x 44 mm (5.91 in. x 5.24 in. x 1.73 in.), 1 U height
Weight	1.1 kg (2.43 lb)
Power consumption	
Maximum power consumption	17 W
Power specifications	
Power input	<ul style="list-style-type: none"> ● DC power input (PoE not enabled): <ul style="list-style-type: none"> - Rated voltage: 54 V DC - Maximum voltage range: 44 V DC to 57 V DC ● DC power input (PoE enabled): <ul style="list-style-type: none"> - Rated voltage: 56 V DC - Maximum voltage range: 54 V DC to 57 V DC
Alarm output	

DO attributes	<ul style="list-style-type: none"> ● Input withstand voltage: 60 V DC ● Current rating: 1.0 A
DI attributes	Rated voltage: 9.6 V DC to 60 V DC
Interface density	
Console interfaces	1
USB interfaces	1
RS485 interfaces	1
DO interfaces	1
DI interfaces	1
Service interfaces	<ul style="list-style-type: none"> ● Six GE electrical interfaces ● Two GE combo interfaces and two 2.5GE optical interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)
Part number	50010416

3.5.6 AR550E

Version Mapping

[Table 3-420](#) lists the mapping between the AR550E router and software versions.

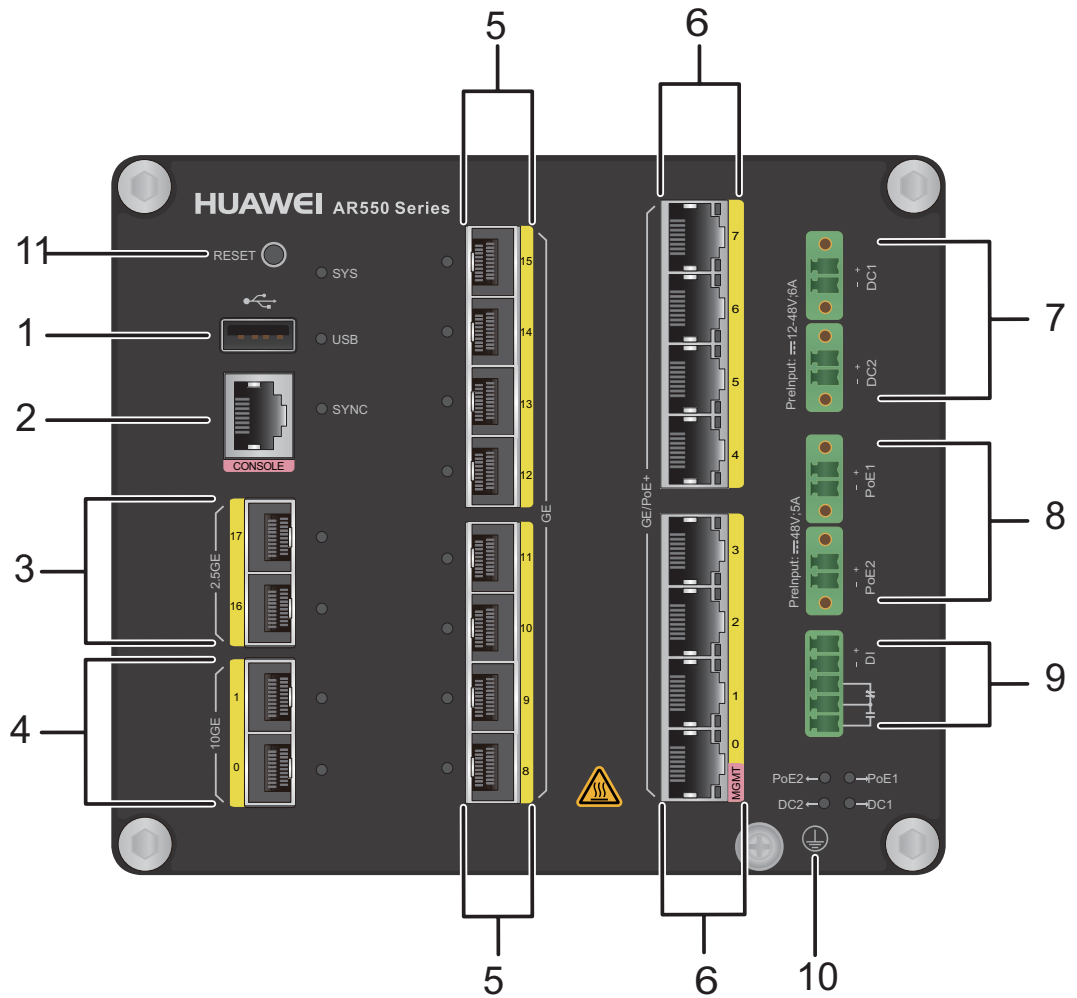
Table 3-420 Mapping between the AR550E router and software versions

Device Model	Software Version
AR550E	V200R009C00 and later versions

Appearance and Structure

[Figure 3-100](#) shows the appearance of the AR550E router.

Figure 3-100 AR550E appearance



1	USB interface	2	Console interface
3	WAN interfaces: two 2.5GE optical interfaces	4	WAN interfaces: two 10GE optical interfaces
5	Eight GE optical interfaces	6	Eight GE electrical interfaces NOTE Electrical interfaces GE0 to GE7 support the PoE+ function.
7	Two DC power sockets NOTE The router supports Huawei 4.5 60 W Industrial AC Power Module .	8	Two PoE power jacks NOTE The router supports Huawei 4.10 240 W AC PoE Power Module .

9	DI interface and DO interface	10	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.
1 1	RESET button NOTE <ul style="list-style-type: none"> This button is used to reset the router. Resetting the router will interrupt services. Exercise caution when deciding to press this button. 	12	-

Indicator Description

Figure 3-101 shows the indicators on the AR550E router.

Figure 3-101 Indicators on the AR550E

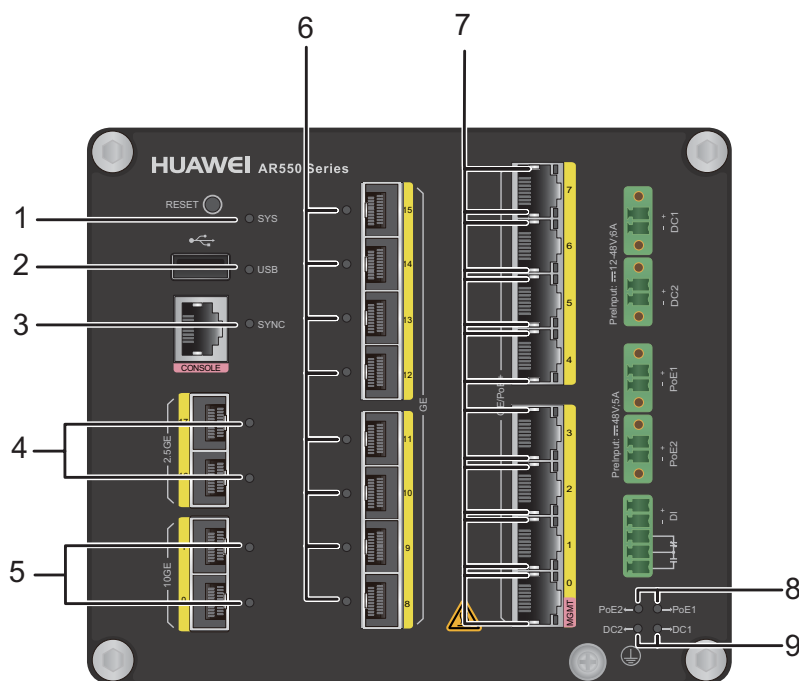


Table 3-421 Description of indicators on the AR550E

Number	Indicator/Button	Color	Description
1	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.

Number	Indicator/Button	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention. The system software is not running or is resetting.
2	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.
3	SYNC	Green	<ul style="list-style-type: none"> ● Steady on: The synchronous clock is used. ● Off: The synchronous clock is not used.
4	2.5GE optical interface indicators (GE16 to GE17)	Green	<ul style="list-style-type: none"> ● Steady on: A link has been established on the interface. ● Blinking: Data is being transmitted or received on the interface. ● Off: No link is established or no data is being transmitted on the link.
5	10GE optical interface indicators (XGE0 to XGE1)	Green	<ul style="list-style-type: none"> ● Steady on: A link has been established on the interface. ● Blinking: Data is being transmitted or received on the interface. ● Off: No link is established or no data is being transmitted on the link.
6	GE optical interface indicators (GE8 to GE15)	Green	<ul style="list-style-type: none"> ● Steady on: A link has been established on the interface. ● Blinking: Data is being transmitted or received on the interface. ● Off: No link is established or no data is being transmitted on the link.
7	GE electrical interface indicators (GE0 to GE7)	Green/ Yellow	<ul style="list-style-type: none"> ● Green indicator steady on: A link has been established on the interface. ● Green indicator off: No link is established on the interface.

Number	Indicator/Button	Color	Description
			<ul style="list-style-type: none"> ● Yellow indicator blinking: Data is being transmitted or received on the interface. ● Yellow indicator off: No data is being transmitted or received on the interface.
8	PoE	Green	Steady on: The PoE power supply is normal. Off: No PoE power supply is available.
9	DC1/DC2	Green	<ul style="list-style-type: none"> ● Steady on: DC power socket DC1/DC2 is receiving power supply normally. ● Off: DC power socket DC1/DC2 cannot receive power supply normally or the router is not powered on. <p>NOTE If the input voltage is lower than the minimum operating voltage required for the router, there is a possibility that the DC1/DC2 indicator is steady on but the router does not work normally.</p>

Interface Description

Console interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-422](#) lists console interface attributes.

Table 3-422 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	6.18 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 3-423](#) lists GE electrical interface attributes.

Table 3-423 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

GE optical interface

A GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives service traffic at 100 Mbit/s or 1000 Mbit/s. It uses optical fibers together with a GE or FE optical module.

[Table 3-424](#) lists GE optical interface attributes.

Table 3-424 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Interface attribute	Depends on the optical module used
Standards compliance	IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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 3-425](#) describes the attributes of a 10GE optical interface.

Table 3-425 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Interface attribute	Optical modules supported: <ul style="list-style-type: none"> ● OSX010N05
Standards compliance	IEEE802.3ae
Working Mode	1 Gbit/s and 10 Gbit/s auto-sensing, full-duplex

2.5GE optical interface

A 2.5GE optical interface supports GE/2.5GE auto-sensing and is used for data transmission and receiving at over 1 Gbit/s. [Table 3-426](#) lists the attributes of a 2.5GE optical interface.

Table 3-426 2.5GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Transmission speed	1000 Mbit/s, 2500 Mbit/s
Cable type	Optical fiber (inserted in an optical module)
Optical Module type	<ul style="list-style-type: none"> ● GE Optical Module ● 6GE Optical Module

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-427](#) lists USB interface attributes.

Table 3-427 USB interface attributes

Attribute	Description
Connector type	TYPE-A

Attribute	Description
Standards compliance	USB 2.0
Working mode	Host

DO interface

A digital output (DO) interface provides output signals to instruct the connected device to perform required actions. [Table 3-428](#) describes DO interface attributes.

Table 3-428 DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	Low-voltage DI, passive DO, Boolean value (short circuit and open circuit)

Heat Dissipation

The AR550E router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-429](#) lists technical specifications of the AR550E router.

Table 3-429 AR550E technical specification

Item	Specification
System parameters	
Processor	4-core 1.5 GHz
Memory	2 GB
Flash memory	512 MB
Dimensions and weight	
Dimensions (W x D x H)	175 mm x 133 mm x 150 mm (6.89 in. x 5.24 in. x 5.91 in.)
Weight	3 kg (6.61 lb)
Power consumption	
Maximum power consumption	45 W
Power specifications	

Item	Specification
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 12 V to 48 V ● Maximum voltage range: 9.6 V to 60 V
DO attributes	<ul style="list-style-type: none"> ● Input withstand voltage: 60 V DC ● Current rating: 1.0 A
DI attributes	Rated voltage: 9.6 V DC to 60 V DC
Interface density	
Console interfaces	1
USB interfaces	1
DO interfaces	1
DI interfaces	1
Service interfaces	<ul style="list-style-type: none"> ● Eight GE electrical interfaces ● Eight GE optical interfaces ● Two 2.5G optical interfaces ● Two 10GE interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +65°C (-40°F to +149°F) in an open environment with PoE enabled -40°C to +60°C (-40°F to +140°F) in an open environment with PoE disabled -35°C to +75°C (-31°F to +167°F) in an environment with 15 m/s wind speed NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -45°C to +70°C (-49°F to +158°F).
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	≤ 5000 m (16404 ft.)
Storage altitude	≤ 5000 m (16404 ft.)
Part number	50010409

3.6 AR1500 Series

3.6.1 AR1504-8S16T

Version Mapping

Table 3-430 describes the mapping between the AR1504-8S16T router and software versions.

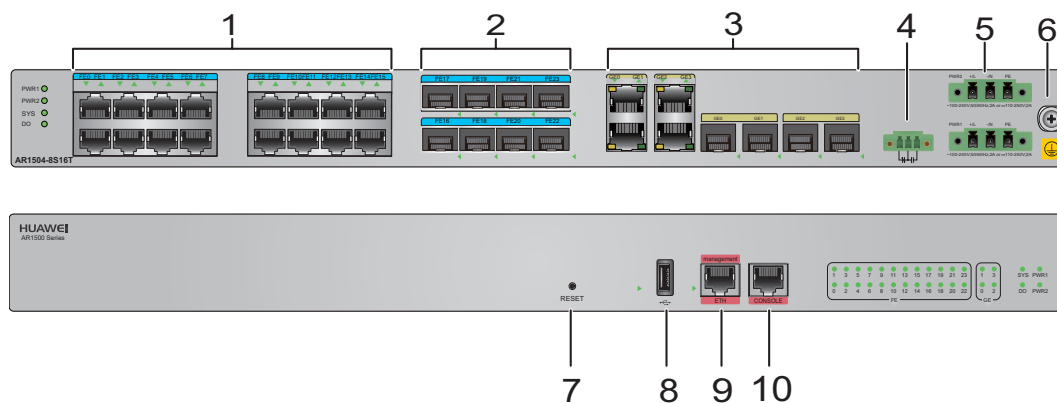
Table 3-430 Mapping between the AR1504-8S16T router and software versions

Device Model	Software Version
AR1504-8S16T	V200R009C00 and later versions

Appearance and Structure

Figure 3-102 shows the appearance of the AR1504-8S16T router.

Figure 3-102 AR1504-8S16T appearance



1	16FE electrical interfaces	2	8FE optical interfaces
3	4GE combo interfaces	4	Reserved DO interface
5	Two power sockets NOTE Use a AC/DC power cables to connect the router to an external power source.	6	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
7	Reset button NOTE <ul style="list-style-type: none"> This button is used to reset the router. Resetting the system will interrupt services. Exercise caution when performing this operation. 	8	USB interface

9	ETH interface NOTE An ETH interface is a management interface used to upgrade the router.	10	Console interface
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Indicator Description

Figure 3-103 shows indicators on the AR1504-8S16T.

Figure 3-103 Indicators on the AR1504-8S16T

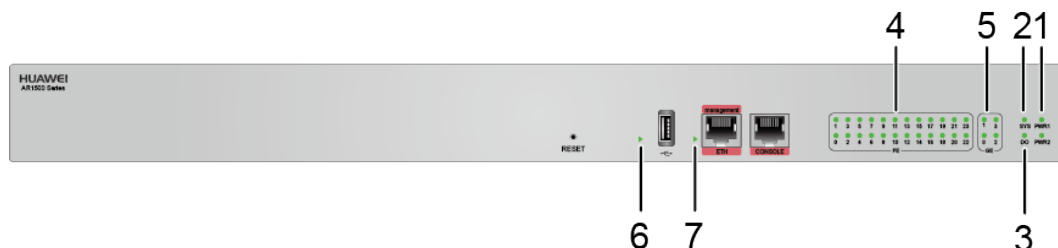


Table 3-431 Description of indicators on the AR1504-8S16T

Number	Indicator /Button	Color	Description
1	PWR1/ PWR2	Green	<ul style="list-style-type: none"> ● Off: The power supply is not working. ● Off: The power supply is working.
2	SYS	Red and green	<ul style="list-style-type: none"> ● 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 restarting. ● Steady red: A fault that affects services has occurred on the card. The fault cannot be rectified automatically and requires manual intervention. ● Off: The system is running properly.
3	DO	Green	<ul style="list-style-type: none"> ● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	FE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Number	Indicator/Button	Color	Description
5	GE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.
6	USB indicator	Red and green	<ul style="list-style-type: none"> ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Slow 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.
7	Management interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Interface Description

Console interface

A console interface connects to an operation terminal for onsite configuration. [Table 3-432](#) lists console interface attributes.

Table 3-432 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

FE electrical interface

An FE electrical interface transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-433](#) lists FE electrical interface attributes.

Table 3-433 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Rate	10/100 Mbit/s
Cable type	6.6 Ethernet Cable

FE optical interface

An FE optical interface transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-434](#) lists FE optical interface attributes.

Table 3-434 FE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab
Rate	100 Mbit/s
Network protocols	IP
Cable type	Optical fiber (inserted in an optical module)

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-435](#) lists USB interface attributes.

Table 3-435 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

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.

DO interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-436](#) describes DO interface attributes.

Table 3-436 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

ETH interface

The ETH interface is used to log in to the router to perform configuration and management. [Table 3-437](#) lists ETH interface attributes.

Table 3-437 ETH interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Rate	10/100 Mbit/s
Cable type	6.6 Ethernet Cable

Heat Dissipation

The AR1504-8S16T router has no fans and uses natural heat dissipation.

Technical Specifications

Table 3-438 lists technical specifications of the AR1504-8S16T router.

Table 3-438 AR1504-8S16T technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions (W x D x H)	442.0 mm x 220.0 mm x 43.6 mm (17.40 in. x 8.66 in. x 1.72 in.)
Weight (empty chassis)	3.8 kg (8.38 lb)
Power consumption (empty chassis)	
Typical power consumption	13.5 W
Maximum power consumption	15.2 W

Item	Specification
Power specifications	
AC power input	<ul style="list-style-type: none"> ● Rated voltage: 100 V AC to 240 V AC, 50/60 Hz ● Maximum voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz
DC power input	<ul style="list-style-type: none"> ● Rated voltage range: 110 V DC to 250 V DC ● Maximum voltage range: 88 V DC to 300 V DC
Interface density	
Console interfaces	1
USB 2.0 interfaces	1
DO interfaces	1
ETH interfaces	1
Service interfaces	<ul style="list-style-type: none"> ● 4 GE combo interfaces ● 24 FE interfaces
Environment parameters	
Operating temperature	-40°C to +65°C (-40°F to +149°F) NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -40°C to +70°C (-40°F to +158°F).
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.)
Part number	50010402

3.6.2 AR1504-16S8T

Version Mapping

[Table 3-439](#) describes the mapping between the AR1504-16S8T router and software versions.

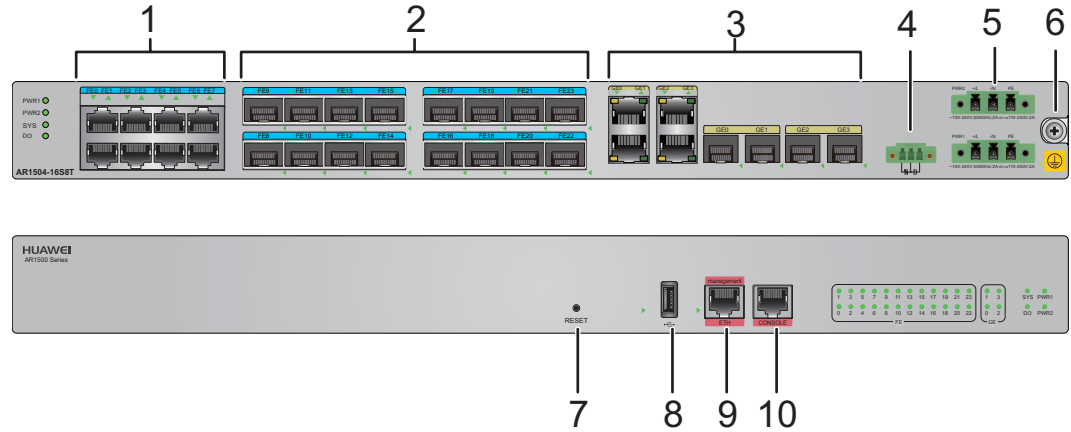
Table 3-439 Mapping between the AR1504-16S8T router and software versions

Device Model	Software Version
AR1504-16S8T	V200R009C00 and later versions

Appearance and Structure

Figure 3-104 shows the appearance of the AR1504-16S8T router.

Figure 3-104 AR1504-16S8T appearance



1	8FE electrical interfaces	2	16FE optical interfaces
3	4GE combo interfaces	4	Reserved DO interface
5	Two power sockets NOTE Use a AC/DC power cables to connect the router to an external power source.	6	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .
7	Reset button NOTE <ul style="list-style-type: none"> This button is used to reset the router. Resetting the system will interrupt services. Exercise caution when performing this operation. 	8	USB interface
9	ETH interface NOTE An ETH interface is a management interface used to upgrade the router.	10	Console interface

Indicator Description

Figure 3-105 shows indicators on the AR1504-16S8T.

Figure 3-105 Indicators on the AR1504-16S8T

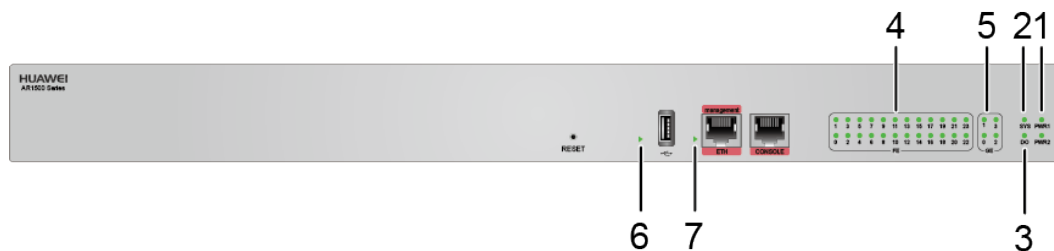


Table 3-440 Description of indicators on the AR1504-16S8T

Number	Indicator /Button	Color	Description
1	PWR1/ PWR2	Green	<ul style="list-style-type: none"> ● Off: The power supply is not working. ● Steady on: The power supply is working normally.
2	SYS	Red and green	<ul style="list-style-type: none"> ● 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 restarting. ● Steady red: A fault that affects services has occurred on the card. The fault cannot be rectified automatically and requires manual intervention. ● Off: The system is running properly.
3	DO	Green	<ul style="list-style-type: none"> ● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	FE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.
5	GE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Number	Indicator/Button	Color	Description
6	USB indicator	Red and green	<ul style="list-style-type: none"> ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Slow 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.
7	Management interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Interface Description

Console interface

A console interface connects to an operation terminal for onsite configuration. [Table 3-441](#) lists console interface attributes.

Table 3-441 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

FE electrical interface

An FE electrical interface transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-442](#) lists FE electrical interface attributes.

Table 3-442 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Rate	10/100 Mbit/s
Cable type	6.6 Ethernet Cable

FE optical interface

An FE optical interface transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-443](#) lists FE optical interface attributes.

Table 3-443 FE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab
Rate	100 Mbit/s
Network protocols	IP
Cable type	Optical fiber (inserted in an optical module)

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-444](#) lists USB interface attributes.

Table 3-444 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

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.

DO interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-445](#) describes DO interface attributes.

Table 3-445 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

ETH interface

The ETH interface is used to log in to the router to perform configuration and management. [Table 3-446](#) lists ETH interface attributes.

Table 3-446 ETH interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Rate	10/100 Mbit/s
Cable type	6.6 Ethernet Cable

Heat Dissipation

The AR1504-16S8T router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-447](#) lists technical specifications of the AR1504-16S8T router.

Table 3-447 AR1504-16S8T technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions (W x D x H)	442.0 mm x 220.0 mm x 43.6 mm (17.40 in. x 8.66 in. x 1.72 in.)
Weight (empty chassis)	3.9 kg (8.60 lb)
Power consumption (empty chassis)	
Typical power consumption	15 W
Maximum power consumption	17.3 W
Power specifications	

Item	Specification
AC power input	<ul style="list-style-type: none"> ● Rated voltage: 100 V AC to 240 V AC, 50/60 Hz ● Maximum voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz
DC power input	<ul style="list-style-type: none"> ● Rated voltage range: 110 V DC to 250 V DC ● Maximum voltage range: 88 V DC to 300 V DC
Interface density	
Console interfaces	1
USB 2.0 interfaces	1
DO interfaces	1
ETH interfaces	1
Service interfaces	<ul style="list-style-type: none"> ● 4 GE combo interfaces ● 24 FE interfaces
Environment parameters	
Operating temperature	-40°C to +65°C (-40°F to +149°F) NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -40°C to +70°C (-40°F to +158°F).
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.)
Part number	50010401

3.6.3 AR1504-24S

Version Mapping

[Table 3-448](#) describes the mapping between the AR1504-24S router and software versions.

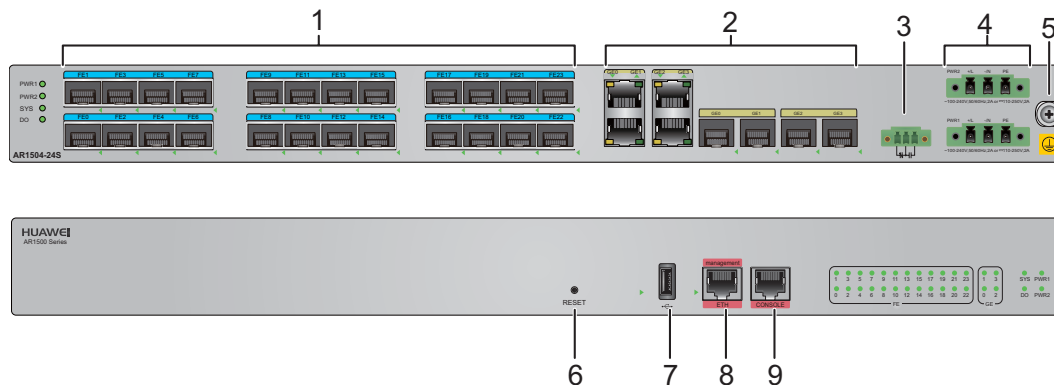
Table 3-448 Mapping between the AR1504-24S router and software versions

Device Model	Software Version
AR1504-24S	V200R009C00 and later versions

Appearance and Structure

Figure 3-106 shows the appearance of the AR1504-24S router.

Figure 3-106 AR1504-24S appearance



1	24FE optical interface	2	4GE combo interface
3	Reserved DO interface	4	Two power sockets NOTE Use a AC/DC power cables to connect the router to an external power source.
5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	Reset button NOTE <ul style="list-style-type: none"> This button is used to reset the router. Resetting the system will interrupt services. Exercise caution when performing this operation.
7	USB interface	8	ETH interface NOTE An ETH interface is a management interface used to upgrade the router.
9	Console interface	10	-

Indicator Description

Figure 3-107 shows indicators on the AR1504-24S.

Figure 3-107 Indicators on the AR1504-24S

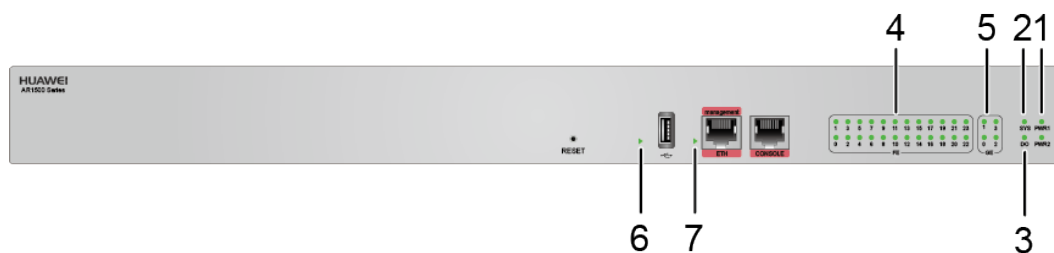


Table 3-449 Description of indicators on the AR1504-24S

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	<ul style="list-style-type: none"> ● Off: The power supply is not working. ● Steady green: The power supply is working.
2	SYS	Red and green	<ul style="list-style-type: none"> ● 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 restarting. ● Steady red: A fault that affects services has occurred on the card. The fault cannot be rectified automatically and requires manual intervention. ● Off: The system is running properly.
3	DO	Green	<ul style="list-style-type: none"> ● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	FE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.
5	GE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Number	Indicator/Button	Color	Description
6	USB indicator	Red and green	<ul style="list-style-type: none"> ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Slow 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.
7	Management interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Interface Description

Console interface

A console interface connects to an operation terminal for onsite configuration. [Table 3-450](#) lists console interface attributes.

Table 3-450 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

FE electrical interface

An FE electrical interface transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-451](#) lists FE electrical interface attributes.

Table 3-451 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Rate	10/100 Mbit/s
Cable type	6.6 Ethernet Cable

FE optical interface

An FE optical interface transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-452](#) lists FE optical interface attributes.

Table 3-452 FE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab
Rate	100 Mbit/s
Network protocols	IP
Cable type	Optical fiber (inserted in an optical module)

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-453](#) lists USB interface attributes.

Table 3-453 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

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.

DO interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-454](#) describes DO interface attributes.

Table 3-454 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

ETH interface

The ETH interface is used to log in to the router to perform configuration and management. [Table 3-455](#) lists ETH interface attributes.

Table 3-455 ETH interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Rate	10/100 Mbit/s
Cable type	6.6 Ethernet Cable

Heat Dissipation

The AR1504-24S router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-456](#) lists technical specifications of the AR1504-24S router.

Table 3-456 AR1504-24S technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions (W x D x H)	442.0 mm x 220.0 mm x 43.6 mm (17.40 in. x 8.66 in. x 1.72 in.)
Weight (empty chassis)	4.1 kg (9.04 lb)
Power consumption (empty chassis)	
Typical power consumption	15.5 W
Maximum power consumption	20.65 W
Power specifications	

Item	Specification
AC power input	<ul style="list-style-type: none"> ● Rated voltage: 100 V AC to 240 V AC, 50/60 Hz ● Maximum voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz
DC power input	<ul style="list-style-type: none"> ● Rated voltage range: 110 V DC to 250 V DC ● Maximum voltage range: 88 V DC to 300 V DC
Interface density	
Console interfaces	1
USB 2.0 interfaces	1
DO interfaces	1
ETH interfaces	1
Service interfaces	<ul style="list-style-type: none"> ● 4 GE combo interfaces ● 24 FE interfaces
Environment parameters	
Operating temperature	-40°C to +65°C (-40°F to +149°F) NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -40°C to +70°C (-40°F to +158°F).
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.)
Part number	50010403

3.6.4 AR1504-24T

Version Mapping

[Table 3-457](#) describes the mapping between the AR1504-24T router and software versions.

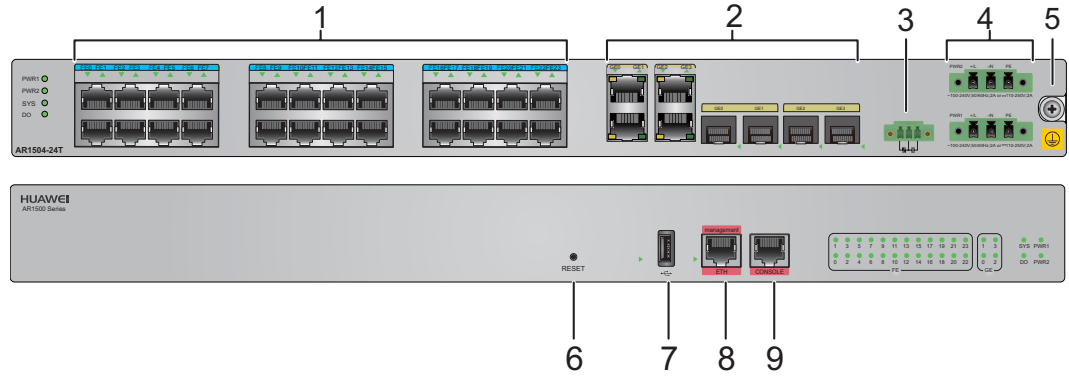
Table 3-457 Mapping between the AR1504-24T router and software versions

Device Model	Software Version
AR1504-24T	V200R009C00 and later versions

Appearance and Structure

Figure 3-108 shows the appearance of the AR1504-24T router.

Figure 3-108 AR1504-24T appearance



1	24 FE electrical interfaces	2	4GE combo interfaces
3	Reserved DO interface	4	Two power sockets NOTE Use a AC/DC power cables to connect the router to an external power source.
5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	Reset button NOTE <ul style="list-style-type: none"> This button is used to reset the router. Resetting the system will interrupt services. Exercise caution when performing this operation.
7	USB interface	8	ETH interface NOTE An ETH interface is a management interface used to upgrade the router.
9	Console interface	10	-

Indicator Description

Figure 3-109 shows indicators on the AR1504-24T.

Figure 3-109 Indicators on the AR1504-24T



Table 3-458 Description of indicators on the AR1504-24T

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	<ul style="list-style-type: none"> ● Off: The power supply is not working. ● Off: The power supply is working.
2	SYS	Red and green	<ul style="list-style-type: none"> ● 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 restarting. ● Steady red: A fault that affects services has occurred on the card. The fault cannot be rectified automatically and requires manual intervention. ● Off: The system is running properly.
3	DO	Green	<ul style="list-style-type: none"> ● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	FE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.
5	GE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Number	Indicator/Button	Color	Description
6	USB indicator	Red and green	<ul style="list-style-type: none"> ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Slow 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.
7	Management interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Interface Description

Console interface

A console interface connects to an operation terminal for onsite configuration. [Table 3-459](#) lists console interface attributes.

Table 3-459 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)

FE electrical interface

An FE electrical interface transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-460](#) lists FE electrical interface attributes.

Table 3-460 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Rate	10/100 Mbit/s
Cable type	6.6 Ethernet Cable

FE optical interface

An FE optical interface transmits Ethernet services at 10 Mbit/s or 100 Mbit/s. [Table 3-461](#) lists FE optical interface attributes.

Table 3-461 FE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab
Rate	100 Mbit/s
Network protocols	IP
Cable type	Optical fiber (inserted in an optical module)

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-462](#) lists USB interface attributes.

Table 3-462 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

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.

DO interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-463](#) describes DO interface attributes.

Table 3-463 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

ETH interface

The ETH interface is used to log in to the router to perform configuration and management. [Table 3-464](#) lists ETH interface attributes.

Table 3-464 ETH interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Rate	10/100 Mbit/s
Cable type	6.6 Ethernet Cable

Heat Dissipation

The AR1504-24T router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-465](#) lists the technical specifications of the AR1504-24T router.

Table 3-465 AR1504-24T technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 700 MHz
Memory	512 MB
Flash	512 MB
Dimensions (W x D x H)	442.0 mm x 220.0 mm x 43.6 mm (17.40 in. x 8.66 in. x 1.72 in.)
Weight (empty chassis)	3.7 kg (8.16 lb)
Power consumption (empty chassis)	
Typical power consumption	10.22 W
Maximum power consumption	13.38 W
Power specifications	

Item	Specification
AC power input	<ul style="list-style-type: none"> ● Rated voltage: 100 V AC to 240 V AC, 50/60 Hz ● Maximum voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz
DC power input	<ul style="list-style-type: none"> ● Rated voltage range: 110 V DC to 250 V DC ● Maximum voltage range: 88 V DC to 300 V DC
Interface density	
Console interfaces	1
USB 2.0 interfaces	1
DO interfaces	1
ETH interfaces	1
Service interfaces	<ul style="list-style-type: none"> ● 4 GE combo interfaces ● 24 FE interfaces
Environment parameters	
Operating temperature	-40°C to +65°C (-40°F to +149°F) NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -40°C to +70°C (-40°F to +158°F).
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.)
Part number	50010400

3.7 AR2500 Series

3.7.1 AR2504-H

Version Mapping

[Table 3-466](#) lists the mapping between the AR2504-H routers and software versions.

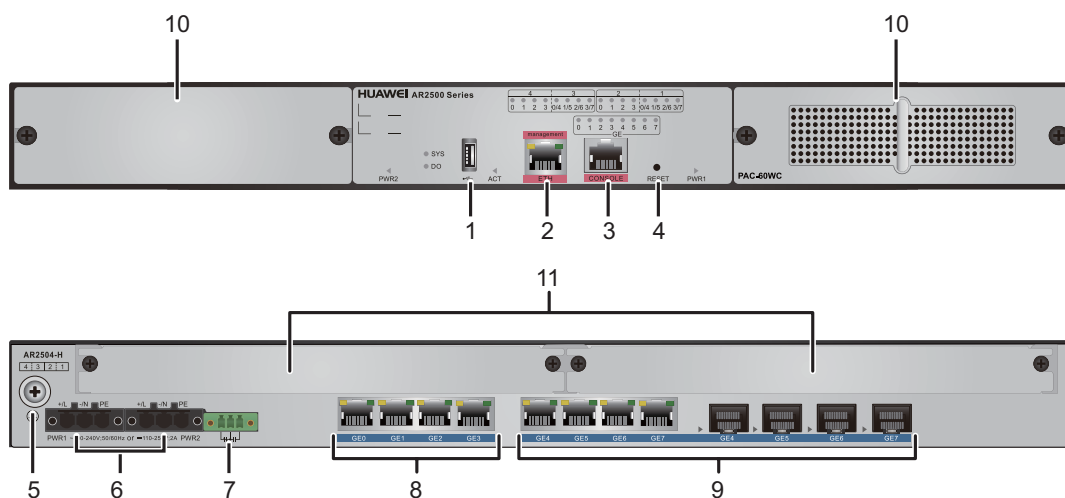
Table 3-466 Mapping between the AR2504-H routers and software versions

Router Model	Software Version
AR2504-H	V200R008C00 and later versions

Appearance and Structure

Figure 3-110 shows the panels of the AR2504-H router.

Figure 3-110 AR2504-H panels



1	USB interface	2	ETH interface NOTE ETH is a management interface and is used to upgrade the router.
3	Console interface	4	RESET button NOTE <ul style="list-style-type: none"> This button is used to reset the router. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
5	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	6	Two power sockets
7	Reserved DO interface	8	Four GE electrical interfaces

9	Four GE combo interfaces	10	Two power module slots Applicable power module: 4.7 60 W AC power module
11	Two WSIC slots	-	-

Indicator Description

Figure 3-111 shows the locations of AR2504-H indicators.

Figure 3-111 Indicators on the AR2504-H

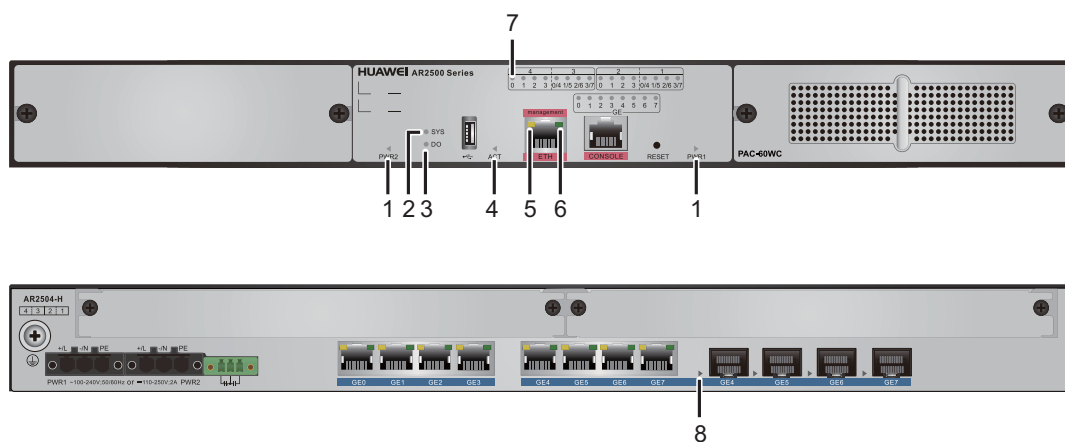


Table 3-467 Description of the indicators on the AR2504-H

Number	Indicator /Button	Color	Description
1	PWR1/ PWR2	Green	<ul style="list-style-type: none"> Off: The power supply is not working. Steady on: The power supply is working.
2	SYS	Red and green	<ul style="list-style-type: none"> 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 restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	DO	Green	<ul style="list-style-type: none"> Off: There are no alarm output signals. Steady on: There are alarm output signals.

Number	Indicator /Button	Color	Description
4	ACT	Red and green	<ul style="list-style-type: none"> ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Slow 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.
5	GE interface indicator	Orange	<ul style="list-style-type: none"> ● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
6	GE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The GE interface is in Link-Up state. ● Off: The GE interface is in Link-Down state.
7	Indicators for interfaces on interface cards	Orange	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.
8	SFP interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Interface Description

Console Interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-468](#) lists console interface attributes.

Table 3-468 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	6.18 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 3-469](#) lists GE electrical interface attributes.

Table 3-469 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-470](#) lists USB interface attributes.

Table 3-470 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

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.

- A 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

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

DO Interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-471](#) describes DO interface attributes.

Table 3-471 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

ETH Interface

The ETH interface is used to log in to the route to perform configuration and management. [Table 3-472](#) lists the attributes of the ETH interface.

Table 3-472 ETH interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

Heat Dissipation

The AR2504-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-473](#) lists technical specifications of the AR2504-H router.

Table 3-473 AR2504-H technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	2 GB
Flash	512 MB
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 17.4 in. x 1.7 in.), 1 U height ● With mounting brackets installed: 482.0 mm x 420.0 mm x 44.4 mm (19.0 in. x 17.4 in. x 1.7 in.), 1 U height
Weight (empty chassis)	7 kg (15.4 lb)
Power consumption (empty chassis)	
Typical power consumption	15 W
Maximum power consumption	25 W

Item	Specification
Power specifications	
AC power input	<ul style="list-style-type: none"> ● Rated voltage: 100 V AC to 240 V AC, 50/60 Hz ● Maximum voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 110 V DC to 250 V DC ● Maximum voltage range: 88 V DC to 300 V DC
Maximum output power	<ul style="list-style-type: none"> ● One power module configured: 60 W ● Two power modules configured: 120 W
Interface density	
Console interfaces	1
USB 2.0 interfaces	1
DO interfaces	1
ETH interfaces	1
Service interfaces (standard configuration)	<ul style="list-style-type: none"> ● Four GE electrical interfaces ● Four GE combo interfaces
Environment parameters	
Operating environment temperature	-40°C to +65°C (-40°F to +149°F) NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -40°C to +70°C (-40°F to +158°F).
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.)
Part number	02350KKH

3.7.2 AR2504-D-H

Version Mapping

[Table 3-474](#) lists the mapping between the AR2504-D-H router and software versions.

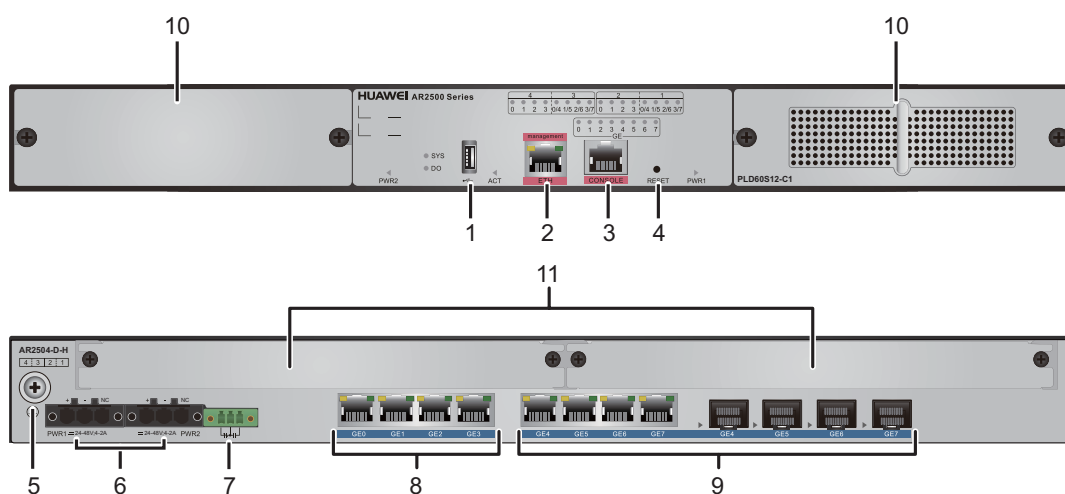
Table 3-474 Mapping between the AR2504-D-H router and software versions

Device Model	Software Version
AR2504-D-H	V200R008C20, V200R008C50 and later versions

Appearance and Structure

Figure 3-112 shows the appearance of the AR2504-D-H router.

Figure 3-112 AR2504-D-H appearance



1	USB interface	2	ETH interface NOTE ETH is a management interface and is used to upgrade the router.
3	Console interface	4	RESET button NOTE This button is used to reset the router. <ul style="list-style-type: none"> ● Holding down the button for 10 seconds will restore the factory settings. ● Pressing the button will reset the system. Resetting the system will interrupt services. Exercise caution when performing this operation.
5	Ground point NOTE To protect the router from lightning and interference, reliably ground the router using a 6.8 Ground Cable .	6	Two DC power sockets

7	Reserved DO interface	8	LAN interfaces: four GE electrical interfaces
9	LAN interfaces: four GE combo interfaces	10	Two power module slots Applicable power module: 4.9 180 W PoE Midspan
11	Two WSIC slots	-	-

Indicator Description

Figure 3-113 shows indicators on the AR2504-D-H router.

Figure 3-113 Indicators on the AR2504-D-H

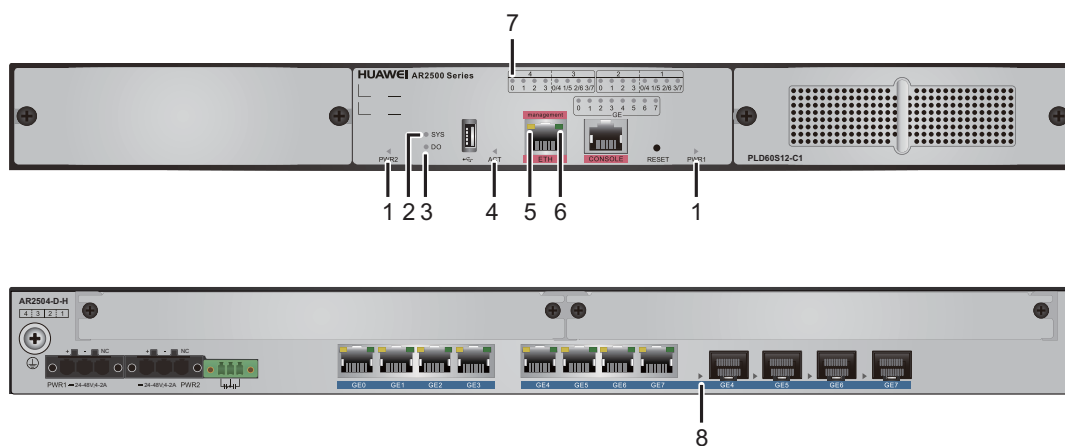


Table 3-475 Description of the indicators on the AR2504-D-H

Number	Indicator /Button	Color	Description
1	PWR1/ PWR2	Green	<ul style="list-style-type: none"> Off: The power supply is not working. Steady on: The power supply is working.
2	SYS	Red and green	<ul style="list-style-type: none"> 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 fault that affects services has occurred on the card. The fault cannot be rectified automatically and requires manual intervention.

Number	Indicator/Button	Color	Description
3	DO	Green	<ul style="list-style-type: none"> ● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	ACT	Red and green	<ul style="list-style-type: none"> ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Slow 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.
5 and 6	GE interface indicators	Orange	<ul style="list-style-type: none"> ● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
		Green	<ul style="list-style-type: none"> ● Steady on: The GE interface is in Link-Up state. ● Off: The GE interface is in Link-Down state.
7	Card interface indicator	Orange	<ul style="list-style-type: none"> ● Steady on: The interface on the card is in Link-Up state. ● Off: The interface on the card is in Link-Down state. ● Blinking: The interface on the card is transmitting or receiving data.
8	SFP interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The SFP optical interface is in Link-Up state. ● Off: The SFP optical interface is in Link-Down state. ● Blinking: The SFP optical is transmitting or receiving data.

Interface Description

Console interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-476](#) lists console interface attributes.

Table 3-476 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	6.18 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 3-477](#) lists GE electrical interface attributes.

Table 3-477 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-478](#) lists USB interface attributes.

Table 3-478 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

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.

- A 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

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

DO interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-479](#) describes DO interface attributes.

Table 3-479 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

ETH interface

The ETH interface is used to log in to the route to perform configuration and management. [Table 3-480](#) lists the attributes of the ETH interface.

Table 3-480 ETH interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

Heat Dissipation

The AR2504-D-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-481](#) lists technical specifications of the AR2504-D-H router.

Table 3-481 AR2504-D-H technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 533 MHz
Memory	2 GB
Flash	512 MB
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 16.5 in. x 1.74 in.), 1 U height ● With mounting brackets installed: 482.0 mm x 420.0 mm x 44.4 mm (18.98 in. x 16.5 in. x 1.74 in.), 1 U height
Weight (empty chassis)	7 kg (15.43 lb)

Item	Specification
Power consumption (empty chassis)	
Typical power consumption	15 W
Maximum power consumption	25 W
Power specifications	
DC power input	<ul style="list-style-type: none"> ● Rated voltage range: 24 V DC to 48 V DC ● Maximum voltage range: 18 V DC to 60 V DC
Maximum output power	<ul style="list-style-type: none"> ● One power module configured: 60 W ● Two power modules configured: 120 W
Interface density	
Console interfaces	1
USB 2.0 interfaces	1
DO interfaces	1
ETH interfaces	1
Service interfaces	LAN interfaces: four GE electrical interfaces and four GE combo interfaces
Environment parameters	
Operating temperature	-40°C to +60°C (-40°F to +140°F)
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.)
Part number	02351AJM

3.7.3 AR2504E-H

Version Mapping

[Table 3-482](#) lists the mapping between the AR2504E-H routers and software versions.

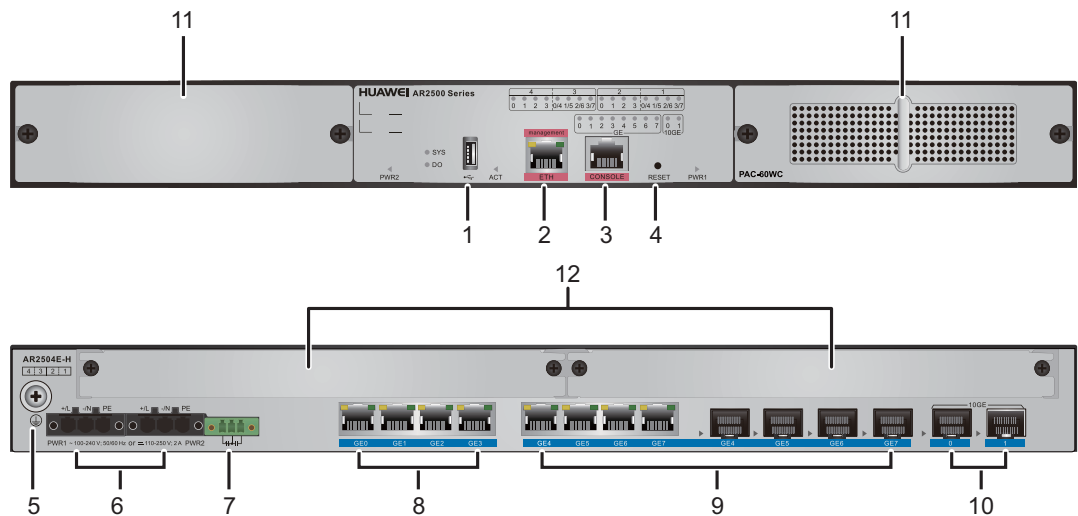
Table 3-482 Mapping between the AR2504E-H routers and software versions

Router Model	Software Version
AR2504E-H	V200R008C00 and later versions

Appearance and Structure

Figure 3-114 shows the panels of the AR2504E-H router.

Figure 3-114 AR2504E-H panels



1	USB interface	2	ETH interface NOTE ETH is a management interface and is used to upgrade the router.
3	Console interface	4	RESET button
5	Ground point NOTE The router must be reliably grounded using a ground cable to protect the router from lightning and electromagnetic interference.	6	Two power sockets
7	Reserved DO interface	8	Four GE electrical interfaces
9	Four GE combo interfaces	10	LAN interface: Two 10GE optical interfaces

11	Two power module slots Applicable power module: 4.7 60 W AC power module	12	Two WSIC slots
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Indicator Description

Figure 3-115 shows the locations of AR2504E-H indicators.

Figure 3-115 Indicators on the AR2504E-H

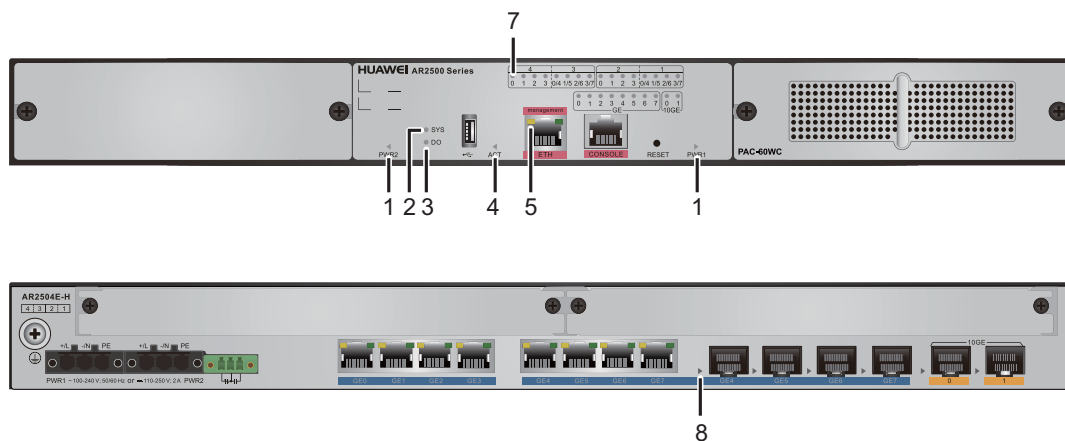


Table 3-483 Description of the indicators on the AR2504E-H

Number	Indicator /Button	Color	Description
1	PWR1/ PWR2	Green	<ul style="list-style-type: none"> Off: The power supply is not working. Steady on: The power supply is working.
2	SYS	Red and green	<ul style="list-style-type: none"> 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 restarting. Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	DO	Green	<ul style="list-style-type: none"> Off: There are no alarm output signals. Steady on: There are alarm output signals.

Number	Indicator /Button	Color	Description
4	ACT	Red and green	<ul style="list-style-type: none"> ● Steady green: The system has been upgraded or configured using a USB flash drive. ● Slow 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.
5	GE interface indicator	Orange	<ul style="list-style-type: none"> ● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
6	GE interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The GE interface is in Link-Up state. ● Off: The GE interface is in Link-Down state.
7	Indicators for interfaces on interface cards	Orange	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.
8	SFP interface indicator	Green	<ul style="list-style-type: none"> ● Steady on: The interface is in Link-Up state. ● Off: The interface is in Link-Down state. ● Blinking: The interface is transmitting or receiving data.

Interface Description

Console Interface

The console interface can connect to an operation terminal for onsite configuration. [Table 3-484](#) lists console interface attributes.

Table 3-484 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	6.18 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 3-485](#) lists GE electrical interface attributes.

Table 3-485 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

USB Interface

NOTICE

Do not remove the USB flash drive during a USB-based deployment. Otherwise, the system will restart.

The USB interface supports USB 2.0 devices and provides upload and download speeds of 480 Mbit/s. You can use the USB interface to upload or download configuration and application files to the flash memory. [Table 3-486](#) lists USB interface attributes.

Table 3-486 USB interface attributes

Attribute	Description
Connector type	TYPE-A
Standards compliance	USB 2.0
Working mode	Host

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.

- A 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

- In V200R008C30 and earlier versions, a combo interface works as an electrical interface and uses a network cable to transmit and receive data by default.
- In V200R008C50 and later versions, a combo interface works in auto mode and automatically works as an optical or electrical interface by default.

DO Interface

The DO interface provides output signals to instruct the connected device to perform required actions. [Table 3-487](#) describes DO interface attributes.

Table 3-487 DO interface attributes

Attribute	Description
Connector type	3-pin Phoenix terminal block
Signal type	Passive DO, Boolean value (short circuit and open circuit)
Cable type	6.2.2 3-Pin Phoenix Connector (DO)

ETH Interface

The ETH interface is used to log in to the route to perform configuration and management. [Table 3-488](#) lists the attributes of the ETH interface.

Table 3-488 ETH interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	<ul style="list-style-type: none"> ● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

10GE Optical Interface

A 10GE optical interface as a LAN interface can send and receive data at 10 Gbit/s. [Table 3-489](#) describes the attributes of a 10GE optical interface.

Table 3-489 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Interface attribute	Optical modules supported: <ul style="list-style-type: none"> ● OSX010N05
Standards compliance	IEEE802.3ae
Working Mode	full-duplex

Heat Dissipation

The AR2504E-H router has no fans and uses natural heat dissipation.

Technical Specifications

[Table 3-490](#) lists technical specifications of the AR2504E-H router.

Table 3-490 AR2504E-H technical specifications

Item	Specification
System parameters	

Item	Specification
Processor	Dual-core, 533 MHz
Memory	2 GB
Flash	512 MB
Dimensions (W x D x H)	<ul style="list-style-type: none"> ● With no mounting bracket installed: 442.0 mm x 420.0 mm x 44.4 mm (17.4 in. x 17.4 in. x 1.7 in.), 1 U height ● With mounting brackets installed: 482.0 mm x 420.0 mm x 44.4 mm (19.0 in. x 17.4 in. x 1.7 in.), 1 U height
Weight (empty chassis)	7 kg (15.4 lb)
Power consumption (empty chassis)	
Typical power consumption	20 W
Maximum power consumption	28 W
Power specifications	
AC power input	<ul style="list-style-type: none"> ● Rated voltage: 100 V AC to 240 V AC, 50/60 Hz ● Maximum voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz
DC power input	<ul style="list-style-type: none"> ● Rated voltage: 110 V DC to 250 V DC ● Maximum voltage range: 88 V DC to 300 V DC
Maximum output power	<ul style="list-style-type: none"> ● One power module configured: 60 W ● Two power modules configured: 120 W
Interface density	
Console interfaces	1
USB 2.0 interfaces	1
DO interfaces	1
ETH interfaces	1
Service interfaces (standard configuration)	<ul style="list-style-type: none"> ● Four GE electrical interfaces ● Four GE combo interfaces ● Two 10GE optical interfaces
Environment parameters	
Operating environment temperature	<p>-40°C to +65°C (-40°F to +149°F)</p> <p>NOTE In compliance with IEC60068-2-1-2007 and ETSI EN 300 019-2-3 V2.2.2:2003, the router can operate reliably for 24 hours in a temperature range of -40°C to +70°C (-40°F to +158°F).</p>

Item	Specification
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.)
Part number	02350RBM

4 Power Supplies

About This Chapter

NOTICE

- Do not use AC and DC power modules in the same router.
 - Do not use power modules of different power values in the same router.
 - A router can use only supported power modules. Using unsupported power modules will bring unexpected risks.
-

- [4.1 Overview of Power Modules](#)
- [4.2 Types of Power Supplies](#)
- [4.3 24 W Integrated Power Adapter](#)
- [4.4 24 W Integrated Power Adapter with an Adapter Cable](#)
- [4.5 60 W Industrial AC Power Module](#)
- [4.6 60 W DC Power Module](#)
- [4.7 60 W AC power module](#)
- [4.8 100 W PoE Power Adapter](#)
- [4.9 180 W PoE Midspan](#)
- [4.10 240 W AC PoE Power Module](#)

4.1 Overview of Power Modules

Power Modules for AR500 Series Routers

Table 4-1 lists the power modules for AR500 series routers.

Table 4-1 Power modules for AR500 series routers

Product Model	Power Module Delivered by Default	Optional Power Module
AR502CG-L	No power module is delivered by default. This model is equipped with an embedded 2-pin DC power terminal.	60 W industrial AC power module
AR502EG-L AR502EG-La AR502EG-Lj AR502EGW-L AR502EGRb-L AR502EGRc-Lc AR502EGRz-Lc AR502EGRz-L AR502G-L-D-H AR502GR-L-D-H	No power module is delivered by default. These models are equipped with an embedded 4-pin DC power terminal (square shape).	<ul style="list-style-type: none"> ● 24 W integrated power adapter with an adapter cable ● 60 W industrial AC power module
AR502EG-L-PD	-	-
AR503EDGW-Lc AR503EDGW-Lo	No power module is delivered by default. These models are equipped with an embedded 5-pin M12 DC power terminal.	-
AR503EDGW-Lc3 AR503EQGW-L AR503EW AR503GW-LM7 AR503GW-LcM7 AR503GW-Lo AR503HGW-L AR503HGW-Lc	No power module is delivered by default. These models are equipped with an embedded 4-pin M12 DC power terminal.	-
AR509CG-Lc AR509CG-Lt AR509CG-Lt-7 AR509CGW-L	No power module is delivered by default. These models are equipped with an embedded 4-pin DC power terminal (square shape).	<ul style="list-style-type: none"> ● 24 W integrated power adapter with an adapter cable ● 60 W industrial AC power module
AR509G-L-D-H AR509G-Lc AR509GW-L-D-H	No power module is delivered by default. These models are equipped with an embedded 4-pin DC power terminal (circular shape).	<ul style="list-style-type: none"> ● 24 W integrated power adapter with an adapter cable ● 60 W industrial AC power module ● 100 W PoE power adapter

Power Modules for AR510 Series Routers

Table 4-2 lists the power modules for AR510 series routers.

Table 4-2 Power modules for AR510 series routers

Product Model	Power Module Delivered by Default	Optional Power Module
AR511GW-LAV2M3 AR511CGW-LAV2M3 AR511GW-LM7 AR511GW-L-B3 AR511EGW-LcAV2 AR515GW-LM9-D AR515CGW-L	No power module is delivered by default. These models are equipped with an embedded 4-pin DC power terminal (circular shape).	-
AR513W-V3M8 AR513GW-LcV1 AR513W-V1	No power module is delivered by default. These models are equipped with an embedded 4-pin DC power terminal (square shape).	

Power Modules for AR530 Series Routers

Table 4-3 lists the power modules for AR530 series routers.

Table 4-3 Power modules for AR530 series routers

Product Model	Power Module Delivered by Default	Optional Power Module
AR531-2C-H AR531-F2C-H AR531GPe-U-H AR531GR-U-H	No power module is delivered by default. These models are equipped with an embedded 4-pin AC power terminal.	180 W PoE midspan
AR531G-U-D-H	No power module is delivered by default. This model is equipped with an embedded 2-pin DC power terminal.	<ul style="list-style-type: none"> ● 60 W industrial AC power module ● 180 W PoE midspan

Power Modules for AR550 Series Routers

Table 4-4 lists the power modules for AR550 series routers.

Table 4-4 Power modules for AR550 series routers

Product Model	Power Module Delivered by Default	Optional Power Module
AR550-8FE-D-H AR550-24FE-D-H	No power module is delivered by default. This model is equipped with an embedded 2-pin DC power terminal.	<ul style="list-style-type: none"> ● 60 W industrial AC power module ● 180 W PoE midspan
AR550C-4GE AR550C-2C6GE AR550E	No power module is delivered by default. These models are equipped with an embedded 2-pin DC power terminal.	<ul style="list-style-type: none"> ● 60 W industrial AC power module ● 240 W AC PoE power module
AR550C-2C6GE-2D	No power module is delivered by default. This model is equipped with an embedded 2-pin DC power terminal.	240 W AC PoE power module

Power Modules for AR1500 Series Routers

Table 4-5 lists the power modules for AR1500 series routers.

Table 4-5 Power modules for AR1500 series routers

Product Model	Power Module Delivered by Default	Optional Power Module
AR1504-8S16T AR1504-16S8T AR1504-24S AR1504-24T	No power module is delivered by default. These models are equipped with an embedded 3-pin AC/DC power terminal.	-

Power Modules for AR2500 Series Routers

Table 4-6 lists the power modules for AR2500 series routers.

Table 4-6 Power modules for AR2500 series routers

Product Model	Power Module Delivered by Default	Optional Power Module
AR2504-H AR2504E-H	No power module is delivered by default. These models are equipped with an embedded 3-pin AC/DC power terminal.	60 W AC power module

Product Model	Power Module Delivered by Default	Optional Power Module
AR2504-D-H	No power module is delivered by default. This model is equipped with an embedded 3-pin AC/DC power terminal.	60 W DC power module

4.2 Types of Power Supplies

Table 4-7 describes the types of power supplies supported by AR series routers. The actual power supplies applicable to a router vary depending on the product model.

Table 4-7 Types of power supplies

Power Module Type	Description
Built-in power module	It is fixed in the chassis with a power socket on the panel, and connects to an external power source through a power cable to supply power for the router.
Power adapter	It is an external unit used to connect a router to an external power source.
PoE power adapter	It is an external unit used to connect a router to an external power source. Using the PoE power adapter, the router can supply power to attached powered devices.
AC power module	It is an external unit used to connect a router to an external power source through a power cable.
DC or AC-DC power module	It is installed in a power slot of a router and connects to an external power source through a power cable to supply power for the router.
AC PoE power module	It is an external unit used to connect a router to an external power source through a power cable to supply power for the router and its attached powered devices.
PoE midspan	It is an external unit used to connect a router to an external power source through a power cable to supply power for the router and its attached powered devices. In addition, it can be used to convert an Ethernet interface that does not support PoE into a PoE-enabled GE interface.

4.3 24 W Integrated Power Adapter

Product Support

Table 4-8 lists the device models that support a 24 W integrated power adapter.

Table 4-8 Product support

Module Name	Product Support
24 W integrated power adapter	AR509G-Lc AR509G-L-D-H AR509GW-L-D-H

Appearance

Figure 4-1 shows the appearance of a 24 W integrated power adapter.

Figure 4-1 24 W integrated power adapter



Function

Table 4-9 describes functions of a 24 W integrated power adapter.

Table 4-9 Function description

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 built-in fans and uses nature heat dissipation.

Technical Specifications

Table 4-10 lists technical specifications of a 24 W integrated power adapter.

Table 4-10 Technical specifications

Item	Specification
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 51 mm x 86 mm x 28 mm (2.01 in. x 3.39 in. x 1.10 in.) ● Weight: 0.15 kg (0.33 lb)
Environment parameter	Operating temperature: -5°C to +45°C (23°F to +113°F)
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
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.4 V DC to 12.6 V DC Maximum output power: 24 W Maximum output current: 2 A

Ordering Information

To place an order, visit <http://e.huawei.com/cn/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-11 provides the 24 W integrated power adapter ordering information.

Table 4-11 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02220362	-	-	24 W integrated power adapter-China Standard
02220363	-	-	24 W integrated power adapter-Europe Standard
02220364	-	-	24 W integrated power adapter-UK Standard
02220365	-	-	24 W integrated power adapter-US Standard
02220366	-	-	24 W integrated power adapter-Australia Standard

4.4 24 W Integrated Power Adapter with an Adapter Cable

Product Support

Table 4-12 lists the device models that support a 24 W integrated power adapter with an adapter cable.

Table 4-12 Product support

Module Name	Product Support
24 W integrated power adapter with an adapter cable	AR502EG-L
	AR502EG-La
	AR502EG-Lj
	AR502EGRb-L
	AR502EGRc-Lc
	AR502EGRz-L
	AR502EGRz-Lc
	AR502EGW-L
	AR502G-L-D-H
	AR502GR-L-D-H
AR509CG-Lc	
	AR509CG-Lt
	AR509CGW-L

Appearance

Figure 4-2 shows the appearance of a 24 W integrated power adapter with an adapter cable.

Figure 4-2 Appearance of a 24 W integrated power adapter with an adapter cable



Function

Table 4-13 describes functions of a 24 W integrated power adapter with an adapter cable.

Table 4-13 Function description

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 built-in fans and uses nature heat dissipation.

Technical Specifications

Table 4-14 lists technical specifications of a 24 W integrated power adapter with an adapter cable.

Table 4-14 Technical specifications

Item	Specification
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 51 mm x 86 mm x 28 mm (2.01 in. x 3.39 in. x 1.10 in.) ● Weight: 0.15 kg (0.33 lb)
Environment parameter	Operating temperature: -5°C to +45°C (23°F to +113°F)
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
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.4 V DC to 12.6 V DC Maximum output power: 24 W Maximum output current: 2 A

Ordering Information

To place an order, visit <http://e.huawei.com/cn/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-15 provides ordering information about a 24 W integrated power adapter with an adapter cable.

Table 4-15 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311RMJ	AR24WAPCN	AR24WAPCN	24 W integrated power adapter with an adapter cable-China Standard
02311RML	AR24WAPEU	AR24WAPEU	24 W integrated power adapter with an adapter cable-Europe Standard
02311RMM	AR24WAPAU	AR24WAPAU	24 W integrated power adapter with an adapter cable-Australia Standard
02311RMN	AR24WAPUK	AR24WAPUK	24 W integrated power adapter with an adapter cable-UK Standard
02311RMP	AR24WAPUK	AR24WAPUK	24 W integrated power adapter with an adapter cable-US Standard

4.5 60 W Industrial AC Power Module

Product Support

Table 4-16 lists the device models that support a 60 W industrial AC power module.

Table 4-16 Product support

Module Name	Product Support
60 W industrial AC power module	<p>AR502CG-L AR502EG-L AR502EG-La AR502EG-Lj AR502EGRb-L AR502EGRc-Lc AR502EGRz-L AR502EGRz-Lc AR502EGW-L AR502G-L-D-H AR502GR-L-D-H</p>
	<p>AR509CG-Lc AR509CG-Lt AR509CGW-L AR509G-Lc AR509G-L-D-H AR509GW-L-D-H</p>
	<p>AR531G-U-D-H</p>
	<p>AR550-24FE-D-H AR550-8FE-D-H AR550C-2C6GE AR550C-4GE AR550E</p>

Appearance

Figure 4-3 shows the appearance of a 60 W industrial AC power module.

Figure 4-3 60 W industrial AC power module



Function

Table 4-17 describes functions of a 60 W industrial AC power module.

Table 4-17 Function description

Function	Description
Input undervoltage 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 can automatically resume power supply from this protection state.
Output current limiting protection	The power module can automatically resume power supply from this protection state.

Function	Description
Output short-circuit protection	The power module can automatically resume power supply from 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.
Hot swap	Supported

Panel

Figure 4-4 shows the panel of a 60 W industrial AC power module.

Figure 4-4 Panel of a 60 W industrial AC power module

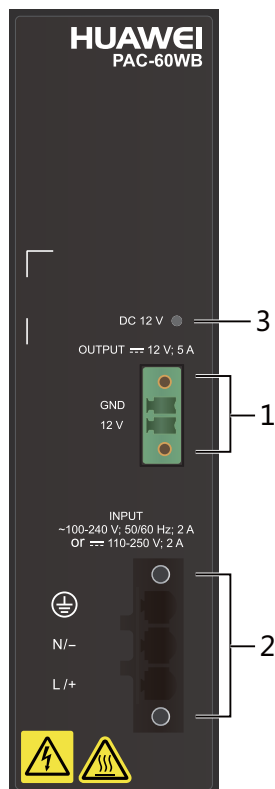


Table 4-18 Components on the panel

Number	Name	Description
1	2-pin DC output power socket	Connect the power cable to the router using a power cable with a 2-pin plug.

Number	Name	Description
2	AC/DC input power socket	Connect the power adapter to an external power supply system using a power cable with a 3-pin plug.
3	DC 12 V	<ul style="list-style-type: none"> ● Steady on: The power output is normal. ● Off: The power output is abnormal. ● Blinking: The power module is in hiccup protection state.

Technical Specifications

Table 4-19 lists technical specifications of a 60 W industrial AC power module.

Table 4-19 Technical specifications

Item	Specification
Physical parameter	<ul style="list-style-type: none"> ● 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 (2.0 lb)
Environment parameter	<ul style="list-style-type: none"> ● Storage temperature: -40°C to +85°C (-40°F to +185°F) ● Operating temperature: -40°C to +70°C (-40°F to +158°F) ● Operating relative humidity: 5% to 95%, noncondensing
Input	Rated input voltage range: <ul style="list-style-type: none"> ● AC: 100 V to 240 V; 50/60 Hz; 2 A ● DC: 110 V to 250 V; 2 A Maximum input voltage range: <ul style="list-style-type: none"> ● AC: 90 V to 264 V ● DC: 88 V to 300 V
Output	Rated output voltage: 12 V DC Rated output current: 5 A

Ordering Information

To place an order, visit <http://e.huawei.com/cn/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-20 provides 60 W industrial AC power module ordering information.

Table 4-20 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311CRR	PAC-60WB	PAC-60WB	60W AC Power Module

4.6 60 W DC Power Module

Product Support

Table 4-21 lists the device models that support a 60 W DC power module.

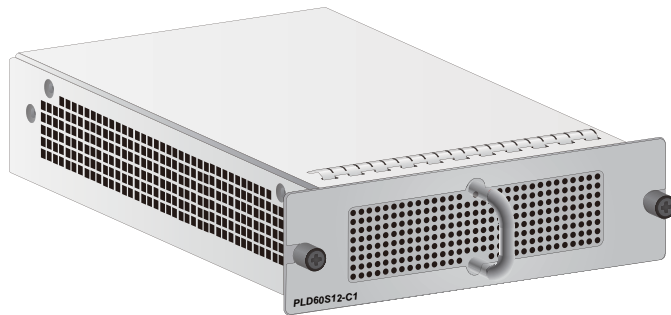
Table 4-21 Product support

Module Name	Product Support
60 W DC power module	AR2504-D-H

Appearance

Figure 4-5 shows the appearance of a 60 W DC power module.

Figure 4-5 60 W DC power module



Function

Table 4-22 describes functions of a 60 W DC power module.

Table 4-22 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.

Function	Description
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module can automatically resume power supply from this protection state.
Output current limiting protection	The power module can automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from 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.
Hot swap	Supported

Technical Specifications

Table 4-23 lists technical specifications of a 60 W DC power module.

Table 4-23 Technical specifications

Item	Specification
Physical parameter	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 139.5 mm x 223.0 mm x 40.2 mm (5.49 in. x 8.78 in. x 1.58 in.) ● Weight: 0.95 kg (2.09 lb)
Power input	<ul style="list-style-type: none"> ● Rated input voltage range: 24 V DC to 48 V DC ● Maximum input voltage range: 18 V DC to 60 V DC ● Maximum input current: 4 A
Power output	<ul style="list-style-type: none"> ● Rated output voltage: 12 V DC ● Output voltage range: 11.93 V DC to 12.66 V DC ● Maximum output power: 60 W

Ordering Information

To place an order, visit <http://e.huawei.com/cn/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-24 provides 60 W DC power module ordering information.

Table 4-24 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311RFU	PLD60S12-C1	PLD60S12-C1	60W 24/48V DC power module

4.7 60 W AC power module

Product Support

Table 4-25 lists the device models that support a 60 W AC power module.

Table 4-25 Product support

Module Name	Product Support
60 W AC power module	AR2504E-H AR2504-H

Appearance

Figure 4-6 shows the appearance of a 60 W AC power module.

Figure 4-6 60 W AC power module



Function

Table 4-26 describes functions of a 60 W AC power module.

Table 4-26 Function description

Function	Description
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.
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.
Hot swap	Supported

Technical Specifications

Table 4-27 lists technical specifications of a 60 W AC power module.

Table 4-27 Technical specifications

Item	Specification
Outline dimensions (W x D x H)	139.5 mm x 223.0 mm x 40.2 mm (5.5 in. x 8.8 in. x 1.6 in.)
Input	Rated input voltage range: <ul style="list-style-type: none"> ● DC power: 110 V to 250 V ● AC power: 100 V to 240 V Maximum input voltage range: <ul style="list-style-type: none"> ● DC power: 88 V to 300 V ● AC power: 90 V to 264 V Maximum input current: 2 A
Output	<ul style="list-style-type: none"> ● Rated output voltage: 12 V DC ● Output voltage range: 11.64 V DC to 12.36 V DC ● Maximum output power: 60 W

Ordering Information

To place an order, visit <http://e.huawei.com/cn/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-28 provides 60 W AC power module ordering information.

Table 4-28 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311EVX	PAC60S12-ON	PAC-60WC	60W AC & 110/220V DC Power Module

4.8 100 W PoE Power Adapter

Product Support

Table 4-29 lists the device models that support a 100 W PoE power adapter.

Table 4-29 Product support

Module Name	Product Support
100 W PoE power adapter	AR509G-Lc AR509G-L-D-H AR509GW-L-D-H

Appearance

Figure 4-7 shows the appearance of a 100 W PoE power adapter.

Figure 4-7 100 W PoE power adapter



Function

Table 4-30 describes functions of a 100 W PoE power adapter.

Table 4-30 Function description

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

Technical Specifications

Table 4-31 lists technical specifications of a 100 W PoE power adapter.

Table 4-31 Technical specifications

Item	Specification
Physical specifications	<ul style="list-style-type: none">● Dimensions (W x D x H): 72 mm x 171 mm x 40 mm (2.83 in. x 6.73 in. x 1.57 in.)● Weight: 0.65 kg (1.43 lb)
Environment parameter	Operating temperature: 0°C to +40°C (32°F to +104°F)
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: 48 V DC Maximum output voltage range: 45.6 V DC to 50.4 V DC Maximum output power: 100 W Maximum output current: 2.08 A

Ordering Information

To place an order, visit <http://e.huawei.com/cn/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-32 provides the 100 W PoE power adapter ordering information.

Table 4-32 Ordering information

Part Number	Model	Description
02220119	AR0MPSAP1000	100W AC-DC Power Adapter

4.9 180 W PoE Midspan

Product Support

Table 4-33 lists the device models that support a 180 W PoE midspan.

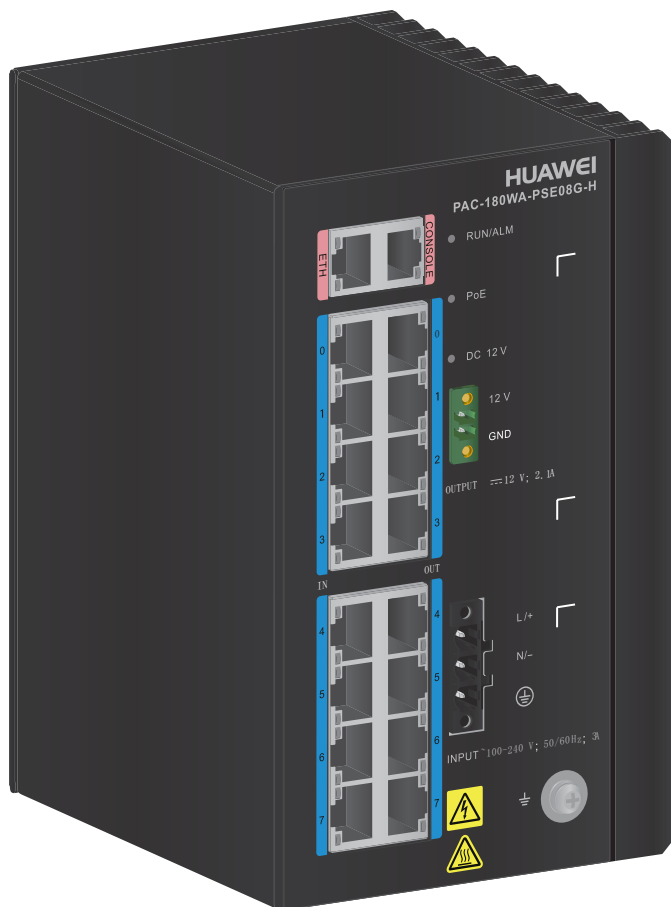
Table 4-33 Product support

Module Name	Product Support
180 W PoE midspan	AR531-2C-H AR531-F2C-H AR531GPe-U-H AR531GR-U-H AR531G-U-D-H
	AR550-8FE-D-H

Appearance

Figure 4-8 shows the appearance of a 180 W PoE midspan.

Figure 4-8 180 W PoE midspan



Function

Table 4-34 describes functions of a 180 W PoE midspan.

Table 4-34 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overcurrent protection	The power module can automatically resume power supply from this protection state.
Output overvoltage protection	The power module can automatically resume power supply from this protection state.
Output current limiting protection	The power module can automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.

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.
Hot swap	Supported

Panel

Figure 4-9 shows the panel of a 180 W PoE midspan.

Figure 4-9 Panel of a 180 W PoE midspan

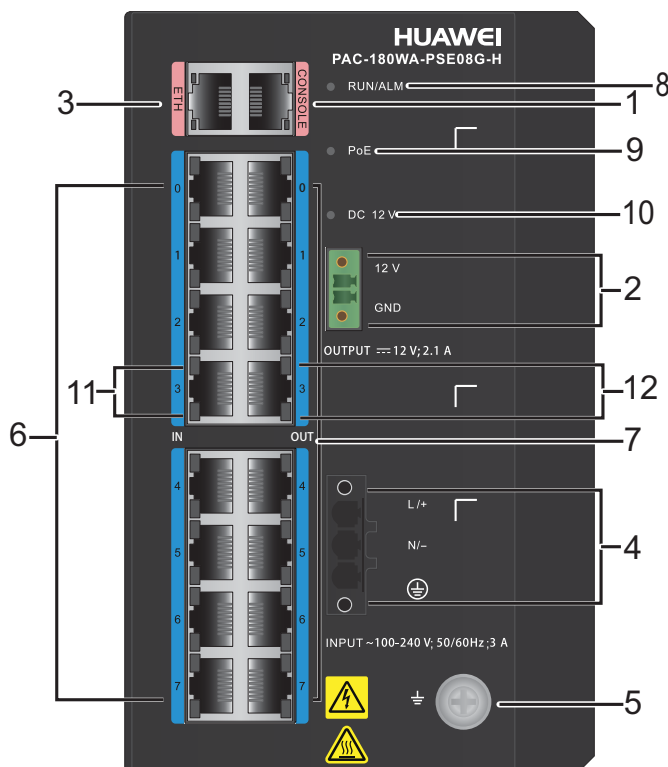


Table 4-35 Components on the panel

Number	Name	Description
1	Console interface	Uses a 6.18 Console Cable to connect to the console for power commissioning.
2	2-pin DC output power socket	Connects the power module to a router using a power cable with a 2-pin plug.

Number	Name	Description
3	Management FE interface	Reserved hardware interfaces.
4	AC input power socket	Connects the power module to an external power supply system using a power cable with a 3-pin plug.
5	Equipotential ground terminal	Uses a 6.8 Ground Cable to reliably ground a router to protect the router from lightning and interference.
6	LAN interfaces: eight input GE interfaces	Uses an 6.6 Ethernet Cable to connect to the Ethernet interface of the router.
7	LAN interfaces: eight output GE interfaces (PoE capable)	Connect to other devices for PoE. NOTE An Ethernet interface that does not support PoE can be converted into a PoE-enabled GE interface through a 180 W PoE midspan. To implement PoE, connect the output and input GE interfaces to the corresponding interfaces, for example, connecting the input GE interface to the GE0 interface on the left and the output GE interface to the GE0 interface on the right.
8	RUN/ALM	<ul style="list-style-type: none"> ● 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 restarting.
		Steady red: A system fault has occurred and requires manual intervention.
9	PoE	<ul style="list-style-type: none"> ● Steady on: The midspan is providing 48 V power supply normally. ● Off: The midspan does not provide 48 V power supply normally or is not connected to any power source.
10	12 V	<ul style="list-style-type: none"> ● Steady on: The power input socket of the midspan is receiving power normally from a power source. ● Off: The midspan cannot be powered by the power source or is not connected to any power source.
11 and 12	GE electrical interface indicators	<ul style="list-style-type: none"> ● Steady green: The power supply level for PDs is 0 to 3. ● Off: The interface is not supplying power to PDs.

Number	Name	Description
	<ul style="list-style-type: none"> ● 11: input interface indicator ● 12: output interface indicator 	<ul style="list-style-type: none"> ● Steady orange: The power supply level for PDs is 4. ● Off: The interface is not supplying power to PDs.

Technical Specifications

Table 4-36 lists technical specifications of a 180 W PoE midspan.

Table 4-36 Technical specifications

Item	Specification
Physical parameter	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 180 mm x 133 mm x 111 mm (7.1 in. x 5.2 in. x 4.4 in.) ● Weight: 2.92 kg (6.44 lb)
Environment parameter	Operating relative humidity: 5% to 95%, noncondensing
Input	<ul style="list-style-type: none"> ● Rated voltage range: 100 V AC to 240 V AC, 50/60 Hz ● Maximum voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz ● Input current: 3 A
Output	<ul style="list-style-type: none"> ● Rated output voltage: 12 V DC ● Output voltage range: 11.64 V DC to 12.36 V DC ● Output power: 25.2 W <p>NOTE The rated output voltage, output voltage range, and output power are output specifications of the 2-pin DC power supply.</p>
PoE interface standards compliance	802.3af on eight interfaces (a maximum of 15.4 W power), four of which support 802.3at (a maximum of 30 W power) at the same time

Ordering Information

To place an order, visit <http://e.huawei.com/cn/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-37 provides 180 W PoE midspan ordering information.

Table 4-37 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02350EJC	PAC-PSE08G-H	PAC-180WA-PSE08G-H	180 W PoE midspan

4.10 240 W AC PoE Power Module

Product Support

Table 4-38 lists the device models that support a 240 W AC PoE power module.

Table 4-38 Product support

Module Name	Product Support
240 W AC PoE power module	AR550C-2C6GE AR550C-2C6GE-2D AR550C-4GE AR550E

Appearance

Figure 4-10 shows the appearance of a 240 W AC PoE power module.

Figure 4-10 240 W AC PoE power module



Function

Table 4-39 describes functions of a 240 W AC PoE power module.

Table 4-39 Function description

Function	Description
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.
Output overvoltage protection	The power module can automatically resume power supply from this protection state.
Output current limiting protection	The power module can automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from 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.

Panel

Figure 4-11 shows the panel of a 240 W AC PoE power module.

Figure 4-11 Panel of a 240 W AC PoE power module

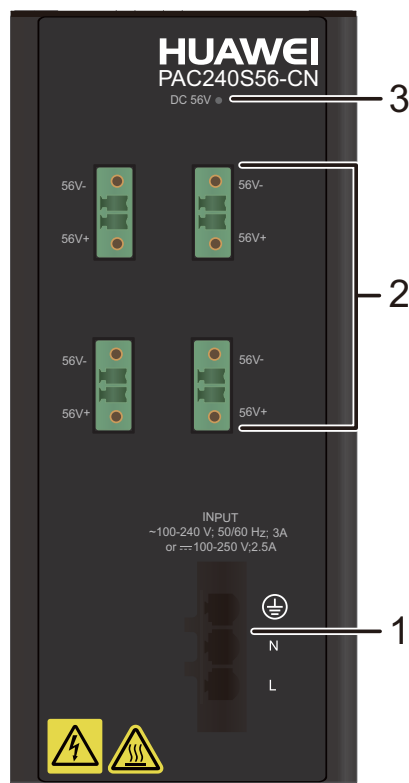


Table 4-40 Components on the panel

Number	Name	Description
1	3-pin AC/DC input power socket	Connect the power adapter to an external power supply system using a power cable with a 3-pin plug.
2	Four 2-pin DC output power sockets	Connect the power cable to the router using a power cable with a 2-pin plug.
3	Output indicator (DC 56 V)	<ul style="list-style-type: none"> ● Steady on: The power supply is normal. ● Blinking green: The power module is in the output overvoltage or overcurrent protection state. ● Off: The power output is abnormal or the power module is faulty.

Technical Specifications

Table 4-41 lists technical specifications of a 240 W AC PoE power module.

Table 4-41 Technical specifications

Item	Specification
Physical parameter	<ul style="list-style-type: none">● Dimensions (W x D x H): 60 mm x 133 mm x 150 mm (2.36 in. x 5.24 in. x 5.91 in.)● Weight: 1.47 kg (3.24 lb)
Input	<ul style="list-style-type: none">● AC power input: 100 V AC to 240 V AC, 50/60 Hz● AC input current: 3 A● DC power input: 100 V DC to 250 V DC● DC input current: 2 A
Output	Output voltage range: 54 V DC to 57 V DC Output power: 240 W

Ordering Information

To place an order, visit <http://e.huawei.com/cn/how-to-buy> to find the local supplier or submit your inquiries online.

Table 4-42 provides 240 W AC PoE power module ordering information.

Table 4-42 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02131265	PAC240S56-CN	PAC240S56-CN	AC-DC Power,-40degC,70degC,90V,290V,56V/4.29A

5 Cards

About This Chapter

[5.1 Basic Concepts of Cards](#)

[5.2 Ethernet LAN Interface Cards](#)

[5.3 WAN Interface Cards](#)

5.1 Basic Concepts of Cards

5.1.1 Card Category

Table 5-1 lists the cards supported by AR routers.

Table 5-1 Card types supported by AR models

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight
Ethernet LAN interface card	8ES2G	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)	7 W	0.7 kg (1.54 lb)

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight
	8ES2GS	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)	11 W	0.7 kg (1.54 lb)
WAN interface card	8AS	8-Port Async Serial Port Interface Card	15.1 W	0.6 kg (1.32 lb)
	1LTE-L-H	FDD/HSPA+ Industrial Data Card	7.3 W	0.58 kg (1.28 lb)

5.1.2 Card Structure and Dimensions

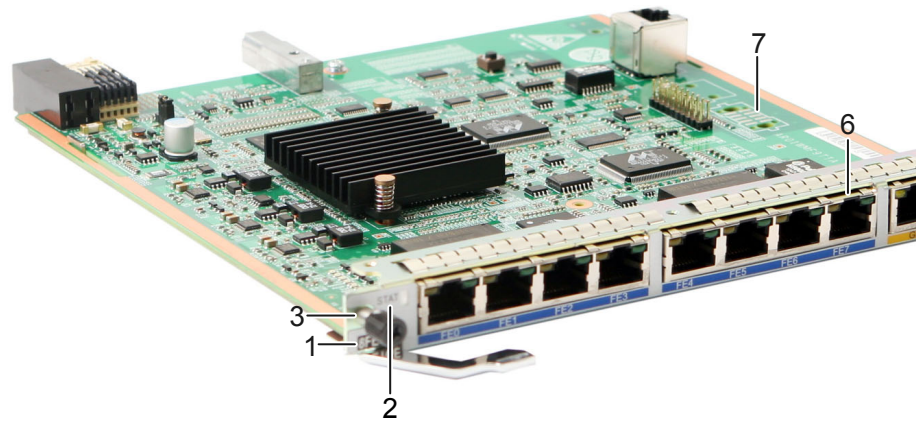
Card Structure

 **NOTE**

All wide service interface cards (WSICs) of AR series routers have the same structure.

Figure 5-1 shows the structure of a WSIC card.

Figure 5-1 WSIC card structure



4. Ejector lever	5. Front panel plate	6. Interface
7. Printed circuit board (PCB)	-	-

A card consists of the following components:

- PCB

The PCB contains all the functional chips and is the core of the card. The PCB provides indicators, buttons, and interfaces on the front panel. PCBs of some cards provide space for installing daughter cards.

 **NOTE**

Different cards provide different indicators, buttons, and interfaces. Some cards support daughter cards, while others do not. For details, see the description of specific cards.

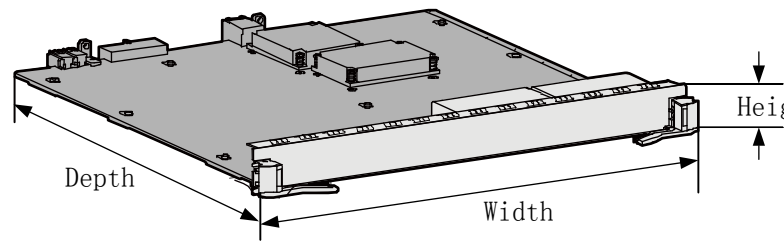
- Front panel, consisting of captive screws, ejector levers, and plate

- Captive screws: fix the card into the chassis.
- Ejector levers: allow you to insert and remove the card.
- Plate: connects the ejector levers and the PCB to the panel. Labels, such as the bar code and laser label, are also attached on the plate.

Card Dimensions

[Figure 5-2](#) illustrates the dimensions of a card.

Figure 5-2 Card dimensions



 **NOTE**

The card dimensions are defined as follows:

- Depth: the distance between the top of an ejector lever and the end of PCB
- Width: the longest distance between the tops of two ejector levers
- Height: the height of the front panel

Figure 5-3 shows a typical card supported by the AR routers, and **Table 5-2** lists the card dimensions.

Figure 5-3 Typical card



Table 5-2 Card dimensions

Card Type	Dimensions (W x D x H)
WSIC	201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.)

5.1.3 Port Numbering

On an 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**

When two slots need to be combined into one slot, the larger 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.

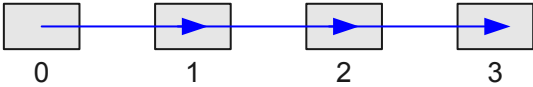
- Subcard ID

The subcard ID specifies the ID of a subcard. AR routers do not support subcards, so the subcard ID is fixed at 0.

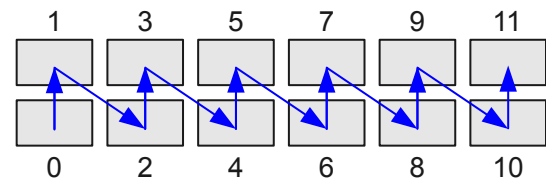
- Interface sequence number

The interface sequence number indicates the position of an interface on a card.

- If there is only one row of interfaces on a card, the interfaces are numbered from left to right, starting with 0.



- If there are two rows of interfaces on a card, the interfaces are numbered from bottom to top and left to right, starting with 0.



5.2 Ethernet LAN Interface Cards

5.2.1 8ES2G (8-Port 1000BASE (RJ45) L2 Ethernet Interface Card (Industry))

Card Overview

The 8ES2G can be used in industrial environments to provide gigabit Ethernet access. It is a WSIC card with eight GE electrical interfaces, which can be connected to network devices such as a switch.

[Figure 5-4](#) shows the appearance of the 8ES2G.

Figure 5-4 8ES2G card appearance



Version Mapping

[Table 5-3](#) describes the mapping between the 8ES2G and software versions.

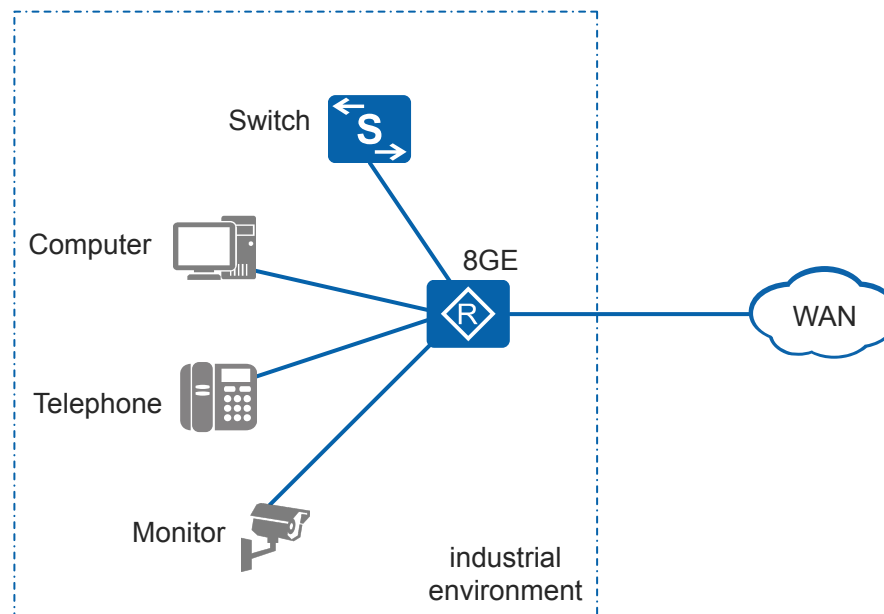
Table 5-3 Mapping between the 8ES2G and software versions

Card Name	AR2500 Series
8ES2G	Supported in V200R008C00 and later versions

Application

An 8ES2G card can be used in industrial environments to provide gigabit Ethernet access, as shown in [Figure 5-5](#). GE electrical interfaces on the card can connect to various devices such as switches, telephones, computers, and monitors.

Figure 5-5 8ES2G card application



Functions and Features

Table 5-4 describes functions and features of the 8ES2G.

Table 5-4 Functions and features of the 8ES2G

Function and Feature	Description
Eight GE interfaces	Each interface provides up to 1000 Mbit/s line-rate 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.
VLANIF	VLANIF interfaces are used as Layer 3 interfaces to support Layer 3 services.
Layer 2 features	MAC, Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), and Link Layer Discovery Protocol (LLDP).

Indicators and Interfaces

Figure 5-6 shows the indicators on an 8ES2G card, and **Table 5-5** describes the indicator states and meanings.

Figure 5-6 Indicators on an 8ES2G card

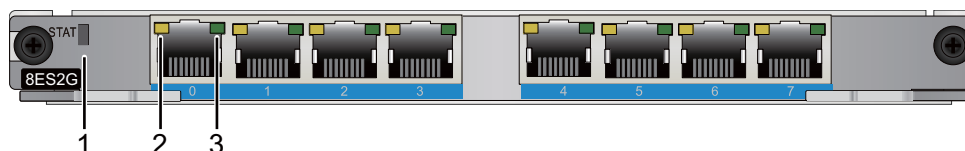


Table 5-5 8ES2G card indicator description

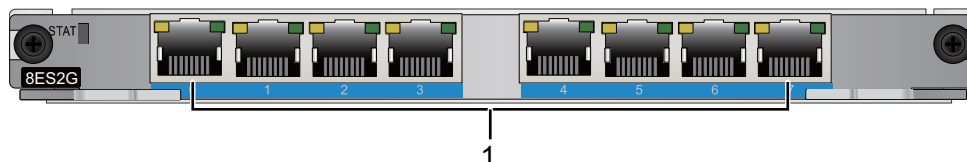
Number	Indicator	Color	Description
1	STAT	Green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.

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	Yellow	Blinking: Data is being transmitted or received on the interface. Off: No data is being transmitted or received on the interface.
3	LINK	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.

Interface Description

Figure 5-7 shows interfaces on an 8ES2G card.

Figure 5-7 Interfaces on an 8ES2G card



1. Eight 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 5-6 lists GE electrical interface attributes.

Table 5-6 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab

Attribute	Description
Interface attribute	MDI/MDIX NOTE <ul style="list-style-type: none"> ● 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.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	6.6 Ethernet Cable

Technical Specifications

Table 5-7 lists technical specifications of the 8ES2G.

Table 5-7 8ES2G technical specifications

Item	Specification
Card type	WSIC
External interfaces	Eight GE electrical interfaces
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface speed	10/100/1000 Mbit/s auto-sensing
Connector type	RJ45
Cable	6.6 Ethernet Cable
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 7 W ● Weight: 0.7kg (1.54 lb)

Item	Specification
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: -40°C to 65°C (-40°F to +149°F). The card can work reliably for 24 hours under within a temperature range of -40°C to +70°C (-40°F to +158°F). ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +85°C (-40°F to +185°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404 ft.)
Safety standards compliance	<ul style="list-style-type: none"> ● 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 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>
EMC standards compliance	<ul style="list-style-type: none"> ● 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 ● IEC 61850-3 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>
Environmental standards compliance	<ul style="list-style-type: none"> ● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>

Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (<http://e.huawei.com>).

Table 5-8 provides the ordering information.

Table 5-8 Ordering information

Part Number	Card Name	Card Description
02311MKN	8ES2G	8-port 1000BASE (RJ45) L2 Ethernet interface card (industry)

5.2.2 8ES2GS (8-Port 1000BASE (SFP) L2 Ethernet Interface Card (Industry))

Card Overview

The 8ES2GS can be used in industrial environments to provide gigabit Ethernet access. It is a WSIC card with eight GE optical interfaces, which can be connected to switches with optical interfaces.

Figure 5-8 shows the appearance of the 8ES2GS.

Figure 5-8 8ES2GS card appearance



Version Mapping

Table 5-9 describes the mapping between the 8ES2GS and software versions.

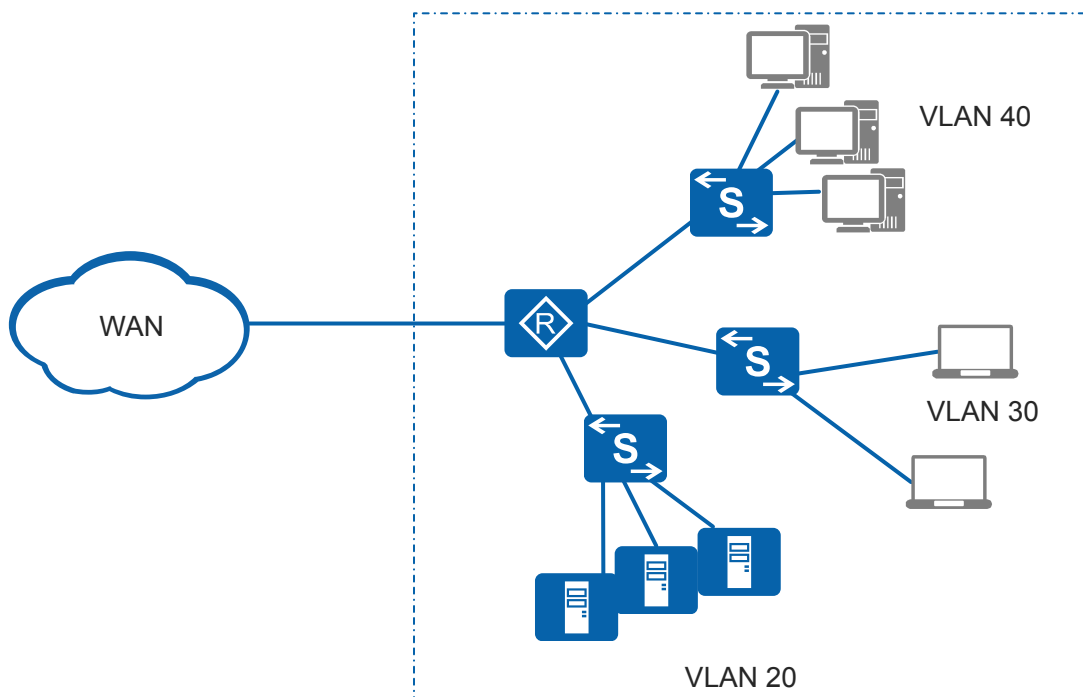
Table 5-9 Mapping between the 8ES2GS and software versions

Card Name	AR2500 Series
8ES2GS	Supported in V200R008C00 and later versions

Application

The 8ES2GS provides gigabit Ethernet access in an industrial environment, as shown in **Figure 5-8**. GE optical interfaces on the card can be connected to optical interfaces of switches using optical fibers, enabling long-distance data transmission.

Figure 5-9 8ES2GS card application



Functions and Features

Table 5-10 describes functions and features of the 8ES2GS.

Table 5-10 Functions and features of the 8ES2GS

Function and Feature	Description
Eight GE interfaces	Each interface provides up to 1000 Mbit/s line-rate 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.
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

Figure 5-10 shows the indicators on an 8ES2GS card, and **Table 5-11** describes the indicator states and meanings.

Figure 5-10 Indicators on an 8ES2GS card

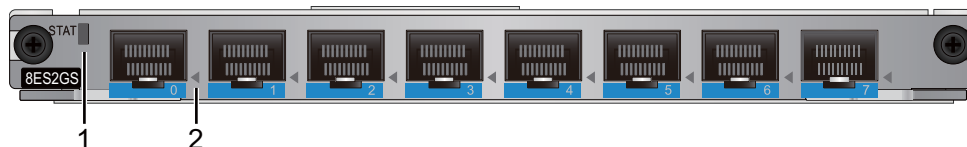


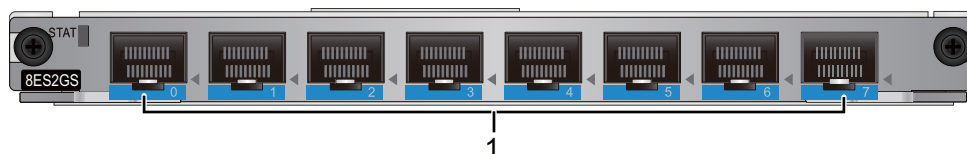
Table 5-11 8ES2GS card indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking green: The system is running properly. Fast blinking green: 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	GE optical interface indicators	Green	Steady on: A link has been established on the interface. Blinking: Data is being transmitted or received on the interface. Off: No link is established or no data is being transmitted or received on the interface.

Interface Description

Figure 5-11 shows interfaces on an 8ES2GS card.

Figure 5-11 Interfaces on an 8ES2GS card



1. Eight GE optical interfaces

GE Optical Interface

A GE optical interface transmits and receives Ethernet services at 1000 Mbit/s. [Table 5-12](#) lists GE optical interface attributes.

Table 5-12 GE optical interface attributes

Attribute	Description
Connector type	SFP
Standards compliance	IEEE802.3z
Rate	1000 Mbit/s
Cable type	<ul style="list-style-type: none"> ● Optical fiber (inserted in an optical module) and GE Optical Module ● 6.6 Ethernet Cable and GE Copper Module

Technical Specifications

[Table 5-13](#) lists technical specifications of the 8ES2GS.

Table 5-13 8ES2GS technical specifications

Item	Specification
Card type	WSIC
External interfaces	Eight GE optical interfaces
Standards compliance	IEEE 802.3z
Interface speed	1000 Mbit/s
Connector type	SFP
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 11 W ● Weight: 0.7kg (1.54 lb)

Item	Specification
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: -40°C to +65°C (-40°F to +149°F). The card can work reliably for 24 hours under within a temperature range of -40°C to +70°C (-40°F to +158°F). ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +85°C (-40°F to +185°F) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404 ft.)
Safety standards compliance	<ul style="list-style-type: none"> ● 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 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>
EMC standards compliance	<ul style="list-style-type: none"> ● 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 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>
Environmental standards compliance	<ul style="list-style-type: none"> ● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>

Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (<http://e.huawei.com>).

Table 5-14 provides the ordering information.

Table 5-14 Ordering information

Part Number	Card Name	Card Description
02311MKP	8ES2GS	8-port 1000BASE (SFP) L2 Ethernet interface card (industry)

5.3 WAN Interface Cards

5.3.1 8AS (8-Port Async Serial Port Interface Card)

Card Overview

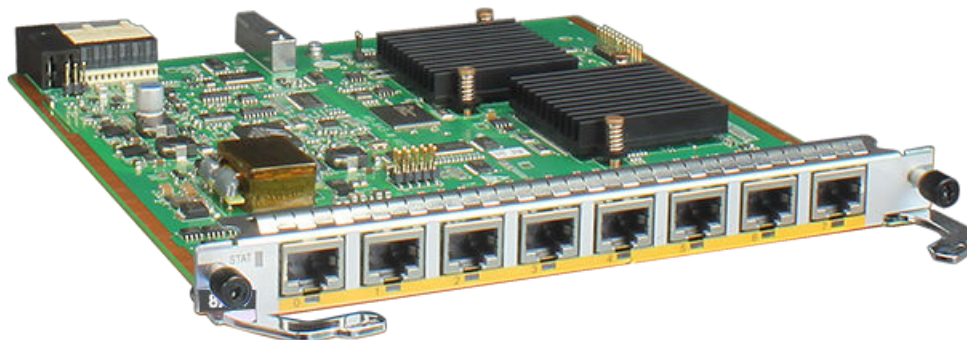
 **NOTE**

- 8: indicates eight interfaces.
- AS: indicates asynchronous serial interface.

An 8AS card is a WSIC card with eight asynchronous serial interfaces, and can work in protocol or flow mode. It can be connected to a public switched telephone network (PSTN) through a modem or be used as a serial port server to provide remote management for terminals.

Figure 5-12 shows the appearance of an 8AS card.

Figure 5-12 8AS card appearance



Version Mapping

Table 5-15 describes the mapping between the 8AS and software versions.

Table 5-15 Mapping between the 8AS and software versions

Card Name	AR2500 Series
8AS	Supported in V200R008C00 and later versions

Application

An 8AS card can be used for:

- WAN Interconnection: Connecting to a PSTN Through a Modem
- Remote Management: Serial Port Server

WAN Interconnection: Connecting to a PSTN Through a Modem

As shown in [Figure 5-13](#), enterprise A and enterprise B deploy AR routers with 8AS cards on their campus networks, which connect to the PSTN through modems. Either enterprise can initiate a connection request to the other enterprise. A connection will be set up between the two enterprises only when they need to communicate, reducing communication fees.

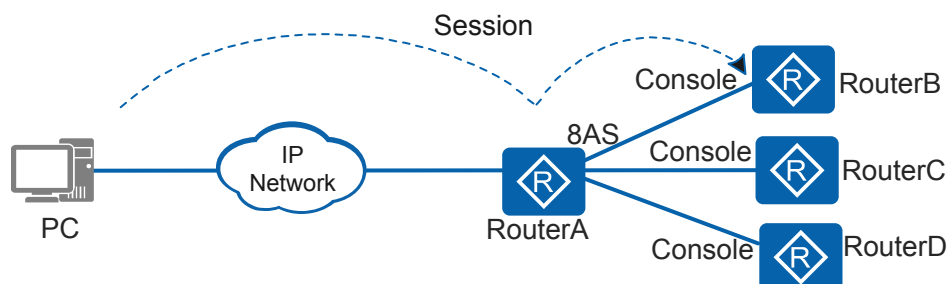
Figure 5-13 Enterprise communication through modems



Remote Management: Serial Port Server

In telecommunications and financial service industries, some terminals support only serial port access or do not support Telnet. In this case, an 8AS card can be configured as a serial port server to provide the serial port redirection function. As shown in [Figure 5-14](#), routers that do not support Telnet are connected to the 8AS card in RouterA, and a remote PC can be used to configure and manage these routers based on their IP addresses and serial ports connected to them.

Figure 5-14 Remote management through serial port redirection



Functions and Features

[Table 5-16](#) describes functions and features of the 8AS.

Table 5-16 Functions and features of the 8AS

Function and Feature	Specification
Asynchronous serial interfaces	An 8AS card can provide access to a PSTN through a modem or act as a serial port server.
Basic function	An 8AS card can be used as a dialup access server for a small or medium ISP. In this case, the asynchronous serial interfaces provide the dial-up function.
	An 8AS card can be used as a serial port server, through which a user can log in to other devices.
Interface speed	Each asynchronous serial interface provides a maximum of 115.2 kbit/s transmission rate
Protocol	<ul style="list-style-type: none"> When working in protocol mode, an 8AS card supports the PPP protocol at the link layer and IP protocol at the network layer. When working in flow mode, an 8AS card does not support any link-layer protocol or IP protocol.

Indicators and Interfaces

[Figure 5-15](#) shows the indicators on an 8AS card, and [Table 5-17](#) describes the indicator states and meanings.

Figure 5-15 Indicators on an 8AS card

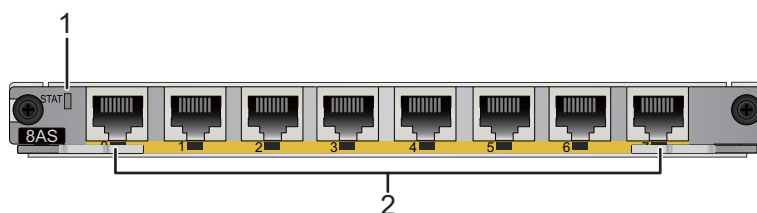


Table 5-17 8AS card indicator description

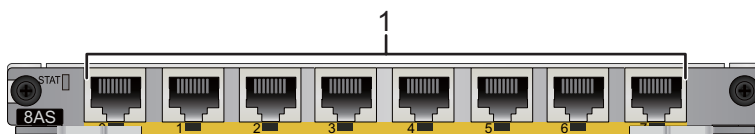
Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is powering on or restarting.

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	The system software is not running or is resetting.
2	LINK (interface status indicator)	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.

Interface Description

Figure 5-16 shows interfaces on an 8AS card.

Figure 5-16 Interfaces on an 8AS card



1. Eight asynchronous serial interfaces (RJ45)

Asynchronous serial interface

Asynchronous serial interfaces are commonly used WAN interfaces. They can be used to set up private asynchronous connections for an enterprise, and provide modem dial-up access, data backup, and remote terminal access functions. Table 5-18 lists attributes of an asynchronous serial interface.

Table 5-18 Asynchronous serial interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance and working mode	RS232
Minimum baud rate	600 bit/s
Maximum baud rate	115.2 kbit/s

Attribute	Description
Services provided	<ul style="list-style-type: none"> ● Modem dial-up access ● Data backup ● Private asynchronous connection ● Terminal access
Cable type	6.19 8AS Cable

Technical Specifications

Table 5-19 lists technical specifications of an 8AS card.

Table 5-19 8AS technical specifications

Item	Specification
Card type	WSIC
External interfaces	8 asynchronous serial interfaces
Standards compliance	RS232
Interface speed	600 bit/s to 115200 bit/s
Connector type	RJ45
Cable	6.19 8AS Cable
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	<ul style="list-style-type: none"> ● Dimensions (W x D x H): 201 mm x 223.5 mm x 19.82 mm (7.91 in. x 8.8 in. x 0.78 in.) ● Maximum power consumption: 15.1 W ● Weight: 0.6 kg (1.32 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: -40°C to +65°C (-40°F to +149°F) ● Storage temperature: -40°C to +70°C (-40°F to +158°) ● Operating relative humidity: 5% to 95%, noncondensing ● Operating altitude: 0 m to 5000 m (0 ft. to 16404 ft.)

Item	Specification
Safety standards compliance	<ul style="list-style-type: none"> ● 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 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>
EMC standards compliance	<ul style="list-style-type: none"> ● 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 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>
Environmental standards compliance	<ul style="list-style-type: none"> ● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>

Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (<http://e.huawei.com>).

Table 5-20 provides the ordering information.

Table 5-20 Ordering information

Part Number	Card Name	Card Description
02311MKL	8AS	8-port async serial port interface card

5.3.2 1LTE-L-H (FDD/HSPA+ Industrial Data Card)

Card Overview

The 1LTE-L-H is a high-speed wireless WAN access module. It is installed in a WSIC slot to provide high-speed wireless data transmission, enabling enterprise users to connect to Long Term Evolution (LTE) networks.

Figure 5-17 shows the appearance of the 1LTE-L-H card.

Figure 5-17 1LTE-L-H appearance



Version Mapping

Table 5-21 describes the mapping between the 1LTE-L-H card and software versions.

Table 5-21 Mapping between the 1LTE-L-H card and software versions

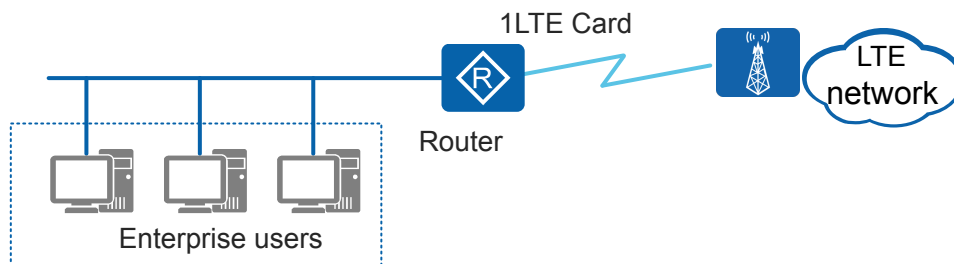
Card Name	AR2500 Series
1LTE-L-H NOTE The card is supported in V200R008C20 and later versions.	Supported

Application

- **LTE network access**

As shown in **Figure 5-18**, enterprise users can connect to an LTE network through a 1LTE-L-H card. The 1LTE-L-H card provides fast, secure, reliable wireless access service for enterprise users.

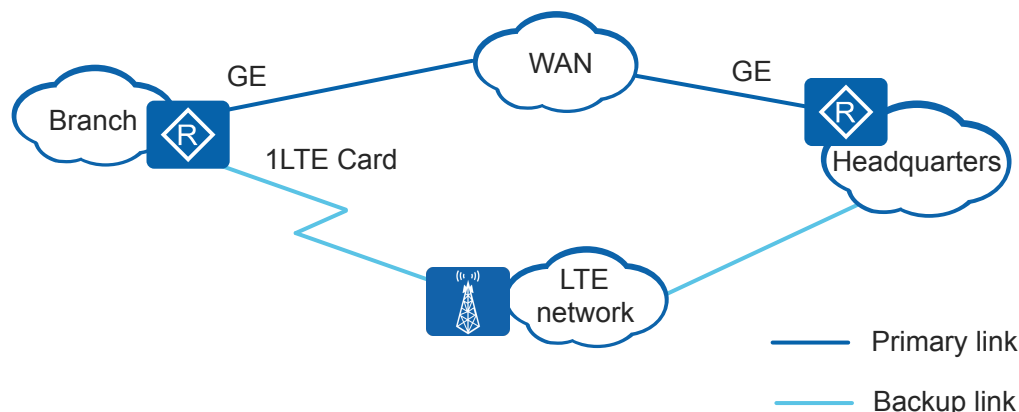
Figure 5-18 LTE network access



- **LTE link as a backup link**

As shown in [Figure 5-19](#), an enterprise's headquarters and branch networks connect to the WAN through GE interface cards and connect to an LTE network through 1LTE-L-H 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 1LTE-L-H cards improves communication reliability between the enterprise headquarters and branch.

Figure 5-19 LTE link as a backup link



Functions and Features

[Table 5-22](#) describes functions and features of the 1LTE-L-H card.

Table 5-22 Functions and features of the 1LTE-L-H

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.

Function and Feature	Description
High bandwidth	Supports frequency division duplex (FDD) LTE and provides up to 50 Mbit/s uplink rate at 20 MHz channel bandwidth (category 4) and 150 Mbit/s downlink rate.
Good 4G experience	Provides end-to-end QoS guarantee through the dial-on-demand function.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technology.
Flexible wireless working mode	Backward compatible with 3G services.
	Supports FDD LTE, Dual Carrier High Speed Packet Access Plus (DC-HSPA+), HSPA+, HSPA, Wideband Code Division Multiple Access (WCDMA), Global System for Mobile Communications (GSM), general packet radio system (GPRS), and Enhanced Data rates for GSM Evolution (EDGE) standards.
	Provides a 4G wireless access solution 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

Figure 5-20 shows indicators on the 1LTE-L-H panel, and **Table 5-23** describes the indicator states and meanings.

Figure 5-20 Indicators on the 1LTE-L-H panel

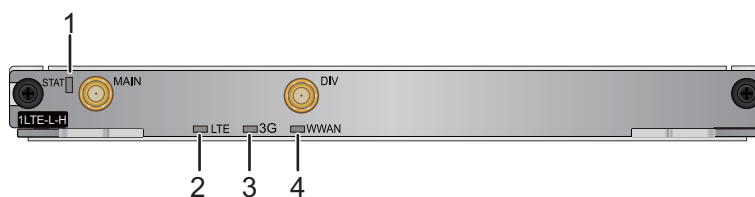
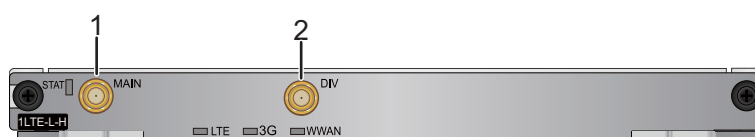


Table 5-23 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system 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.

Figure 5-21 shows interfaces on the 1LTE-L-H card.

Figure 5-21 Interfaces on the 1LTE-L-H card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface
----------------------------------	------------------------------------

LTE antenna interface

An RF antenna interface connects to an RF antenna to receive and transmit wireless data.

Table 5-24 lists the attributes of an RF antenna interface.

Table 5-24 RF antenna interface attributes

Attribute	Description
Connector type	SMA
Standards compliance	IEEE802.15.4g
Frequency bands supported	433 MHz
Rate	2.4 Mbit/s
Cable type	6.3.6 433 MHz RF Remote Antenna

Technical Specifications

Table 5-25 lists technical specifications of the 1LTE-L-H card.

Table 5-25 1LTE-L-H card technical specifications

Item	Specification
Card type	WSIC
External interfaces	One primary LTE antenna interface and one secondary LTE antenna interface
Standards compliance	Frequency-Division Duplex (FDD) LTE, Dual Carrier High Speed Packet Access Plus (DC-HSPA+), HSPA+, HSPA, Wideband Code Division Multiple Access (WCDMA), Global System for Mobile Communications (GSM), general packet radio system (GPRS), Enhanced Data rates for GSM Evolution (EDGE)

Item	Specification
Interface speed	<ul style="list-style-type: none"> ● GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s ● EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s ● WCDMA circuit switched (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 ● HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s ● DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 43.2 Mbit/s ● LTE FDD: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
Connector type	SMA-K (Screw threads outside and hole inside)
Cable	6.3.2 LTE Whip Antenna
Hot swap	Supported
In-service upgrade	In-service upgrade through the system management channel
Physical specifications	<ul style="list-style-type: none"> ● 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: 7.3 W ● Weight: 0.58 kg (1.28 lb)
Environment parameters	<ul style="list-style-type: none"> ● Operating temperature: -40°C to +65°C (-40°F to +149°) ● Operating relative humidity: 5% to 95%, noncondensing ● Storage temperature: -40°C to +85°C (-40°F to +185°) ● Operating altitude: 0 m to 5000 m (0 ft. to 16404 ft.)
Safety standards compliance	<ul style="list-style-type: none"> ● 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 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>

Item	Specification
EMC standards compliance	<ul style="list-style-type: none"> ● 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 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>
Environmental standards compliance	<ul style="list-style-type: none"> ● RoHS ● ETSI EN 300 019-2-1 ● ETSI EN 300 019-2-2 ● ETSI EN 300 019-2-3 <p>For details, see the <i>Huawei AR500&AR530&AR550&AR2500 Series Enterprise Routers Safety and Regulatory Compliance Information</i>.</p>

Ordering Information

To place an order, contact the Huawei local office. To download the system software, visit the Huawei Enterprise website (<http://e.huawei.com>).

Table 5-26 provides the ordering information.

Table 5-26 1LTE-L-H ordering information

Part Number	Card Name	Card Description
02311NTA	1LTE-L-H	FDD/HSPA+ industrial data card

6 Cables

About This Chapter

- 6.1 Power Cables
- 6.2 Wiring Terminal
- 6.3 Antennas
- 6.4 Serial Cable (CON/RS232)
- 6.5 6-pin Serial Cable
- 6.6 Ethernet Cable
- 6.7 RS232 Cable
- 6.8 Ground Cable
- 6.9 Standard Telephone Cable
- 6.10 Optical Fiber
- 6.11 Audio Cable
- 6.12 DB25 Audio and Video Cable
- 6.13 3.5 mm Headset Cable
- 6.14 CVBS Video Cable
- 6.15 VGA Video Cable
- 6.16 HDMI Video Cable
- 6.17 20-Pin Boolean Input/Output Cable
- 6.18 Console Cable
- 6.19 8AS Cable

6.1 Power Cables

6.1.1 4-Pin Power Cable (Without Terminals)

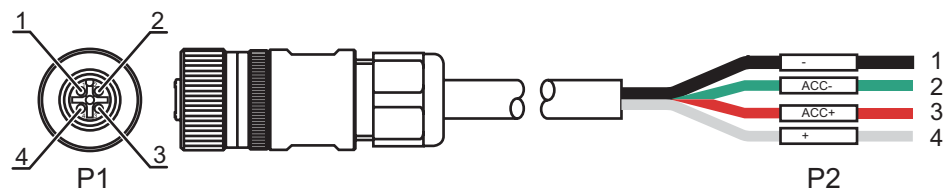
Description

A 4-pin 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).

Appearance and Structure

Figure 6-1 shows the structure of a power cable.

Figure 6-1 Structure of a power cable



Specifications

None

Pin Assignments

Table 6-1 lists the pin assignments of a 4-pin power cable.

Table 6-1 Pin assignments of a 4-pin power cable

Connector P1	Connector P2	Wire Color
1	-	Black
2	ACC-	Green
3	ACC+	Red
4	+	White

Connection

A 4-pin 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.

Ordering Information

None

6.1.2 4-Pin Power Cable (with Terminals)

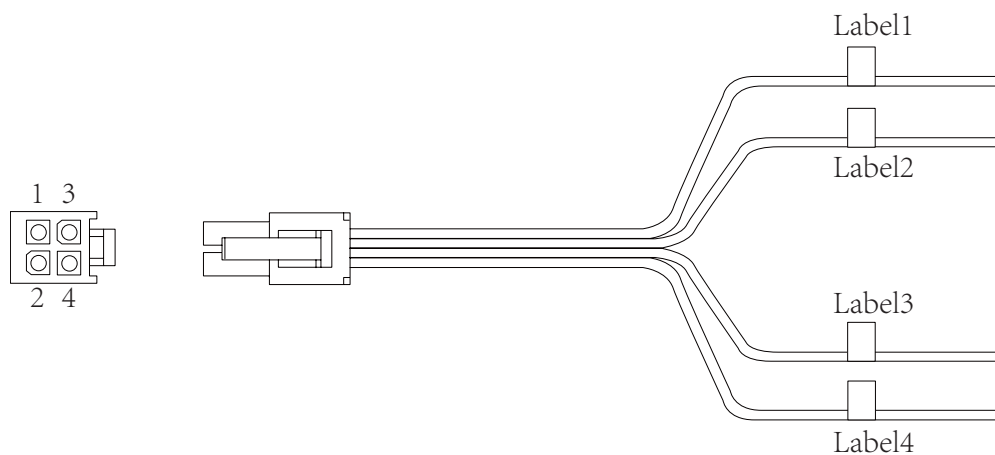
Description

A 4-pin power cable consists of a 4-pin output terminal block at one end and connects to a vehicle-mounted device to be powered at the other end.

Appearance and Structure

Figure 6-2 shows the structure of a 4-pin power cable.

Figure 6-2 Structure of a 4-pin power cable



Specifications

None

Pin Assignments

Table 6-2 lists the pin assignments of a 4-pin power cable.

Table 6-2 Pin assignments of a 4-pin power cable

Connector P1	Label	Signal
1	Label1	12 V
2	Label2	5 V
3	Label3	GND

Connector P1	Label	Signal
4	Label4	GND

Connection

A 4-pin power cable is connected as follows:

- The 4-pin terminal block at one end is connected to the 4-pin Mini-Fit interface on a router.
- The other end is connected to an in-vehicle peripheral, for example, a monitor with a 12 V input power supply.

Ordering Information

Table 6-3 provides the 4-pin power cable ordering information.

Table 6-3 4-pin power cable ordering information

Part Number	Description	Remarks
04152259	Power Cable, 0.3m,H2X2(4.2), 2*18UL1007R +2*18UL1007B,4*Transfer connector 1pin,Only for AR515C	Optional

6.1.3 eSATA Power and Signal Cable

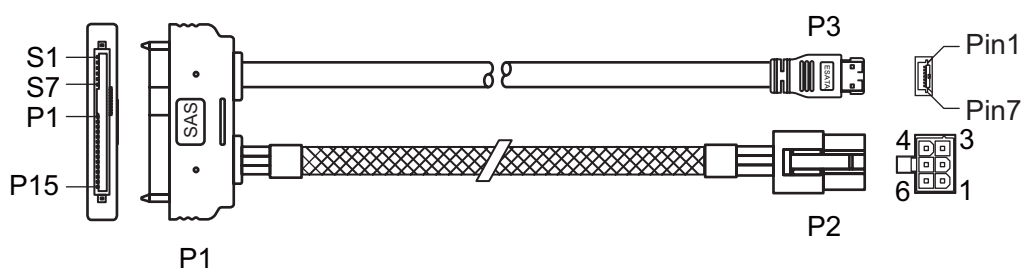
Description

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.

Appearance and Structure

Figure 6-3 shows the structure of an eSATA power and signal cable.

Figure 6-3 Structure of an eSATA power and signal cable



Specifications

None

Pin Assignments

Table 6-4 lists the pin assignments of an eSATA power and signal cable.

Table 6-4 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	-	-
	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 6-5 provides the eSATA power and signal cable ordering information.

Table 6-5 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

6.1.4 60 W Open Frame Power Supply Cable

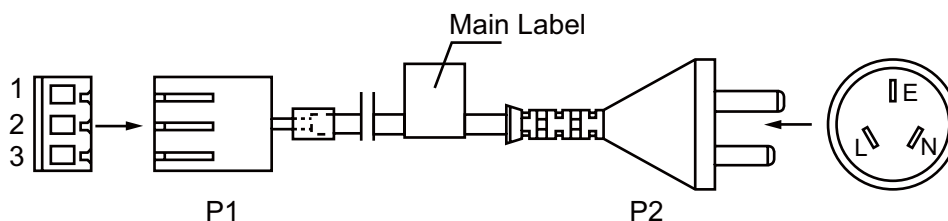
Description

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.

Appearance and Structure

Figure 6-4 shows the structure of a 60 W open frame power supply cable used in China.

Figure 6-4 Structure of a 60 W open frame power supply cable



Specifications

None

Pin Assignments

Table 6-6 lists the pin assignments of a 60 W power cable for open frame power supply.

Table 6-6 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 6-7 provides ordering information of the 60 W open frame power supply cable.

Table 6-7 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

6.1.5 Power Adapter Plate Cable

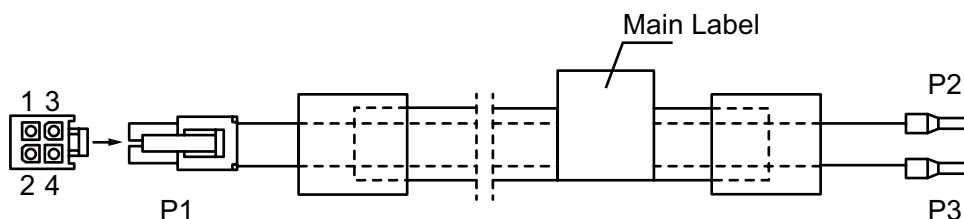
Description

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.

Appearance and Structure

Figure 6-5 shows the structure of a power adapter plate cable.

Figure 6-5 Structure of a power adapter plate cable



Specifications

None

Pin Assignments

Table 6-8 lists the pin assignments of a power adapter plate cable.

Table 6-8 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 6-9 provides the power adapter plate cable ordering information.

Table 6-9 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

6.2 Wiring Terminal

6.2.1 2-Pin DC Power Terminal

Description

A 2-pin DC power cable consists of a 2-pin DC terminal block and power wires made onsite. Make the power wires according to the power supply requirements and connect them to the power supply system.

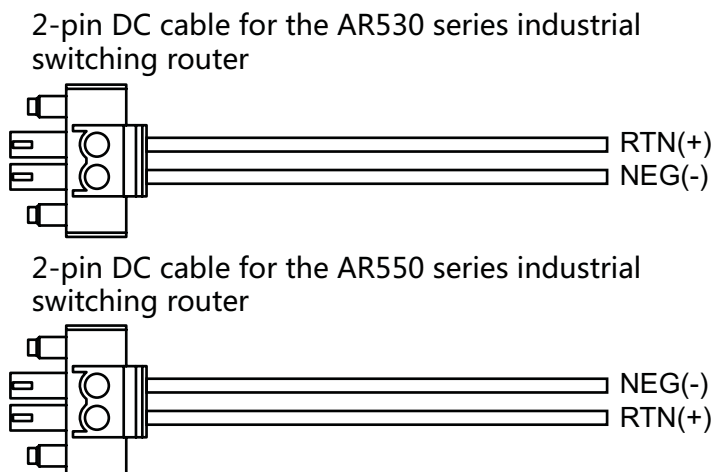
The 2-pin DC terminal block can prevent damages to the industrial switching router caused by reverse connection of the power wires. Once the positive and negative wires are reversely connected to power terminals, the industrial switching router will not be powered on.

The AR530 series and AR550 series use 2-pin DC power cables with different wire sequences. Select the appropriate 2-pin DC power cable for the router you use.

Appearance and Structure

Figure 6-6 shows the structure of a 2-pin DC power terminal.

Figure 6-6 Structure of a 2-pin DC power terminal



Specifications

To meet current (lower than 2 A) and ambient temperature requirements, you are advised to use power wires with 1.0 mm² conductors. [Table 6-10](#) lists the required specifications of a 2-pin DC cable.

Table 6-10 Specifications of a 2-pin DC cable

Conductor Type	Minimum Conductor Cross-Sectional Area	Maximum Conductor Cross-Sectional Area
Solid	0.5 mm ² or 20 AWG	1.5 mm ² or 16 AWG
Twisted	0.5 mm ² or 20 AWG	1.5 mm ² or 16 AWG

Pin Assignments

[Table 6-11](#) lists the pin assignments of a 2-pin DC power terminal.

Table 6-11 Pin assignments of a 2-pin DC power terminal

X1	Signal
1	RTN (+)
2	NEG (-)

Connection

A 2-pin DC power cable is connected as follows:

- The 2-pin DC terminal block is connected to the DC power socket of an industrial switching router.

- Wires at the other end are connected to a DC power supply device.

Ordering Information

Table 6-12 provides the 2-pin DC terminal block ordering information.

Table 6-12 2-pin DC terminal block ordering information

Part Number	Description
14180269	Terminal Block, 2, plug, 1.5MM2, pitch 3.81mm

6.2.2 3-Pin Phoenix Connector (DO)

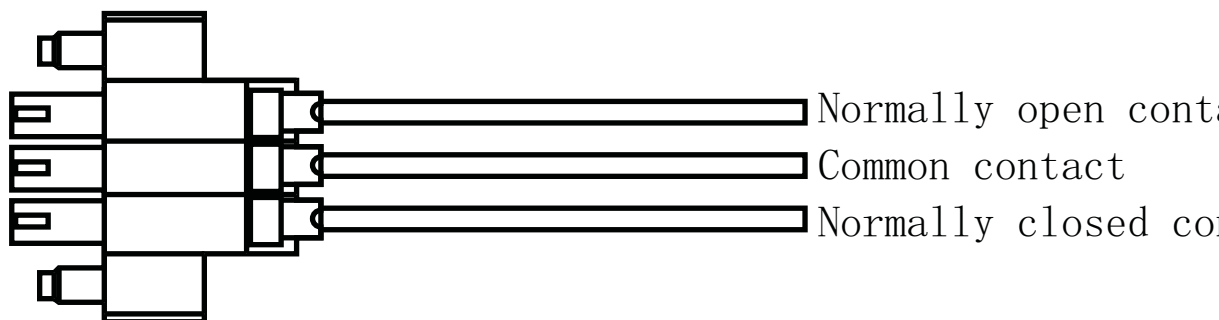
Description

A 3-pin phoenix connector (DO) output cable has a 3-pin input connector at one end, and wires at the other end are connected to digital input devices.

Appearance and Structure

Figure 6-7 shows the structure of a 3-pin phoenix connector (DO).

Figure 6-7 Structure of a 3-pin phoenix connector (DO)



Specifications

Table 6-13 lists the required specifications of a Boolean output cable. To meet current (lower than 2 A) and ambient temperature requirements, you are advised to use 3-pin phoenix connector (DO) output cables with 1.0 mm² conductors.

Table 6-13 Specifications of a 3-pin phoenix connector (DO) output cable

Conductor Type	Minimum Conductor Cross-Sectional Area	Maximum Conductor Cross-Sectional Area
Solid	0.5 mm ² or 20 AWG	1.5 mm ² or 16 AWG
Twisted	0.5 mm ² or 20 AWG	1.5 mm ² or 16 AWG

Pin Assignments

None

Connection

A 3-pin phoenix connector (DO) output cable is connected as follows:

- The 3-pin phoenix connector (DO) is connected to Boolean output interfaces on the local device.
- The 3-pin phoenix connector (DO) output cable at the other end is connected to external Boolean devices.

Ordering Information

Table 6-14 provides the 3-pin phoenix connector (DO) ordering information.

Table 6-14 3-pin phoenix connector (DO) ordering information

Part Number	Description	Remarks
14180412	Terminal Block, 3Pin, Straight Female, AWG28~16, Pitch 3.81mm, With flange	Standard configuration

6.2.3 3-Pin AC/DC Power Terminal

Description

3-pin AC/DC power cables consist of a 3-pin AC/DC input terminal block and power cables made onsite. Make the power wires according to the power supply requirements and connect them to the power supply system.

The 3-pin AC/DC input terminal block can prevent damages to the router caused by reverse connection of the power wires. Once the positive and negative wires are reversely connected to power terminals, the router will not be powered on.

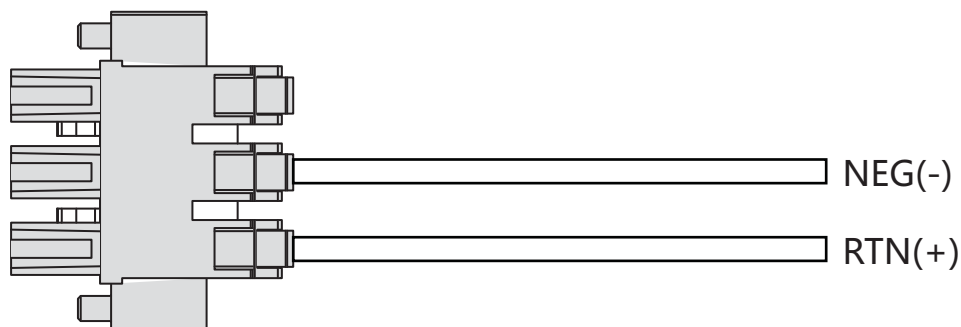
The 3-pin AC/DC input terminal block can be used for both AC and DC power cables. You can connect either AC or DC power cables to the terminal block as required, and connect the power cables to an external power supply system.

Appearance and Structure

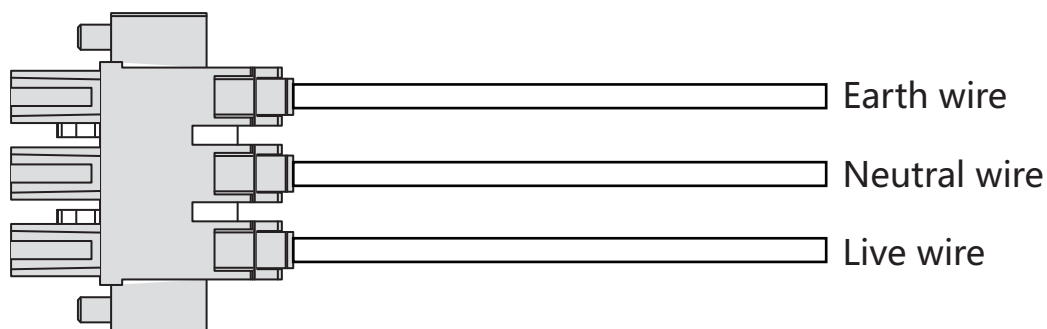
Figure 6-8 shows the structure of a 3-pin AC/DC power terminal.

Figure 6-8 Structure of a 3-pin AC/DC power terminal

Connected to a DC power supply system



Connected to an AC power supply system



Specifications

Table 6-15 lists the required specifications of 3-pin AC/DC power cables.

Table 6-15 Specifications of 3-pin AC/DC power cables

Cable	Minimum Cross-Sectional Area	Maximum Cross-Sectional Area
3-pin AC/DC power cable	0.5 mm ² or 20 AWG	2.5 mm ² or 12 AWG

Pin Assignments

None

Connection

3-pin AC power cables are connected as follows:

- The 3-pin AC/DC input terminal block is connected to the AC/DC input power socket of a 60 W power module.
- Cables at the other end are connected to an external power supply system.

Ordering Information

Table 6-16 provides the ordering information of the 3-pin AC/DC input terminal block.

Table 6-16 3-pin AC/DC input terminal block ordering information

Part Number	Description	Remarks
14180441	Combicon,1*3,Straight Male,20-14 AWG (UL),Pitch 7.62mm	Standard configuration

6.2.4 4-Pin DC Power Terminal (Square Shape)

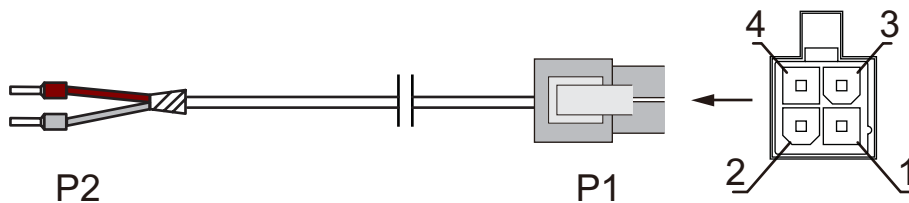
Description

A 4-pin DC power cable has a 4-pin DC connector at one end and two cord end terminals at the other end. Connect the cord end terminals to a power supply system.

Appearance and Structure

Figure 6-9 shows the structure of a 4-pin DC power terminal (square shape).

Figure 6-9 Structure of a 4-pin DC power terminal (square shape)



Pin Assignments

Table 6-17 lists the pin assignments of a 4-pin DC power terminal (square shape).

Table 6-17 Pin assignments of a 4-pin DC power terminal (square shape)

P2	Signal	P1
Red cable	12-24 V	1
-	NC	2

P2	Signal	P1
Black cable	GND	3
-	NC	4

Connection

A 4-pin DC power cable is connected as follows:

- The output terminals (P1) are connected to the DC power socket on a router.
- The input terminal (P2) is connected to an external DC power source.

Ordering Information

Table 6-18 provides the 4-pin DC power terminal (square shape) ordering information.

Table 6-18 4-pin DC power terminal (square shape) ordering information

Part Number	Description	Remarks
04151253	Power Cable, 1.0m, 18AWG, H2X2(4.20), 18UL1015B+18UL1015R, T1.0^2Y	Standard configuration

6.2.5 4-Pin DC Power Terminal (Circular Shape)

Description

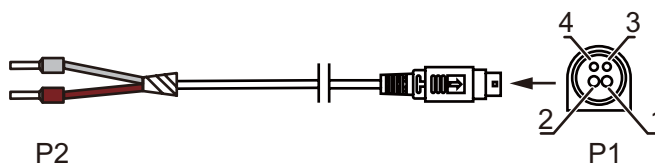
A 4-pin DC power cable connects to a router that uses a DC power module.

A 4-pin DC power cable consists of a 4-pin DC terminal block and power wires made onsite. Before making the power wires, understand the pin assignments and cable specifications.

Appearance and Structure

Figure 6-10 shows the structure of a 4-pin DC power terminal (circular shape).

Figure 6-10 Structure of a 4-pin DC power terminal (circular shape)



Pin Assignments

Table 6-19 lists the pin assignments of a 4-pin DC power terminal (circular shape).

Table 6-19 Pin assignments of a 4-pin DC power terminal (circular shape)

P1	Signal	P2
1	+12 V	Red cord-end terminal
2	+12 V	
3	GND	Black cord-end terminal
4	GND	

Connection

A 4-pin DC 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.

Ordering Information

None

6.2.6 4-Pin AC Power Terminal

Description

A 4-pin AC power cable consists of a 4-pin AC terminal block and power wires made onsite. Make the power wires according to the power supply requirements and connect them to the power supply system.

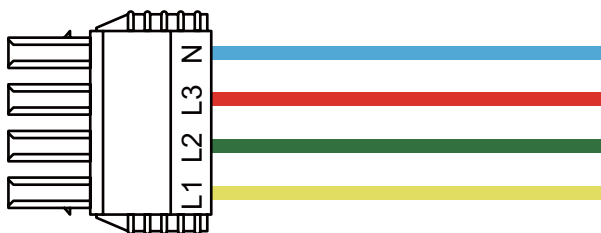
A 4-pin AC power cable supports single-phase and three-phase power supply. The cable wire connection method differs in the two power supply modes:

- For single-phase power supply, insert an N wire and any L wire into the corresponding holes on the terminal block.
- For three-wire power supply, insert wires L1, L2, L3, and N to the corresponding holes on the terminal block.

Appearance and Structure

Figure 6-11 shows the structure of a 4-pin AC power terminal.

Figure 6-11 Structure of a 4-pin AC power terminal



Specifications

Considering the current capacity, you are advised to use wires with 2.5 mm² to 4 mm² conductors for a 4-pin AC power cable. **Table 6-20** lists the required specifications of a 4-pin AC power cable.

Table 6-20 Specifications of a 4-pin AC power cable

Wire Type	Minimum Conductor Cross-Sectional Area	Maximum Conductor Cross-Sectional Area
Solid wire	0.5 mm ²	10 mm ²
Multi-core wire	0.5 mm ²	6 mm ²

Pin Assignments

Table 6-21 lists the pin assignments of a 4-pin AC power terminal.

Table 6-21 Pin assignments of a 4-pin AC power terminal

Pin Number	Wire Number	Wire Core
L1	L1	Yellow
L2	L2	Green
L3	L3	Red
N	N	Blue

Connection

A 4-pin AC power cable is connected as follows:

- The 4-pin AC terminal block is connected to the AC power socket of an industrial switching router.
- Wires at the other end are connected to an AC power supply device.

Ordering Information

Table 6-22 provides the 4-pin AC power terminal ordering information.

Table 6-22 4-pin AC power terminal ordering information

Part Number	Description	Remarks
14180357	Terminal Block, 4Pin, 24AWG-8AWG, 7.62mm	Standard configuration

6.2.7 RJ-45 Connector (DI/DO)

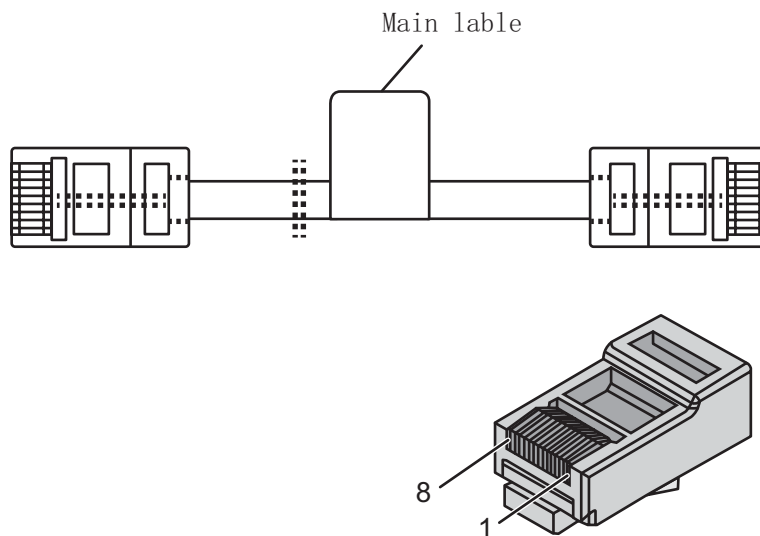
Description

A DI/DO cable consists of a group of twisted pairs and RJ-45 connectors at both ends.

Appearance and Structure

Figure 6-12 shows the structure of an RJ-45 connector (DI/DO).

Figure 6-12 Structure of an RJ-45 connector (DI/DO)



Pin Assignments

Table 6-23 lists the pin assignments of an RJ-45 connector (DI/DO).

Table 6-23 Pin assignments of an RJ-45 connector (DI/DO)

Pin	Definition	Attribute	Description
1	V33	Power supply, 3.3 V	3.3 V power supply, supporting a maximum output current of 0.5 A
2	DIDO0	IN/OUT, LVTTTL	Digital input/output pin, providing digital input by default after power-on

Pin	Definition	Attribute	Description
3	DIDO1	IN/OUT, LVTTTL	Digital input/output pin, providing digital input by default after power-on
4	DIDO2	IN/OUT, LVTTTL	Digital input/output pin, providing digital input by default after power-on
5	DIDO3	IN/OUT, LVTTTL	Digital input/output pin, providing digital input by default after power-on, pulled up to 3.3 V with a 4.7 kohm pull-up resistor
6	DIDO4	IN/OUT, LVTTTL	Digital input/output pin, providing digital input by default after power-on, pulled up to 3.3 V with a 4.7 kohm pull-up resistor
7	DIDO5	IN/OUT, LVTTTL	Digital input/output pin, providing digital input by default after power-on, pulled up to 3.3 V with a 4.7 kohm pull-up resistor
8	GND	Ground	Ground line

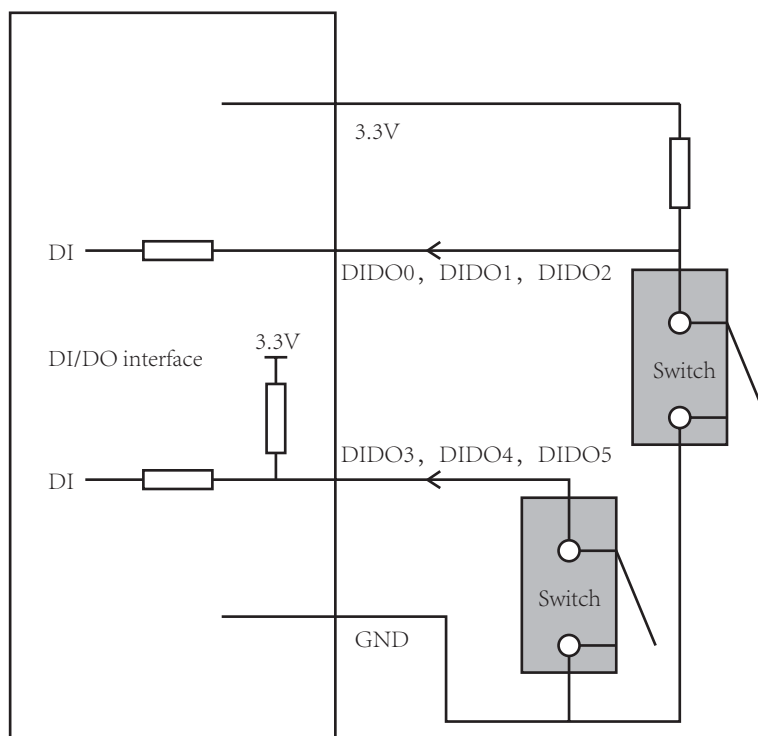
DI/DO Processing

- Use of the DI lines:
 - Connection of any of DI lines 0, 1, and 2: Connect one terminal on a switch to a DI line and to the 3.3 V power supply line through a 4.7 kohm pull-up resistor. Connect the other terminal on the switch to the GND line.
 - Connection of any of DI lines 3, 4, and 5: Connect one terminal on a switch to a DI line, and connect the other terminal on the switch to the GND line.

Determine the levels on the DI lines according to [Table 6-24](#).

Table 6-24 Levels on DI lines

Switch	DI Lines 0, 1, 2	DI Lines 3, 4, 5
Open	High level	High level
Closed	Low power	Low power

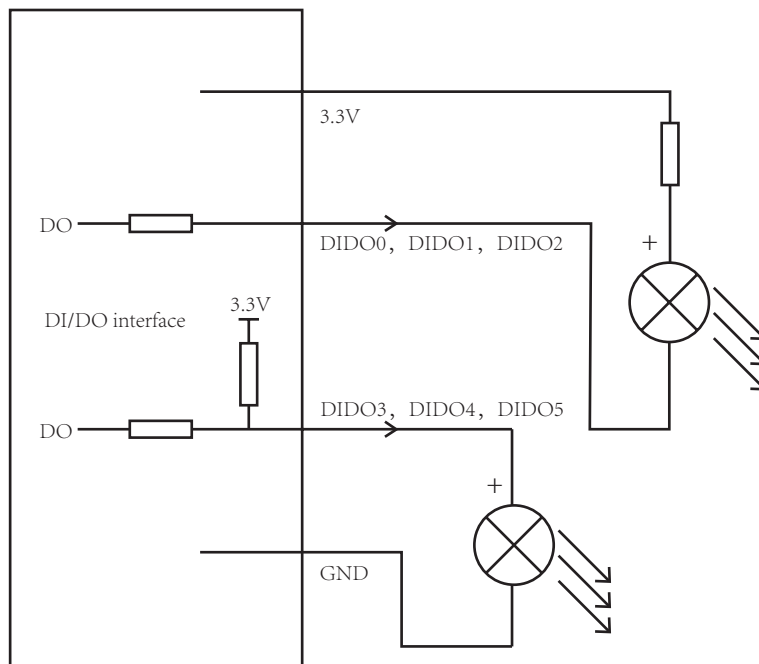


- Use of the DO lines:
 - Connection of any of DO lines 0, 1, and 2: Connect the positive pole of an LED to the 3.3 V power supply line a current-limiting resistor, and connect the negative pole of the LED to a DO line.
 - Connection of any of DO lines 3, 4, and 5: Connect the positive pole of an LED to a DO line and connect the negative pole to the GND line.

Determine the levels on the DO lines according to [Table 6-25](#).

Table 6-25 Levels on DO lines

LED	DO Lines 0, 1, 2	DO Lines 3, 4, 5
On	Low power	High level
Off	High level	Low power



Connection

None

Ordering Information

None

6.2.8 5-Pin Phoenix Connector (RS485/RS422)

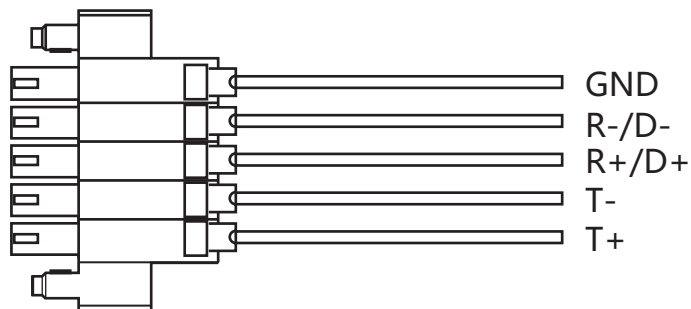
Description

An RS485/RS422 cable has a 5-pin terminal block at one end, and the other end can be connected to a meter or monitoring terminal.

Appearance and Structure

Figure 6-13 shows the structure of a 5-pin phoenix connector (RS485/RS422).

Figure 6-13 Structure of a 5-pin phoenix connector (RS485/RS422)



Specifications

To meet current (lower than 2 A) and ambient temperature requirements, you are advised to use wires with 1.0 mm² conductors to assemble the RS485/RS422 cable. [Table 6-26](#) lists required specifications of an RS485/RS422 cable.

Table 6-26 Specifications of an RS485/RS422 cable

Conductor Type	Minimum Conductor Cross-Sectional Area	Maximum Conductor Cross-Sectional Area
Solid	0.5 mm ² or 20 AWG	1.5 mm ² or 16 AWG
Twisted	0.5 mm ² or 20 AWG	1.5 mm ² or 16 AWG

Pin Assignments

For RS485 connection, turn pins 1 and 2 of the DIP switch to the ON position. For RS422 connection, turn pins 1 and 2 of the DIP switch to the OFF position. [Table 6-27](#) describes the DIP switch settings.

Table 6-27 DIP switch settings

Switch and State	Pin and State	Pin and State	Pin and State	Pin and State	Pin and State
SW	5	4	3	2	1
	Pull low	Pull high	Terminator	Duplex	
ON	510 Ω	510 Ω	120 Ω	Half	Half
OFF	150 kΩ	150 kΩ	-	Full	Full

In some critical environments, you may need to add termination resistors to prevent serial signal reflection. When using termination resistors, you must set the pull high/low resistors correctly to prevent electrical signals from being corrupted. Because a specific pull/low resistor value cannot suit all environments, the AR500 series routers use DIP switches to set the pull high/low resistor values for the serial port.

- To set the terminal resistor to 150 kohm, put pins 4 and 5 to the OFF position. (This is the default state setting.)
- To set the terminal resistor to 510 Ω, put pins 4 and 5 to the ON position.

NOTICE

Do not set the terminal resistor to 510 Ω the RS422 interface is used. This setting will degrade the quality of RS422 signals and shortens the maximum communication distance.

Connection

The 5-pin phoenix connector (RS485/RS422) cable can be assembled with cables differently to provide RS485 or RS422 connection.

- For RS485 connection, insert three cables to the D+, D-, and GND holes on the 5-pin terminal block.
- For RS422 connection, insert five cables to the T+, T-, R+, R-, and GND holes on the 5-pin terminal block.

A 5-pin phoenix connector (RS485/RS422) cable is connected as follows:

- The 5-pin terminal block is connected to the RS485/RS422 interface on a router.
- The other end is connected to a meter with an RS485 interface or a monitoring terminal with an RS485/RS422 interface.

6.2.9 5-Pin M12 DC Power Terminal

Description

A 5-pin M12 DC power terminal 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).

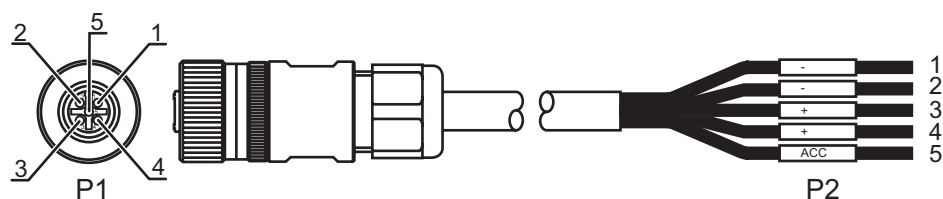
 **NOTE**

Either the ACC pin or a positive pole pin needs to be connected to an external power supply to supply power to the device.

Appearance and Structure

Figure 6-14 shows the structure of a 5-pin M12 DC power terminal.

Figure 6-14 Structure of a 5-pin M12 DC power terminal



Pin Assignments

Table 6-28 lists the pin assignments of a 5-pin M12 DC power terminal.

Table 6-28 Pin assignments of a 5-pin M12 DC power terminal

Connector P1	Connector P2
1	-

Connector P1	Connector P2
2	-
3	+
4	+
5	ACC

Connection

A 5-pin M12 DC power terminal 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.

Ordering Information

None

6.2.10 4-Pin M12 DC Power Terminal

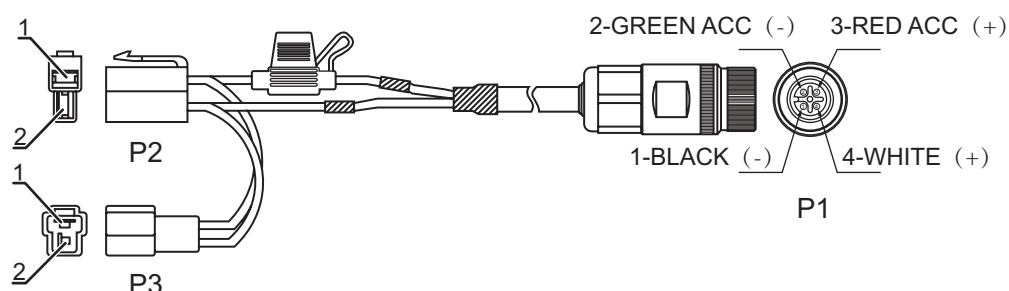
Description

A 4-pin M12 DC power cable connects to the power socket of a router at one end and connects to the P2 or P3 connector at the other end.

Appearance and Structure

Figure 6-15 shows the structure of a 4-pin M12 DC power terminal.

Figure 6-15 Structure of a 4-pin M12 DC power terminal



Pin Assignments

A 4-pin M12 DC power terminal can connect to an AR511GW-LM7 and AR503GW-LM7. The pin assignments vary according to the connected router.

Table 6-29 lists the pin assignments of a power cable for the AR511GW-LM7.

Table 6-29 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 6-30 lists the pin assignments of a power cable for the AR503GW-LM7.

Table 6-30 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	-	-
4	White	1	1

Connection

A 4-pin M12 DC power terminal 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.

Ordering Information

None

6.2.11 8-Pin Phoenix Connector (RS485/DI)

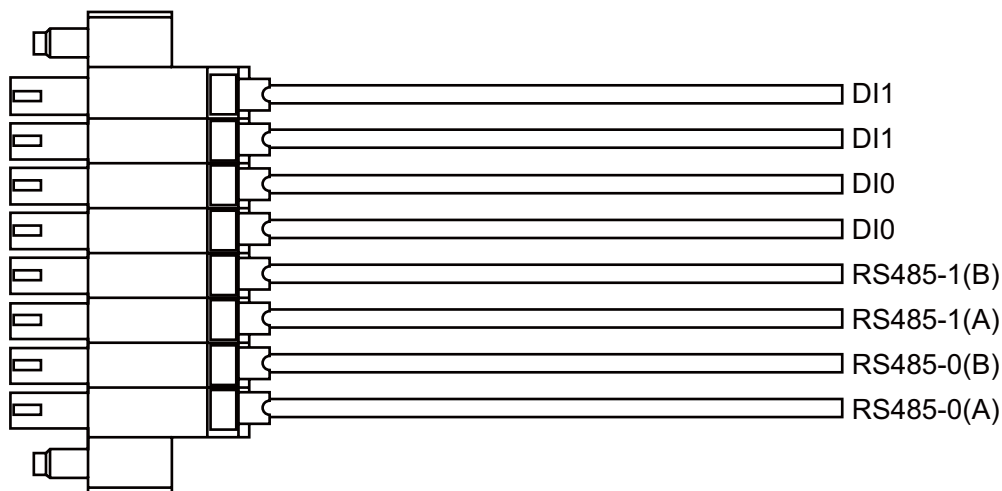
Description

An RS485 and DI cable has an 8-pin phoenix connector, which is connected to RS485 and DI interfaces on an industrial switching router. Wires at the other end are connected to electricity meters and digital input devices.

Appearance and Structure

Figure 6-16 shows the structure of an RS485 and DI cable.

Figure 6-16 Structure of an RS485 and DI cable



Specifications

Table 6-31 lists required specifications of an RS485 and DI cable. To meet current (lower than 2 A) and ambient temperature requirements, you are advised to use power wires with 1.0 mm² conductors.

Table 6-31 Specifications of an RS485 and DI cable

Conductor Type	Minimum Conductor Cross-Sectional Area	Maximum Conductor Cross-Sectional Area
Solid	0.5 mm ² or 20 AWG	1.5 mm ² or 16 AWG
Twisted	0.5 mm ² or 20 AWG	1.5 mm ² or 16 AWG

Pin Assignments

None

Connection

An RS485 and DI cable is connected as follows:

- The 8-pin phoenix connector is connected to RS485 and DI interfaces on the local device.
- At the other end, the RS485 wires are connected to electricity meters or other devices that have RS485 interfaces, and the DI wires are connected to digital input devices.

Ordering Information

Table 6-32 provides the 8-pin phoenix connector (RS485/DI) ordering information.

Table 6-32 8-pin phoenix connector (RS485/DI) ordering information

Part Number	Description	Remarks
14180359	Terminal Block, 8Pin, straight spring terminal, Female, AWG28-16	Standard configuration

6.2.12 M12 Straight Male Connector

Description

An M12 straight male connector connects to the network interface of a router.

Connection

An M12 straight male connector connects to the network interface of a router.

Ordering Information

Table 6-33 provides the M12 straight male connector ordering information.

Table 6-33 M12 straight male connector ordering information

Part Number	Description
14210041	Round Connector,M12,8PIN,Straight Male,Fast stripping,For 23~26AWG Cable

6.3 Antennas

6.3.1 3G Whip Antenna

Description

A 3G whip antenna is directly connected to an industrial switching router and is recommended for wall mounting scenarios.

Appearance and Structure

Figure 6-17 shows the appearance of a 3G whip antenna.

Figure 6-17 3G whip antenna

Technical Specifications

Table 6-34 lists the technical specifications of a 3G whip antenna.

Table 6-34 Technical specifications of a 3G whip antenna

Item	Specification
Connector type	SMA male connector (pin and screw threads inside)
Frequency bands supported	824 MHz to 960 MHz/1710 MHz to 2170 MHz
Maximum gain	1 dBi/2 dBi
Standing wave ratio	< 3
Polarization	Vertical
Direction	Omnidirectional

Connection

A 3G whip antenna connects to the 3G antenna interface of a router.

Ordering Information

Table 6-35 provides the 3G whip antenna ordering information.

Table 6-35 3G whip antenna ordering information

Part Number	Description	Remarks
27010809	Isotropic Antenna, 824-960/1710-2170MHz, 1dBi/2dBi, Vertical, Omni, 5W, 0r, SMA-Male, Do not need Bracket	Standard configuration

6.3.2 LTE Whip Antenna

Description

LTE whip antennas are connected to the LTE main and diversity antenna interfaces of a router. LTE whip antennas are recommended in desk mounting and wall mounting scenarios.

Appearance and Structure

Figure 6-18 shows the appearance of an LTE whip antenna.

Figure 6-18 LTE whip antenna



Technical Specifications

Table 6-36 lists the technical specifications of an LTE whip antenna.

Table 6-36 Technical specifications of an LTE whip antenna

Item	Specification
Connector type	SMA male connector (pin and screw threads inside)
Frequency bands supported	698 MHz to 960 MHz/1710 MHz to 2690 MHz
Maximum gain	2 dBi/4.5 dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Connection

An LTE whip antenna connects to an LTE interface of a router.

Ordering Information

[Table 6-37](#) provides the LTE whip antenna ordering information.

Table 6-37 LTE whip antenna ordering information

Type	Part Number	Description
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

6.3.3 LTE Indoor Remote Antenna

Description

An LTE indoor remote antenna can be connected to the primary LTE antenna interface on a router through a self-contained 3 m feeder. LTE indoor remote antennas are recommended in cabinet/rack mounting scenarios.

Appearance and Structure

[Figure 6-19](#) shows the appearance of an LTE indoor remote antenna.

Figure 6-19 LTE indoor remote antenna



Technical Specifications

Table 6-38 lists the technical specifications of an LTE indoor remote antenna.

Table 6-38 Technical specifications of an LTE indoor remote antenna

Item	Description
Connector type	SMA male connector (pin and screw threads inside)
Cable length	3 m
Frequency bands supported	698 MHz to 960 MHz/1710 MHz to 2690 MHz
Maximum gain	1 dBi/0 dBi

Item	Description
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Connection

An LTE indoor remote antenna connects to an LTE interface of a router.

Ordering Information

[Table 6-39](#) provides the LTE indoor remote antenna ordering information.

Table 6-39 LTE indoor remote antenna ordering information

Part Number	Description	Remarks
27011299	Isotropic Antenna, 698MHz-960MHz/ 1710MHz-2690MHz, 1.0dBi(698MHz-960MHz)&0dBi(1710MHz- 2690MHz), Vertical, Omni, 10W, SMA-J, do not need bracket	Optional

6.3.4 Outdoor LTE Antenna

Description

An outdoor LTE antenna can be connected to the primary antenna interface of a router that is used outdoors.

Appearance and Structure

[Figure 6-20](#) shows the appearance of an outdoor LTE antenna.

Figure 6-20 Outdoor LTE antenna



[Figure 6-21](#) shows the appearance of a surge protector.

Figure 6-21 Surge protector



Figure 6-22 shows the appearance of an outdoor extension cable.

Figure 6-22 Outdoor extension cable



Technical Specifications

Table 6-40 lists the technical specifications of an outdoor LTE antenna.

Table 6-40 Technical specifications of an outdoor LTE antenna

Item	Description
Connector type	N-F
Frequency bands supported	698 MHz to 960 MHz/1710 MHz to 2690 MHz
Maximum gain	1.5 dBi/2.5 dBi

Item	Description
Standing wave ratio	≤ 2.5
Polarization	Vertical
Direction	Omnidirectional
Power	20 W

Table 6-41 lists technical specifications of a surge protector.

Table 6-41 Technical specifications of a surge protector

Item	Description
Connector type	<ul style="list-style-type: none"> ● Surge: N-F ● Protect: N-M
Frequency bands supported	698 MHz to 2700 MHz
Insertion loss	≤ 0.2 dB
Standing wave ratio	≤ 1.2
Characteristic impedance	50 ohm
Power	100 W
Operating temperature	-40°C to +75°C (-40°F to +167°F)
Ingress protection	IP67

Outdoor extension cables for an outdoor LTE antenna include 2 m, 3 m, 5 m N-M/N-M extension cables and 2 m N-F/SMA-J extension cables. **Table 6-42**, **Table 6-43**, and **Table 6-44** list technical specifications of these outdoor extension cables.

Table 6-42 Technical specifications of 2 m and 3 m N-M/N-M outdoor extension cables

Item	Description
Connector type	N-M/N-M
Insertion loss	≤ 22.64 dB/100 m @ 2000 MHz
Standing wave ratio	≤ 1.15 @ 2000 MHz
Characteristic impedance	50 ohm
Length	2 m/3 m

Table 6-43 Technical specifications of a 5 m N-M/N-M outdoor extension cable

Item	Description
Connector type	N-M/N-M
Insertion loss	≤ 15.90 dB/100 m @ 2000 MHz
Standing wave ratio	≤ 1.12 @ 2000 MHz
Characteristic impedance	50 ohm
Length	5 m

Table 6-44 Technical specifications of an N-F/SMA-J outdoor extension cable

Item	Description
Connector type	N-M/SMA-J
Insertion loss	≤ 1.6 dB @ 2700 MHz
Standing wave ratio	≤ 1.4 @ 2700 MHz
Characteristic impedance	50 ohm
Length	2 m

Connection

An outdoor LTE antenna connects to an LTE interface of a router.

Ordering Information

Table 6-45 provides the ordering information.

Table 6-45 Ordering information

Component	Part Number	Description	Remarks
Outdoor LTE antenna	27011972	Omni-directional Antenna, 698MHz-960MHz/1710MHz-2700MHz, 1.5dBi/2.5dBi, Isotropic, 20W, N50SF, NO	Optional
Surge protector	19020282	Antenna Arrester, 20KA, 20V, 698MHz-2700MHz, 20W, N/Male-N/Female, all	Optional
2 m N-M/N-M outdoor extension cable	04130032	RF Cable, 2m, N50SM-V, COAX50-7.2/2.74B, N50SM-V, RG8 Jumper	Optional

Component	Part Number	Description	Remarks
3 m N-M/N-M outdoor extension cable	04130033	RF Cable, 3m, N50SM-V, COAX50-7.2/2.74B, N50SM-V, RG8 Jumper	Optional
5 m N-M/N-M outdoor extension cable	04130034	RF Cable, 5m, N50SM-XIII, COAX50-8.7/3.55B, N50SM-XIII, 1/2 Inch Super flexible Jumper	Optional
2m N-F/SMA-J outdoor extension cable	04130530	Radio Frequency Cable, 2m, N50SF, 195 Series, SMA-J, ALL	Optional

6.3.5 LTE Strip-shaped Remote Antenna

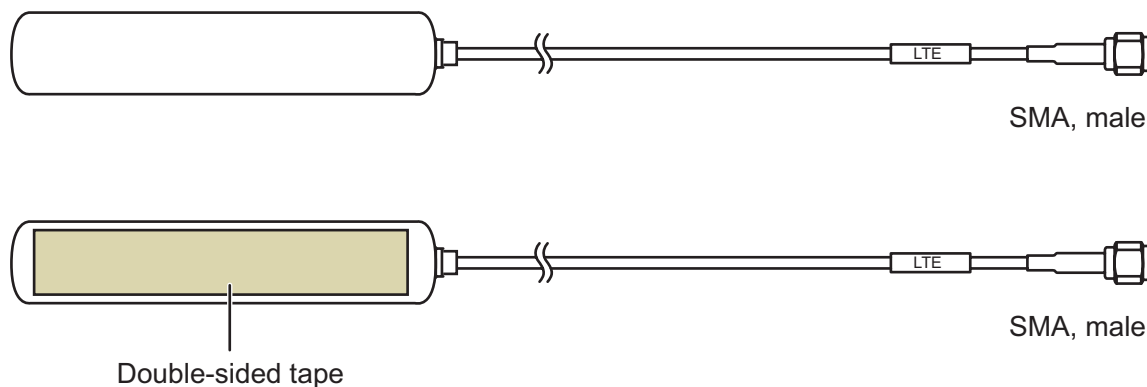
Description

An LTE strip-shaped remote antenna connects to a router at one end and to a plastic horizontal plane at the other end.

Appearance and Structure

Figure 6-23 shows the structure of an LTE strip-shaped remote antenna.

Figure 6-23 Structure of an LTE strip-shaped remote antenna



Technical Specifications

Table 6-46 lists technical specifications of an LTE strip-shaped remote antenna.

Table 6-46 Technical specifications of an LTE strip-shaped remote antenna

Item	Specification
Connector type	SMA-J (screw threads and pin inside)
Cable length	3 m
Frequency bands supported	<ul style="list-style-type: none"> ● 698 MHz to 960 MHz ● 1710 MHz to 2690 MHz
Maximum gain	0.5 dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Connection

An LTE strip-shaped remote antenna is connected as follows:

- The SMA male connector is connected to the LTE MAIN interface on a router.
- The other end (cover) is attached to a plastic horizontal plane.

Ordering Information

Table 6-47 provides the LTE strip-shaped remote antenna ordering information.

Table 6-47 LTE strip-shaped remote antenna ordering information

Part Number	Description	Remarks
27012295	Omni-directional Antenna, 698MHz-960MHz/1710MHz-2690MHz, 1.0dBi(698MHz-960MHz)&2dBi(1710MHz-2690MHz),5W,SMA-J	Optional

6.3.6 433 MHz RF Remote Antenna

Description

A 433 MHz RF remote antenna is delivered with a router that provides the radio frequency (RF) function. It is used on an RF antenna interface to provide RF access.

Appearance and Structure

Figure 6-24 shows the appearance of a 433 MHz RF remote antenna.

Figure 6-24 433 MHz RF remote antenna



Technical Specifications

Table 6-48 lists technical specifications of a 433 MHz RF remote antenna.

Table 6-48 Technical specifications of a 433 MHz RF remote antenna

Item	Specification
Connector type	SMA-J
Cable length	0.5 m
Frequency bands supported	428 MHz to 438 MHz
Maximum gain	3 dBi
Standing wave ratio	2.0
Polarization	Linear polarization
Direction	Omnidirectional

Connection

A 433 MHz RF remote antenna connects to the RF antenna interface of a router.

Ordering Information

Table 6-49 provides the 433 MHz RF remote antenna ordering information.

Table 6-49 433 MHz RF remote antenna ordering information

Antenna Type	Part Number	Description
433 MHz RF remote antenna	27012479	Omni-directional Antenna,428-438MHz, 3.0dB,linear polarization,Omnidirectional, 2W,SMA-J

6.3.7 915 MHz RF Remote Antenna

Description

A 915 MHz RF remote antenna is delivered with a router that provides the radio frequency (RF) function. It is used on an RF antenna interface to provide RF access.

Appearance and Structure

Figure 6-25 shows the appearance of a 915 MHz RF remote antenna.

Figure 6-25 915 MHz RF remote antenna



Technical Specifications

Table 6-50 lists technical specifications of a 915 MHz RF remote antenna.

Table 6-50 Technical specifications of a 915 MHz RF remote antenna

Item	Specification
Connector type	SMA-M
Cable length	0.5 m
Frequency bands supported	<ul style="list-style-type: none">● 824 MHz to 960 MHz● 1710 MHz to 2170 MHz
Maximum gain	<ul style="list-style-type: none">● 824 MHz to 960 MHz: 1 dBi● 1710 MHz to 2170 MHz: 2.5 dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Connection

A 915 MHz RF remote antenna connects to the RF antenna interface of a router.

Ordering Information

Table 6-51 provides the 915 MHz RF remote antenna ordering information.

Table 6-51 915 MHz RF remote antenna ordering information

Antenna Type	Part Number	Description
915 MHz RF remote antenna	27010824	Omni-directional Antenna, 824-960/1710-2170MHz, ≥ 1.0 dBi(824-960 MHz)& ≥ 2.5 dBi(1710-2170MHz),10W, Or,SMA-Male

6.3.8 ZigBee Whip Antenna

Description

A ZigBee whip antenna is directly connected to an industrial switching router and is recommended for wall mounting scenarios.

Appearance and Structure

Figure 6-26 shows the appearance of a ZigBee whip antenna.

Figure 6-26 ZigBee whip antenna



Technical Specifications

Table 6-52 lists the technical specifications of a ZigBee whip antenna.

Table 6-52 Technical specifications of a ZigBee whip antenna

Item	Specification
Connector type	RP-SMA male connector (hole and screw threads inside)
Frequency bands supported	2.4 GHz
Maximum gain	2.65 dBi
Standing wave ratio	< 2.5
Polarization	Vertical
Direction	Omnidirectional

Connection

An outdoor ZigBee antenna connects to a ZigBee antenna interface of a router.

Ordering Information

Table 6-53 provides the ZigBee whip antenna ordering information.

Table 6-53 ZigBee whip antenna ordering information

Part Number	Description	Remarks
02210848	Auxiliary Tool, AR531GR-U-H ZigBee Antenna for 2.4G	Optional

6.3.9 Outdoor ZigBee Antenna

Description

An outdoor ZigBee antenna can be connected to the primary antenna interface of a router that is used outdoors.

Appearance and Structure

Figure 6-27 shows the appearance of an outdoor ZigBee antenna.

Figure 6-27 Outdoor ZigBee antenna



Figure 6-28 shows the appearance of a surge protector.

Figure 6-28 Surge protector



Figure 6-29 shows the appearance of an extension cable.

Figure 6-29 Outdoor extension cable



Technical Specifications

Table 6-54 lists the technical specifications of an outdoor ZigBee antenna.

Table 6-54 Technical specifications of an outdoor ZigBee antenna

Item	Description
Connector type	N-F
Frequency bands supported	2400 MHz to 2500 MHz
Minimum gain	8 dBi
Standing wave ratio	1.5

Item	Description
Polarization	Vertical
Direction	Omnidirectional
Maximum power	200 W

Table 6-55 lists technical specifications of a surge protector.

Table 6-55 Technical specifications of a surge protector

Item	Description
Connector type	<ul style="list-style-type: none"> ● Surge: N-F ● Protect: N-M
Frequency bands supported	1200 MHz to 2500 MHz
Insertion loss	≤ 0.2 dB
Standing wave ratio	≤ 1.15
Characteristic impedance	50 ohm
Power	100 W
Operating temperature	-40°C to +75°C (-40°F to +167°F)
Ingress protection	IP67

Outdoor extension cables for an outdoor ZigBee antenna include 2 m, 3 m, 5 m N-M/N-M extension cables and 2 m N-F/RP-SMA extension cables. **Table 6-56**, **Table 6-57**, and **Table 6-58** list technical specifications of these outdoor extension cables.

Table 6-56 Technical specifications of 2 m and 3 m N-M/N-M outdoor extension cables

Item	Description
Connector type	N-M/N-M
Insertion loss	≤ 22.64 dB/100 m @ 2000 MHz
Standing wave ratio	≤ 1.15 @ 2000 MHz
Characteristic impedance	50 ohm
Length	2 m/3 m

Table 6-57 Technical specifications of a 5 m N-M/N-M outdoor extension cable

Item	Description
Connector type	N-M/N-M
Insertion loss	≤ 15.90 dB/100 m @ 2000 MHz
Standing wave ratio	≤ 1.12 @ 2000 MHz
Characteristic impedance	50 ohm
Length	5 m

Table 6-58 Technical specifications of an N-F/SMA outdoor extension cable

Item	Description
Connector type	N-F/RP-SMA
Insertion loss	≤ 1.6 dB @ 2700 MHz
Standing wave ratio	≤ 1.4 @ 2700 MHz
Characteristic impedance	50 ohm
Length	2 m

Connection

An outdoor ZigBee antenna connects to a ZigBee antenna interface of a router.

Ordering Information

Table 6-59 provides the ordering information.

Table 6-59 Ordering information

Component	Part Number	Description	Remarks
Outdoor ZigBee antenna	27010913	Isotropic Antenna, 2400~2500MHz, >8dBi, Vertical polarization, Isotropic, 200W, Or, N-Female, with bracket	Optional
Surge protector	19020084	Antenna Feeder Arrester, 20KA, Residual Voltage 20V, 1200~2500MHz, 50W, N-F/N-M	Optional
2 m N-M/N-M outdoor extension cable	04130032	RF Cable, 2m, N50SM-V, COAX50-7.2/2.74B, N50SM-V, RG8 Jumper	Optional

Component	Part Number	Description	Remarks
3 m N-M/N-M outdoor extension cable	04130033	RF Cable, 3m, N50SM-V, COAX50-7.2/2.74B, N50SM-V, RG8 Jumper	Optional
5 m N-M/N-M outdoor extension cable	04130034	RF Cable, 5m, N50SM-XIII, COAX50-8.7/3.55B, N50SM-XIII, 1/2 Inch Super flexible Jumper	Optional

6.3.10 Wi-Fi Antenna

Description

Wi-Fi antennas are classified into two types:

- Wi-Fi rod antenna: applicable to the series routers that support the Wi-Fi function.
- Wi-Fi whip antenna: applicable to the series routers that support the Wi-Fi function.

Appearance and Structure

Figure 6-30 shows the appearance of a Wi-Fi rod antenna.

Figure 6-30 Wi-Fi rod antenna



Figure 6-31 shows the appearance of a Wi-Fi whip antenna.

Figure 6-31 Wi-Fi whip antenna



Technical Specifications

Table 6-60 lists the technical specifications of a Wi-Fi rod antenna.

Table 6-60 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 ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Table 6-61 lists the technical specifications of a Wi-Fi whip antenna.

Table 6-61 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

Item	Specification
Maximum gain	2.15 dBi/3 dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Connection

A Wi-Fi antenna connects to the Wi-Fi interface of a router.

Ordering Information

Table 6-62 lists the Wi-Fi rod antenna ordering information.

Table 6-62 Wi-Fi rod 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

Table 6-63 lists the Wi-Fi whip antenna ordering information.

Table 6-63 Wi-Fi whip antenna ordering information

Antenna Type	Part Number	Description	Remarks
Wi-Fi whip antenna	27010806	Isotropic Antenna, 2400-2500/5150-5850MHz, >2.15dBi/3dBi, Vertical, Omni, 5W-0r-RP-SMA-J, without Bracket	Mandatory

6.3.11 Wi-Fi Remote Antenna (2x2)

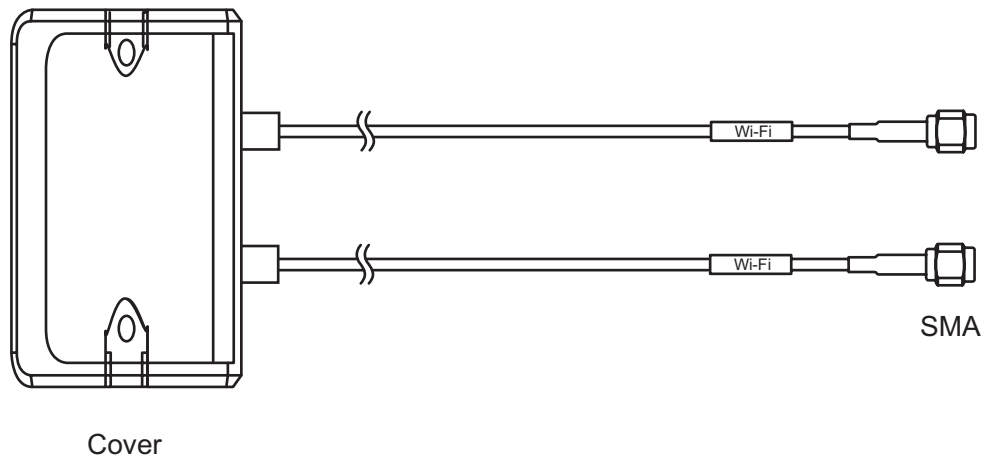
Description

A Wi-Fi remote antenna (2x2) connects to a router at one end and to a plastic horizontal plane at the other end.

Appearance and Structure

Figure 6-32 shows the structure of a Wi-Fi remote antenna (2x2).

Figure 6-32 Structure of a Wi-Fi remote antenna (2x2)



Technical Specifications

Table 6-64 lists technical specifications of a Wi-Fi remote antenna (2x2).

Table 6-64 Technical specifications of a Wi-Fi remote antenna (2x2)

Item	Specification
Connector type	RP-SMA-J (Screw threads and hole inside)
Cable length	1 m
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Maximum gain	1 dBi
Standing wave ratio	2.5
Polarization	Linear polarization
Direction	Omnidirectional

Connection

A Wi-Fi remote antenna (2x2) is connected as follows:

- The SMA male connector is connected to the Wi-Fi interface on a router.
- The other end (cover) is attached to a plastic horizontal plane.

Ordering Information

Table 6-65 provides the Wi-Fi remote antenna (2x2) ordering information.

Table 6-65 Wi-Fi remote antenna (2x2) ordering information

Part Number	Description	Remarks
27012439	Omni-directional Antenna,2400~2500MHz/ 5150~5850MHz,1dBi(2.4G)/1dBi(5G), 5W,RP-SMA-J	Optional

6.3.12 Wi-Fi Remote Antenna (3x3)

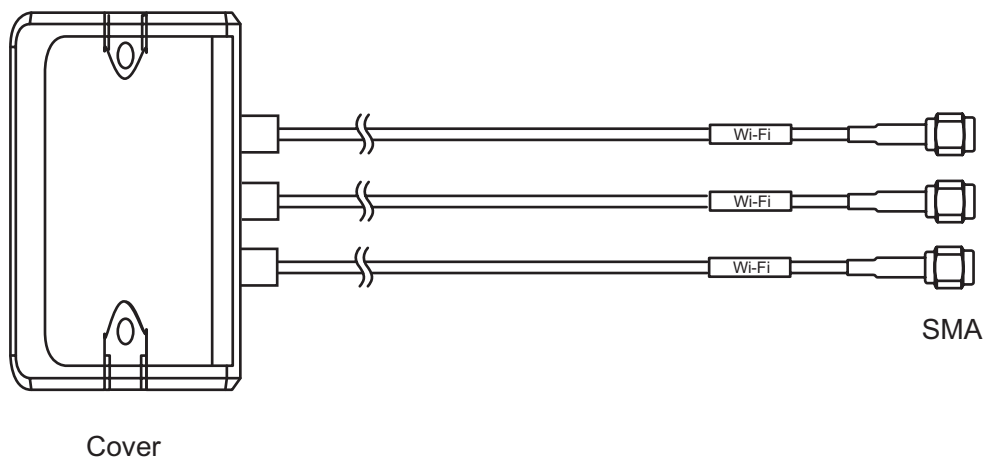
Description

A Wi-Fi remote antenna (3x3) connects to a router at one end and to a plastic horizontal plane at the other end.

Appearance and Structure

Figure 6-33 shows the structure of a Wi-Fi remote antenna (3x3).

Figure 6-33 Structure of a Wi-Fi remote antenna (3x3)



Technical Specifications

Table 6-66 lists technical specifications of a Wi-Fi remote antenna (3x3).

Table 6-66 Technical specifications of a Wi-Fi remote antenna (3x3)

Item	Specification
Connector type	RP-SMA-J (screw threads and hole inside)
Cable length	1 m
Frequency bands supported	<ul style="list-style-type: none"> ● 2.4 GHz ● 5.0 GHz
Maximum gain	1 dBi
Standing wave ratio	2.5
Polarization	Linear polarization
Direction	Omnidirectional

Connection

A Wi-Fi remote antenna (3x3) is connected as follows:

- The SMA male connector is connected to the Wi-Fi interface on a router.
- The other end (cover) is attached to a plastic horizontal plane.

Ordering Information

Table 6-67 provides the Wi-Fi remote antenna (3x3) ordering information.

Table 6-67 Wi-Fi remote antenna (3x3) ordering information

Part Number	Description	Remarks
27012297	Omni-directional Antenna,2400~2500MHz/ 5150~5850MHz,1dBi(2.4G)/1dBi(5G), 5W,RP-SMA-J	Optional

6.3.13 Wi-Fi Rod Remote Antenna

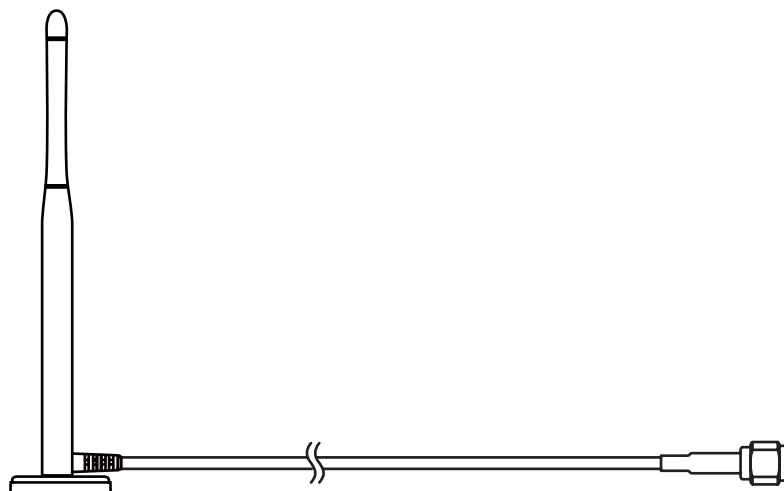
Description

A Wi-Fi rod remote antenna consists of a Wi-Fi rod antenna and a 3 m Wi-Fi feeder.

Appearance and Structure

Figure 6-34 shows the structure of a Wi-Fi rod remote antenna.

Figure 6-34 Structure of a Wi-Fi rod remote antenna



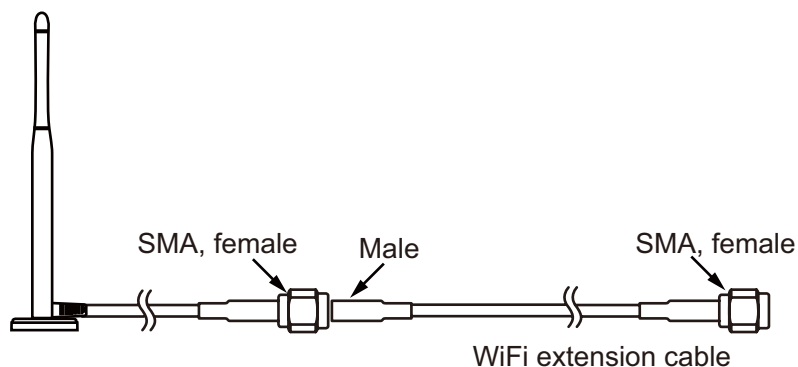
Wi-Fi Extension Cable

NOTE

The Wi-Fi feeder of a Wi-Fi rod remote antenna is 3 m long by default. If this length is not enough for antenna connection, use a Wi-Fi extension cable to extend the length.

When using a Wi-Fi extension cable, connect its male connector to the SMA female connector of the Wi-Fi rod antenna SMA and its female connector to the router, as shown in [Figure 6-35](#).

Figure 6-35 Connection of a Wi-Fi extension cable



Technical Specifications

None

Connection

A Wi-Fi rod 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 rod antenna is installed on a horizontal plane.

Ordering Information

None

6.3.14 Wi-Fi Strip-Shaped Remote Antenna

Description

A Wi-Fi strip-shaped remote antenna has a 1.0 m RF cable.

Appearance and Structure

Figure 6-36 shows the structure of a Wi-Fi strip-shaped remote antenna.

Figure 6-36 Structure of a Wi-Fi strip-shaped remote antenna



Technical Specifications

None

Connection

A Wi-Fi strip-shaped 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 (strip-shaped antenna) is attached to a horizontal plane or a side of the router.

Ordering Information

None

6.3.15 GPS/BDS Remote Antenna

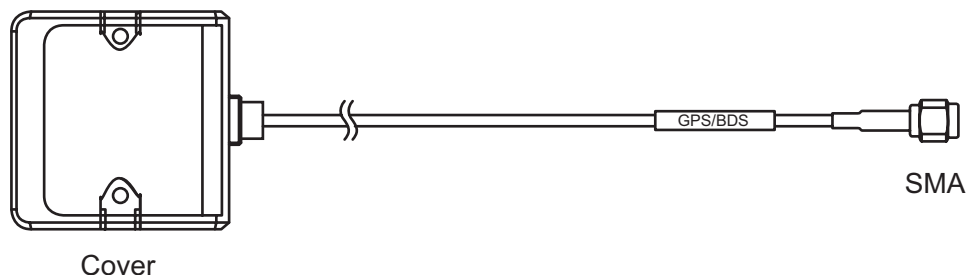
Description

A GPS/BDS remote antenna connects to the GPS/BDS interface of a router at one end and to a plastic horizontal plane at the other end.

Appearance and Structure

Figure 6-37 shows the structure of a GPS/BDS remote antenna.

Figure 6-37 Structure of a GPS/BDS remote antenna



Technical Specifications

Table 6-68 lists technical specifications of a GPS/BDS remote antenna.

Table 6-68 Technical specifications of a GPS/BDS remote antenna

Item	Specification
Connector type	SMA-J (screw threads and pin inside)
Cable length	3 m
Frequency bands supported	<ul style="list-style-type: none">● GPS: 1575.42 MHz● BDS: 1561.098 MHz
Maximum gain	3 dBi
Standing wave ratio	2.0
Polarization	Right hand circular polarization
Direction	Omnidirectional

Connection

A GPS/BDS remote antenna is connected as follows:

- The SMA male connector is connected to the GPS/BDS interface on a router.
- The other end (cover) is attached to a plastic horizontal plane.

Ordering Information

Table 6-69 provides the GPS/BDS remote antenna ordering information.

Table 6-69 GPS/BDS remote antenna ordering information

Part Number	Description	Remarks
27012296	Omni-directional Antenna,1575.42MHz/ 1561.098MHz,3dBi,Right Hand Circular Polarization,Omni,0.125W,SMA-J,No rack	Optional

6.3.16 Primary LTE Remote Antenna (Square Shape)

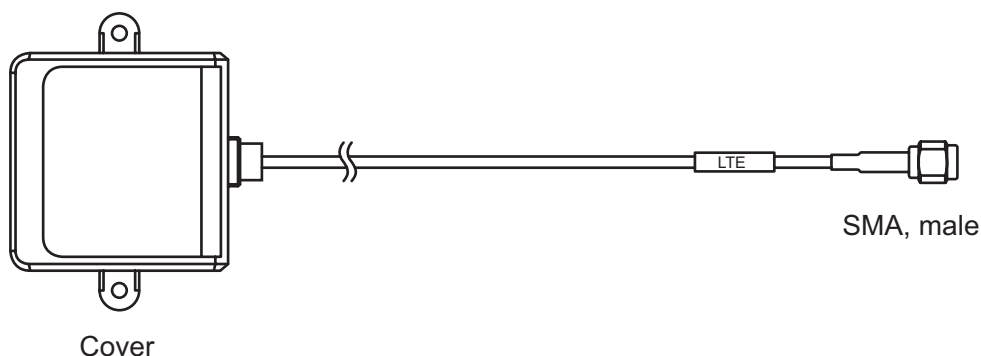
Description

A primary LTE remote antenna connects to an LTE MAIN interface on a router at one end and to a plastic horizontal plane on the other end.

Appearance and Structure

Figure 6-38 shows the structure of a primary LTE remote antenna (square shape).

Figure 6-38 Structure of a primary LTE remote antenna (square shape)



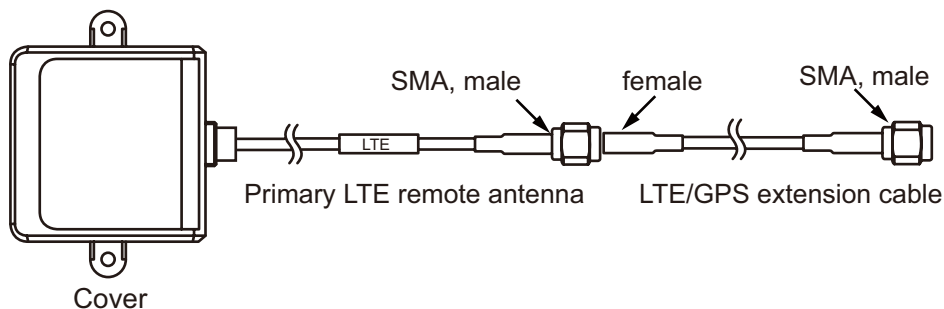
LTE/GPS Extension Cable

NOTE

A primary LTE remote antenna is 3 m long by default. If the default length is not enough for antenna connection, use an LTE/GPS extension cable to prolong the antenna.

When using an 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 (square shape), as shown in **Figure 6-39**.

Figure 6-39 Connection of an LTE/GPS extension cable



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 plastic horizontal plane.

Ordering Information

NOTE

If primary LTE remote antennas (square shape) need to be prolonged, configure an LTE/GPS extension cable for each primary LTE remote antenna.

Table 6-70 provides the primary LTE remote antenna (square shape) ordering information.

Table 6-70 Primary LTE remote antenna (square shape) ordering information

Part Number	Description	Remarks
02210790	Auxiliary Tool, AR511GW-LAV2M3-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

6.3.17 Primary LTE Remote Antenna (Circular Shape)

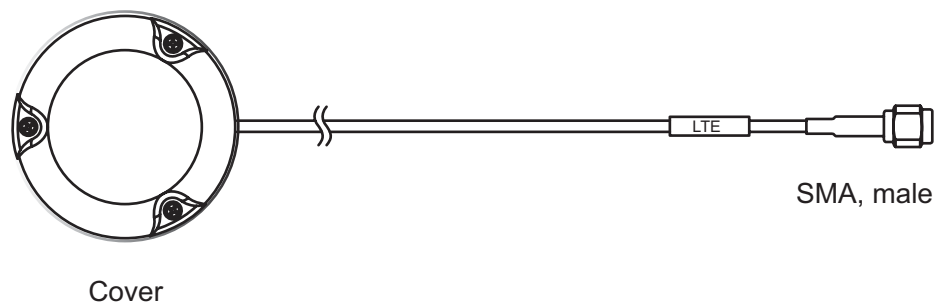
Description

A primary LTE remote antenna (circular shape) has a 3.0 m feeder.

Appearance and Structure

Figure 6-40 shows the structure of a primary LTE remote antenna (circular shape).

Figure 6-40 Structure of a primary LTE remote antenna (circular shape)



Technical Specifications

None

Connection

A primary LTE remote antenna (circular shape) 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 horizontal plane.

Ordering Information

None

6.3.18 GPS+LTE Remote Diversity Antenna (Square Shape)

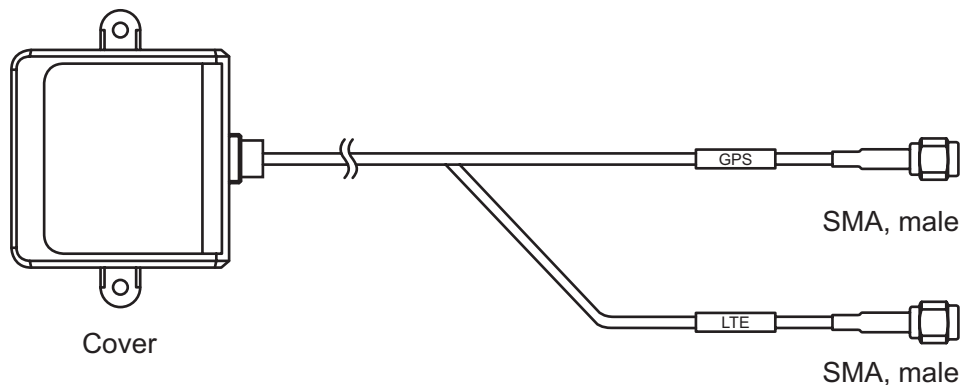
Description

A GPS+LTE remote diversity antenna (square shape) connects to the GPS interface and LTE DIV interface of the router at one end and to a plastic horizontal plane at the other end.

Appearance and Structure

Figure 6-41 shows the structure of a GPS+LTE remote diversity antenna (square shape).

Figure 6-41 Structure of a GPS+LTE remote diversity antenna (square shape)



LTE/GPS Extension Cable

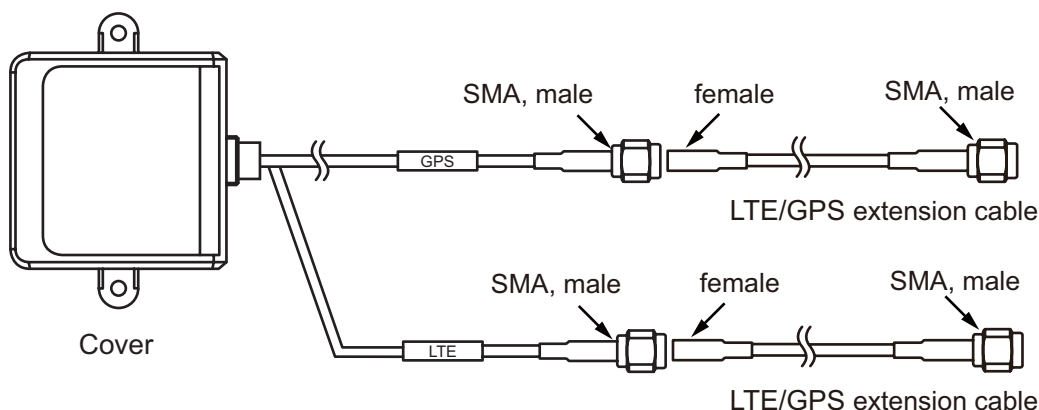
NOTE

- A GPS+LTE remote diversity antenna (square shape) 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 (square shape) need to be prolonged, configure two LTE/GPS extension cables for each GPS+LTE remote diversity antenna.

Figure 6-42 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.

Figure 6-42 Connection of LTE/GPS extension cables



Technical Specifications

None

Connection

The GPS+LTE remote diversity antenna (square shape) 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 6-71 provides the GPS+LTE remote diversity antenna (square shape) ordering information.

Table 6-71 GPS+LTE remote diversity antenna (square shape) 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

6.3.19 GPS+LTE Remote Diversity Antenna (Circular Shape)

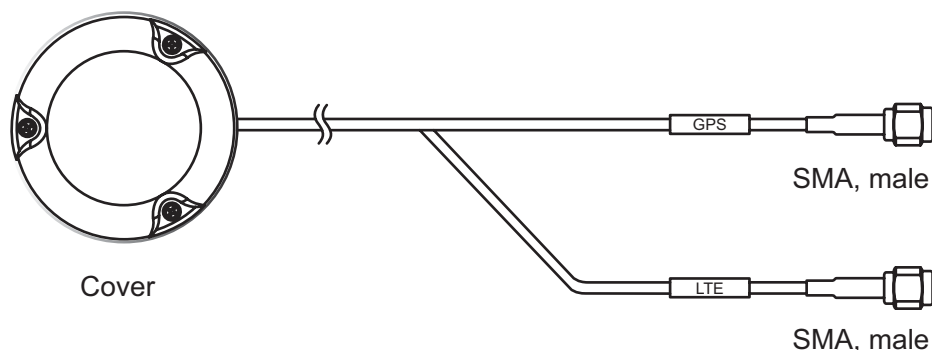
Description

A GPS+LTE LTE remote diversity antenna (circular shape) has a 3.0 m feeder.

Appearance and Structure

Figure 6-43 shows the structure of a GPS+LTE remote diversity antenna (circular shape).

Figure 6-43 Structure of a GPS+LTE remote diversity antenna (circular shape)



Technical Specifications

None

Connection

A GPS+LTE remote diversity antenna (circular shape) is connected as follows:

- The SMA male connectors 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 horizontal plane.

Ordering Information

None

6.3.20 GPS/BDS+LTE Remote Diversity Antenna (Circular Shape)

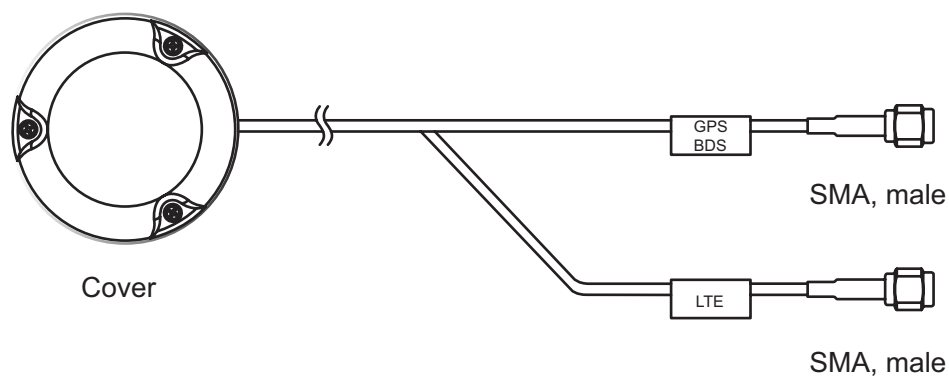
Description

A GPS/BDS+LTE remote diversity antenna (circular shape) has a 3.0 m feeder.

Appearance and Structure

Figure 6-44 shows the structure of a GPS/BDS+LTE remote diversity antenna (circular shape).

Figure 6-44 Structure of a GPS/BDS+LTE remote diversity antenna (circular shape)



Technical Specifications

None

Connection

A GPS/BDS+LTE remote diversity antenna (circular shape) 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 horizontal plane.

Ordering Information

None

6.3.21 DTMB Remote Antenna

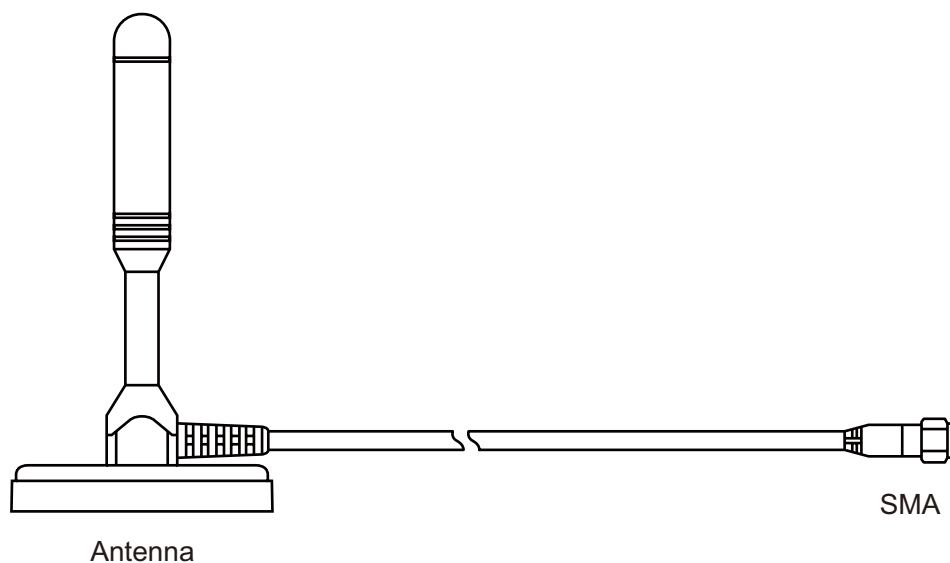
Description

A DTMB remote antenna connects to the DTMB interface of a router at one end and to a plastic horizontal plane at the other end.

Appearance and Structure

Figure 6-45 shows the structure of a Digital Terrestrial Multimedia Broadcasting (DTMB) remote antenna.

Figure 6-45 Structure of a DTMB remote antenna



Technical Specifications

Table 6-72 lists the technical specifications of a DTMB remote antenna.

Table 6-72 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 ratio	< 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.

Ordering Information

None

6.3.22 sub-GHz Antenna

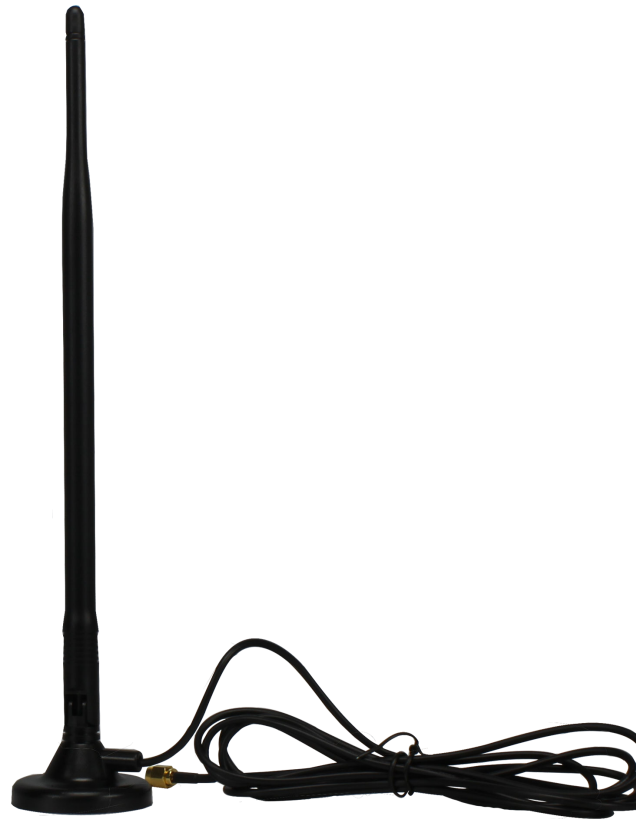
Description

A sub-GHz antenna has a feeder. Connect the feeder to the sub-GHz interface of an industrial switching router and place the antenna on a horizontal plane. The sub-GHz antenna is recommended when an industrial switching router is installed in a cabinet or rack.

Appearance and Structure

[Figure 6-46](#) shows the appearance of a sub-GHz antenna.

Figure 6-46 sub-GHz antenna



Technical Specifications

Table 6-73 lists the technical specifications of a sub-GHz antenna.

Table 6-73 Technical specifications of a sub-GHz antenna

Item	Specification
Connector type	RP-SMA male connector (hole and screw threads inside)
Frequency bands supported	169 MHz
Maximum gain	0 dBi
Standing wave ratio	< 2
Polarization	Vertical
Direction	Omnidirectional

Connection

A sub-GHz antenna connects to a sub-GHz interface of a router.

Ordering Information

Table 6-74 provides the sub-GHz antenna ordering information.

Table 6-74 sub-GHz antenna ordering information

Part Number	Description	Remarks
02210844	Auxiliary Tool, AR531GR-U-H Sub-G Antenna for 170M	Optional

6.4 Serial Cable (CON/RS232)

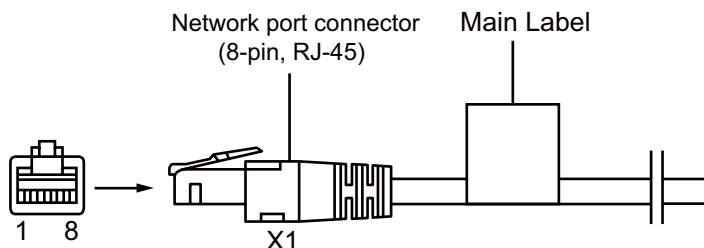
Description

A serial cable (CON/RS232) has an 8-pin RJ-45 connector at one end and an RJ-45 or another type of connector at the other end.

Appearance and Structure

Figure 6-47 shows the structure of a serial cable.

Figure 6-47 Structure of a serial cable (CON/RS232)



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 6-75](#).

Table 6-75 Pin assignment of a serial cable (CON/RS232)

X1	Signal Type
1	CON_RTS
2	CON_DTR
3	CON_TXD
4	CON_DCD
5	GND_RS232
6	CON_RXD
7	CON_DSR
8	CON_CTS

Connection

A serial cable (CON/RS232) 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.

Ordering Information

None

6.5 6-pin Serial Cable

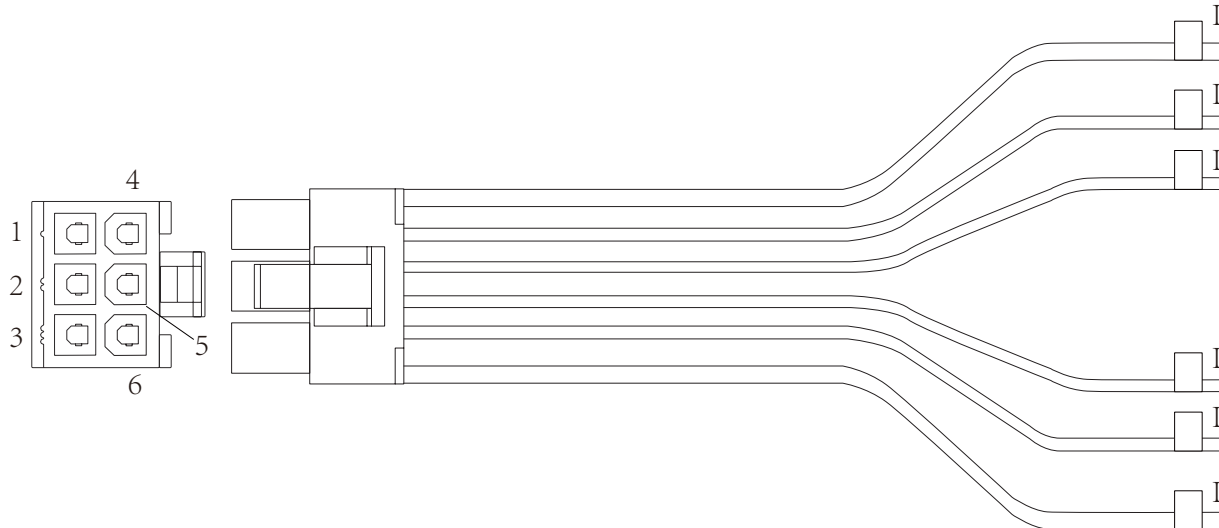
Description

A 6-pin serial cable has a 6-pin terminal block at one end and connects to an RS485 or RS232 interface at the other end.

Appearance and Structure

Figure 6-48 shows the structure of a 6-pin serial cable.

Figure 6-48 Structure of a 6-pin serial cable



Pin Assignments

Table 6-76 lists the pin assignments of a 6-pin serial cable.

Table 6-76 Pin assignments of a 6-pin serial cable

Connector P1	Label	Signal
1	Label1	12 V
2	Label2	GND
3	Label3	RS485_P
4	Label4	RS485_N
5	Label5	RS232_TX
6	Label6	RS232_RX

Connection

A 6-pin serial cable is connected as follows:

- The 6-pin terminal block at one end is connected to the 6-pin Mini-Fit interface on a router.

- At the other end, the Label3 and Label4 interfaces are connected to an RS485 interface, and the Label5 and Label6 interfaces are connected to an RS232 interface.

Ordering Information

[Table 6-77](#) provides the 6-pin serial cable ordering information.

Table 6-77 6-pin serial cable ordering information

Part Number	Description	Remarks
04152260	Power Cable, 0.3m,H2X3(4.2), 5*20UL1007B +18UL1007R,6*Transfer connector 1pin,Only for AR515C	Optional

6.6 Ethernet Cable

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 6-78](#) describes the two standards.

Table 6-78 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

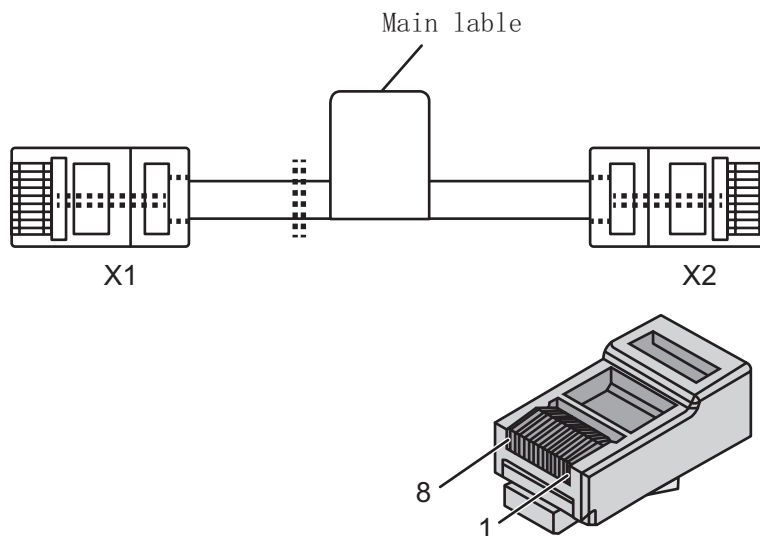
Depending on whether RJ45 connectors at both ends comply with the same standard, Ethernet cables are classified into two types:

- 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.

Appearance and Structure

Figure 6-49 shows the structure of an Ethernet cable.

Figure 6-49 Structure of an Ethernet cable



Pin Assignments

Table 6-79 lists the pin assignments of a straight-through cable.

Table 6-79 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 6-80 lists the pin assignments of a crossover cable.

Table 6-80 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
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 an industrial switching 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 an industrial switching router.
- Connect two switches at the same layer.
- Connect two hubs.
- Connect two computers.
- Connect two industrial switching 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

None

6.7 RS232 Cable

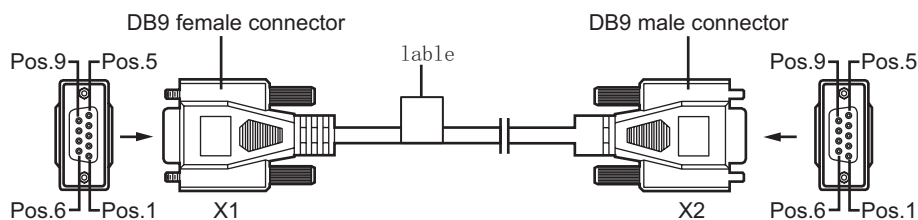
Description

An RS232 cable is used to connect the RS232 interface of a router to a serial interface of a management computer.

Appearance and Structure

Figure 6-50 shows the structure of an RS232 cable.

Figure 6-50 Structure of an RS232 cable



Pin Assignments

Table 6-81 lists the pin assignments of an RS232 cable.

Table 6-81 Pin assignments of an RS232 cable

X1 (DB9 Female Connector)	Signal	Function	X2 (DB9 Male Connector)
1	CON_DCD	Data carrier detect	1
2	CON_RXD	Receiving data	2
3	CON_TXD	Transmitting data	3
4	CON_DTR	Data terminal ready	4
5	GND_RS232	Signal ground	5
6	CON_DSR	Data set ready	6
7	CON_RTS	Request to send	7
8	CON_CTS	Clear to send	8
9	-	NC	9

Connection

An RS232 cable is connected as follows:

- The DB9 male connector is connected to the RS232 interface of a router.
- The DB9 female connector is connected to a maintenance terminal, generally a computer.

Ordering Information

[Table 6-82](#) provides the RS232 cable ordering information.

Table 6-82 RS232 cable ordering information

Part Number	Description	Remarks
04071021	Signal Cable, RS232 signal cable, 3m, D9F, CC4P0.48B(S), D9M	Optional

6.8 Ground Cable

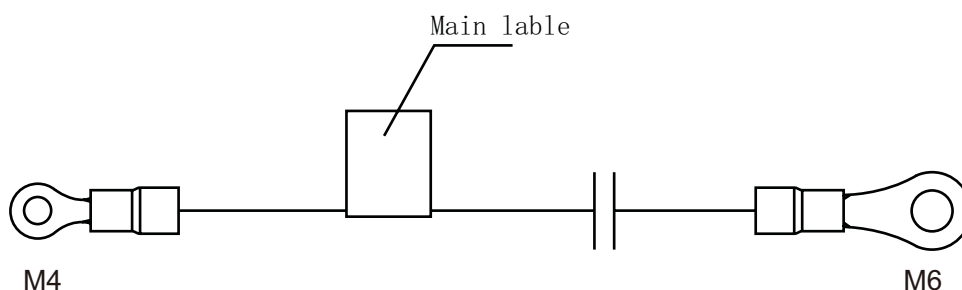
Description

A ground cable grounds an industrial switching router to protect it from lightning and electromagnetic interference.

Appearance and Structure

[Figure 6-51](#) shows the structure of a ground cable.

Figure 6-51 Structure of a ground cable



Pin Assignments

None

Connection

A ground cable is connected as follows:

- The M4 lug is connected to the ground point on an industrial switching router.
- The M6 lug is connected to the ground point or equipotential terminal on a cabinet.

Ordering Information

[Table 6-83](#) provides the ground cable ordering information.

Table 6-83 Ground cable ordering information

Part Number	Description
04150543	Power Cable, 1.0m, 4mm ² , OT6-4, H07Z-K-4 ² G&Y, OT6-6

6.9 Standard Telephone Cable

Description

A standard telephone cable is applicable to the interfaces listed in [Table 6-84](#).

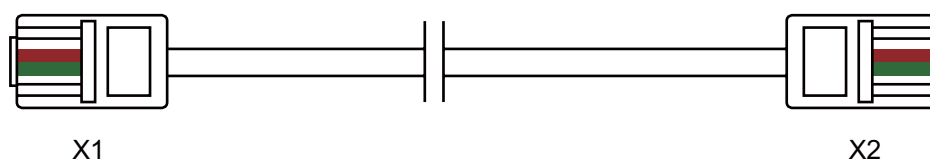
Table 6-84 Interfaces supporting a standard telephone cable

Cable	Interface Type
Standard telephone cable	FXS interface
	FXO interface
	ADSL interface
	VDSL2 interface

Appearance and Structure

[Figure 6-52](#) shows the structure of a standard telephone cable.

Figure 6-52 Structure of a standard telephone cable



Pin Assignments

[Table 6-85](#) lists the pin assignments of a standard telephone cable.

Table 6-85 Pin assignments of a standard telephone cable

X1 (RJ11)	Signal	Direction	X2 (RJ11)
1	-	-	1
2	-	-	2

X1 (RJ11)	Signal	Direction	X2 (RJ11)
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.
- The RJ11 connector on the other end is connected to an analog telephone or fax machine.

Ordering Information

Table 6-86 provides the standard telephone cable ordering information.

Table 6-86 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

6.10 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.
- Each optical module with separate Tx and Rx channels must be used with two optical fibers of the same type.

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.

Appearance and Structure

Figure 6-53 shows the structure of an LC/PC single-mode optical fiber.

Figure 6-53 Structure of an LC/PC single-mode optical fiber



Figure 6-54 shows the structure of an SC/PC single-mode optical fiber.

Figure 6-54 Structure of an SC/PC single-mode optical fiber

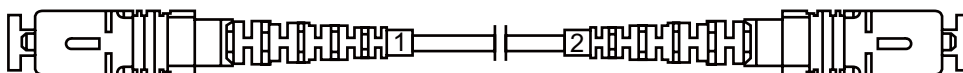


Figure 6-55 shows the structure of an FC/PC single-mode optical fiber.

Figure 6-55 Structure of an FC/PC single-mode optical fiber

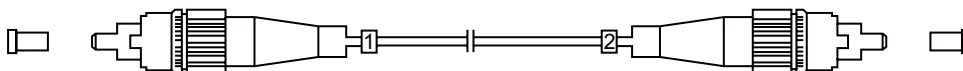
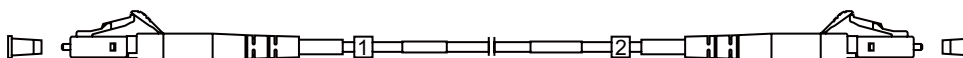


Figure 6-56 shows the structure of an LC/PC multimode optical fiber.

Figure 6-56 Structure of an LC/PC multimode optical fiber



Pin Assignments

Table 6-87 lists the pin assignments of an optical fiber.

Table 6-87 Pin assignments of an optical fiber

Terminal on the Local Device	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.

- The other end is connected to an optical distribution frame (ODF) or an optical interface of another device.

Ordering Information

Table 6-88 provides the optical fiber ordering information.

Table 6-88 Optical fiber ordering information

Part Number	Description	Remarks
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
14130282	Patch Cord, LC/PC-LC/PC, Single mode, G.652D, 2mm, 30m	Optional
14130197	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 10m	Optional
14130274	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130278	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 30m	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
14130312	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 50m	Optional
14130253	Patch Cord, FC/PC-SC/PC, Singlemode, G.652D, 3mm, 10m	Optional

Part Number	Description	Remarks
14130230	Patch Cord, SC/PC-SC/PC, Singlemode, G.652D, 3mm, 10m	Optional
14130098	Patch Cord, 1SC/PC-1SC/PC, Singlemode, G.652D, 3mm, 5m	Optional
14130126	Patch Cord, 1SC/PC-1SC/PC, Singlemode, G.652D, 3mm, 15m	Optional
14130147	Patch Cord, 1SC/PC-1SC/PC, Singlemode, G.652D, 3mm, 20m	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
14130294	Patch Cord, LC/PC-LC/PC, Multimode, A1B, 2mm, 30m	Optional
14130221	Patch Cord, FC/PC-LC/PC, Multimode, A1B, 2mm, 10m	Optional
14130273	Patch Cord, FC/PC-LC/PC, Multimode, A1B, 2mm, 20m	Optional
14130277	Patch Cord, FC/PC-LC/PC, Multimode, A1B, 2mm, 30m	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
14130275	Patch Cord, LC/PC-SC/PC, Multimode, A1B, 2mm, 30m	Optional

Part Number	Description	Remarks
14130311	Patch Cord, LC/PC-SC/PC, Multimode, A1B, 2mm, 50m	Optional

6.11 Audio Cable

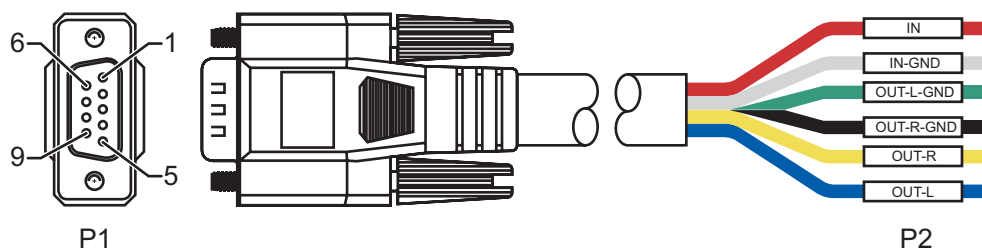
Description

An audio cable supports one audio input and two audio outputs.

Appearance and Structure

Figure 6-57 shows the structure of an audio cable.

Figure 6-57 Structure of an audio cable



Pin Assignments

Table 6-89 lists pin assignments of an audio cable.

Table 6-89 Pin assignments of an audio cable

Connector P1	Connector P2	Wire Color
4	IN-GND	White
5	IN	Red
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.

Ordering Information

Table 6-90 provides the audio cable ordering information.

Table 6-90 Audio cable ordering information

Part Number	Description	Remarks
02210786	Auxiliary Tool, AR511GW-LAV2M3-DB9 Audio cable, NULL,AR511GW-LAV2M3 Vehicle-mounted Special Material	Mandatory

6.12 DB25 Audio and Video Cable

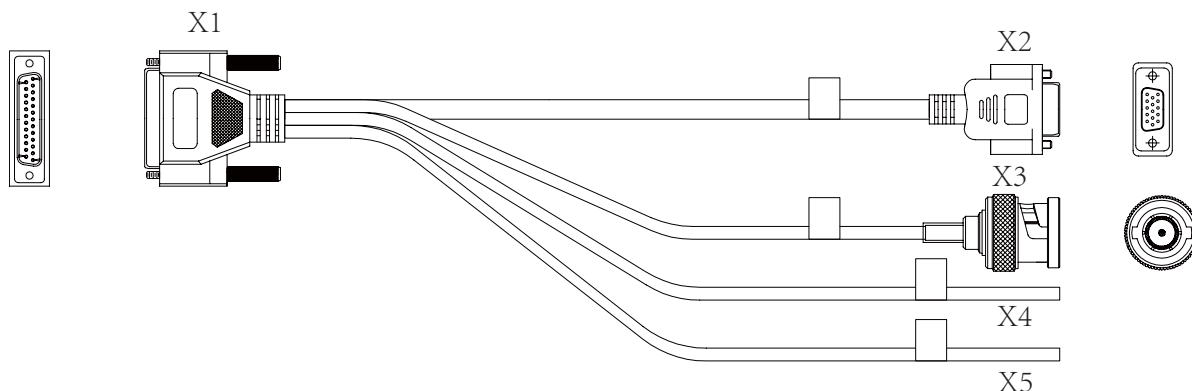
Description

A DB25 audio and video cable has a DB25 male connector at one end and connects to multimedia devices such as a monitor and a speaker at the other end.

Appearance and Structure

Figure 6-58 shows the structure of a DB25 audio and video cable.

Figure 6-58 Structure of a DB25 audio and video cable



Pin Assignments

Table 6-91 describes the required specifications of a DB25 audio and video cable.

Table 6-91 Specifications of a DB25 audio and video cable

Terminal on the Local End	Terminal on the Remote End	Connector Type	Function
X1	X2	VGA	Connects to a monitor with a VGA port.
	X3	CVBS	Connects to a monitor with a CVBS port.
	X4	GND_AUDIO	Connects to a speaker.
	X5	GND	Connects to a speaker.

Connection

A DB25 audio and video cable is connected as follows:

- The DB25 male connector at one end is connected to the DB25 interface on a router.
- The other end is connected to multimedia devices such as a monitor and a speaker.

Ordering Information

Table 6-92 provides the DB25 audio and video cable ordering information.

Table 6-92 DB25 audio and video cable ordering information

Part Number	Description	Remarks
04052028	Audio Video&Control Signal Cable,Video Signal Cable,0.3m,D25F,(UL2919 28AWG*3P+28AWG*5C) +SYV75-2/0.34(S) +2*20UL1007B,D15F +BNC75SSM-III+2*Transfer connector 1pin,Only for AR515C	Optional

6.13 3.5 mm Headset Cable

Description

A 3.5 mm headset cable provides one audio output.

Appearance and Structure

Figure 6-59 shows the structure of a 3.5 mm headset cable.

Figure 6-59 Structure of a 3.5 mm headset cable



Pin Assignments

None

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.

Ordering Information

Table 6-93 provides the 3.5 mm headset cable ordering information.

Table 6-93 Headset cable ordering information

Part Number	Description	Remarks
04050909-001	Audio Video&Control Signal Cable, Audio Cable, 0.8m, 3.5mm Dimensional sound connector, 2*COAX, 3.5mm Dimensional sound connector	Mandatory

6.14 CVBS Video Cable

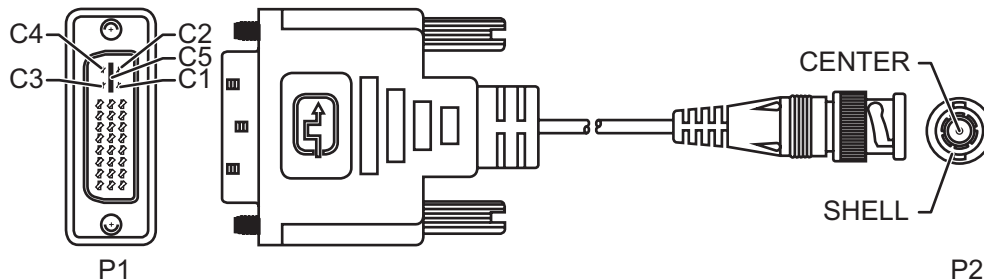
Description

A CVBS 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 6-60 shows the structure of a CVBS video cable.

Figure 6-60 Structure of a CVBS video cable



Pin Assignments

Table 6-94 lists pin assignments of a CVBS video cable.

Table 6-94 Pin assignments of a CVBS video cable

Connector P1	Connector P2
C4	CENTRE
C5	SHELL

Connection

A CVBS 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 6-95 provides the CVBS video cable ordering information.

Table 6-95 CVBS 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

6.15 VGA Video Cable

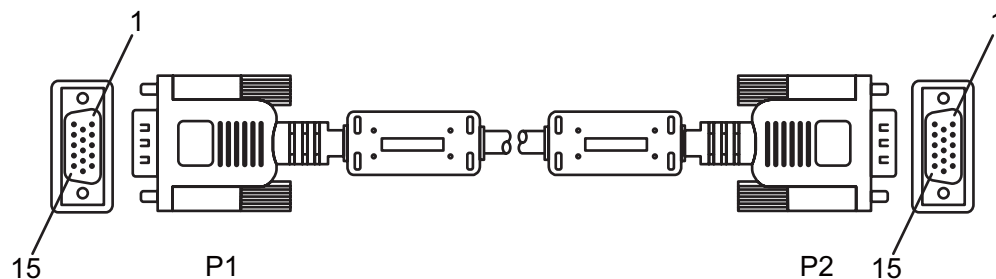
Description

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.

Appearance and Structure

Figure 6-61 shows the structure of a VGA video cable.

Figure 6-61 Structure of a VGA video cable



Pin Assignments

Table 6-96 lists pin assignments of a VGA video cable.

Table 6-96 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

Connector P1	Wire Color	Connector P2
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.

Ordering Information

Table 6-97 provides the VGA video cable ordering information.

Table 6-97 VGA video cable ordering information

Part Number	Description	Remarks
04051110	Audio Video&Control Signal Cable, VGA Cable, 0.6m, D15M-I, CC8P0.4B, D15M-I, Magnet both sides	Mandatory

6.16 HDMI Video Cable

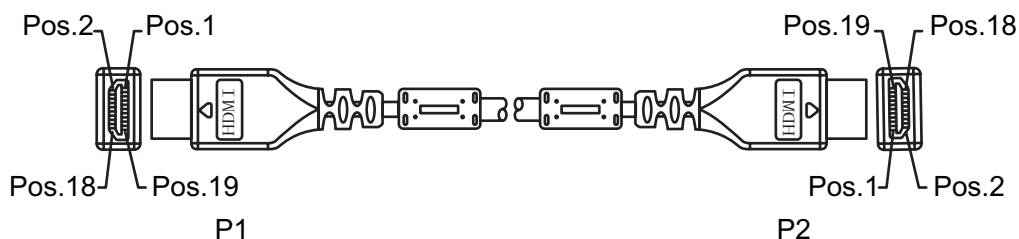
Description

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.

Appearance and Structure

Figure 6-62 shows the structure of an HDMI video cable.

Figure 6-62 Structure of an HDMI video cable



Pin Assignments

Table 6-98 lists pin assignments of an HDMI video cable.

Table 6-98 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	
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.

Ordering Information

Table 6-99 provides the HDMI video cable ordering information.

Table 6-99 HDMI video cable ordering information

Part Number	Description	Remarks
04051109	Audio Video&Control Signal Cable, HDMI-HDMI Cable, 1.3m, HDMI-A M, ((28AWG*1P+D+FAM)*4P+28AWG*1P+28AWG*5C)(S), HDMI-A M	Mandatory

6.17 20-Pin Boolean Input/Output Cable

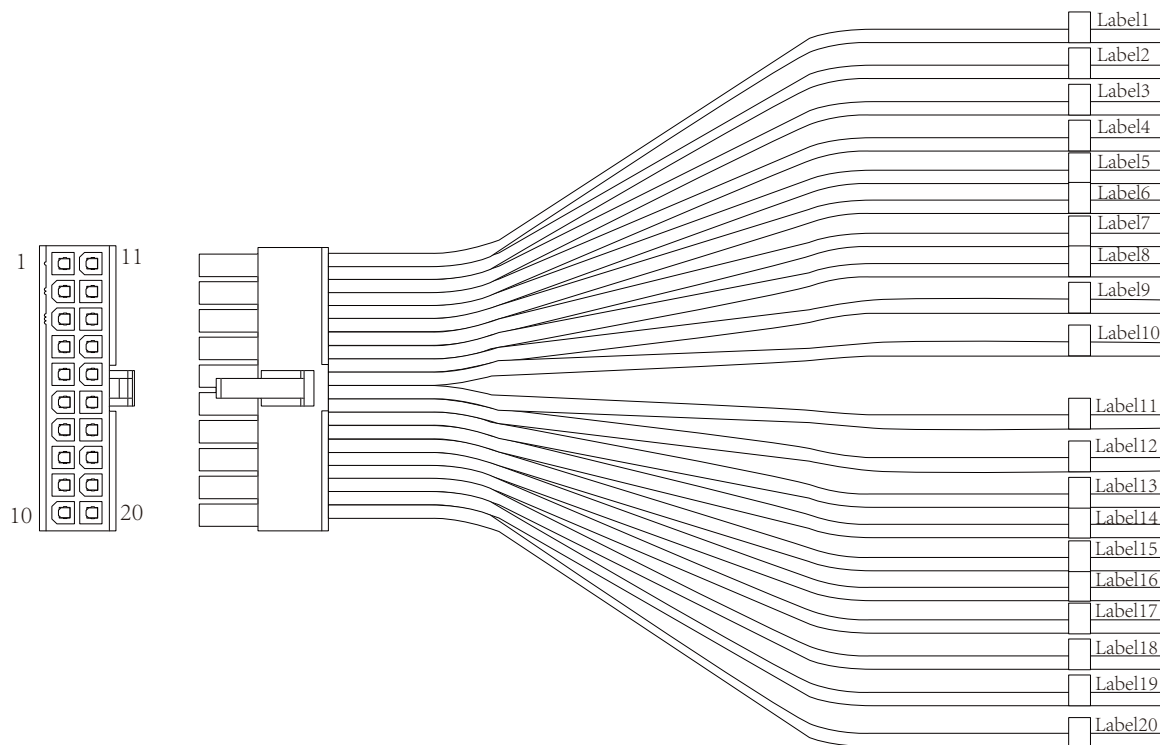
Description

A 20-pin Boolean input/output cable has a 20-pin input connector at one end, and wires at the other end are connected to digital input devices.

Appearance and Structure

Figure 6-63 shows the structure of a 20-pin Boolean input/output cable.

Figure 6-63 Structure of a 20-pin Boolean input/output cable



Pin Assignments

Table 6-100 lists the pin assignments of a 20-pin Boolean input/output cable.

Table 6-100 Pin assignments of a 20-pin Boolean input/output cable

Connector P1	Label	Signal
1	Label1	DI_0
2	Label2	GND
3	Label3	DI_1
4	Label4	DI_2
5	Label5	DI_3
6	Label6	DI_4
7	Label7	DI_5
8	Label8	GND
9	Label9	GND_AI
10	Label10	AI_0
11	Label11	AI_1
12	Label12	DI_6
13	Label13	DI_7
14	Label14	GND
15	Label15	DO_OPEN_0
16	Label16	DO_CLOSE_0
17	Label17	DO_COM_0
18	Label18	DO_OPEN_1
19	Label19	DO_CLOSE_2
20	Label20	DO_COM_3

Connection

A 20-pin Boolean input/output cable is connected as follows:

- The 20-pin connector at one end is connected to the 20-pin Mini-Fit interface on a router.
- Wires at the other end are connected to a digital input device, and the AI analog input is connected to an external analog voltage.

Ordering Information

Table 6-101 provides the 20-pin Boolean input/output cable ordering information.

Table 6-101 20-pin Boolean input/output cable ordering information

Part Number	Description	Remarks
04152261	Power Cable, 2m,H2X10(4.2), 20*20UL1007B, 20*Transfer connector 1pin,Only for AR515C	Optional

6.18 Console Cable

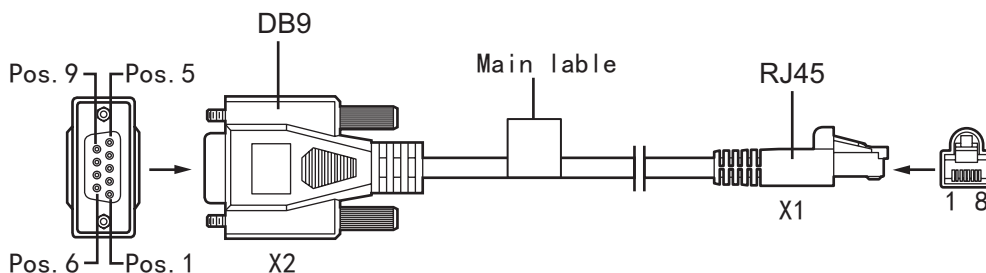
Description

A console cable connects the console interface of an industrial switching router to the serial interface of a computer. The cable connects to the industrial switching router through the RJ45 connector and connects to the computer through the DB9 connector.

Appearance and Structure

Figure 6-64 shows the structure of a console cable.

Figure 6-64 Structure of a console cable



Pin Assignments

Table 6-102 lists the pin assignments of a console cable.

Table 6-102 Pin assignments of a console cable

X1 (RJ45)	Signal	Direction	X2 (DB9)
3	TXD	→	2
5	GND	-	5
6	RXD	←	3

 **NOTE**

- The TXD and RXD signals are defined based on signal stream direction on the industrial switching router, and the corresponding pins must be connected to the pins of RXD and TXD on the remote device.
- 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 the industrial switching router.
- The DB9 connector is connected to a maintenance terminal, generally a computer.

Ordering Information

Each industrial switching router is configured with a console cable, which is delivered in the installation accessory package.

[Table 6-103](#) provides the console cable ordering information.

Table 6-103 Console cable ordering information

Part Number	Description	Remarks
04040838	Single Cable, Serial Port Cable, 3m, D9F, CC2P0.32PWG1U, MP8-VI, S3026V	Standard configuration

6.19 8AS Cable

Description

An 8AS interface card can be used in four scenarios, where different cables are required.

[Table 6-104](#) describes the scenarios and applicable cables.

Table 6-104 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.

Cable Type	Application Scenario	Description
Adapter cable plus straight-through cable	Telecommunications terminal	An adapter cable has an RJ45 plug at one end and an RJ45 socket at the other end. The cable converts the wire sequence on a dumb terminal to the standard wire sequence for telecommunications devices. The RJ45 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.

Straight-Through Cable: Connecting to a Financial Dumb Terminal

Figure 6-65 shows the structure of a straight-through cable.

Figure 6-65 Structure of a straight-through cable

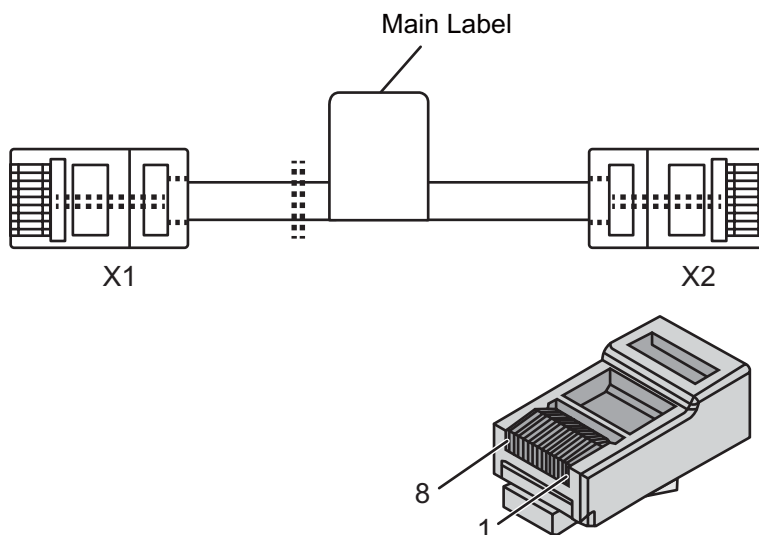


Table 6-105 lists the pin assignments of a straight-through cable.

Table 6-105 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 6-66 shows the structure of an adapter cable.

Figure 6-66 Structure of an adapter cable

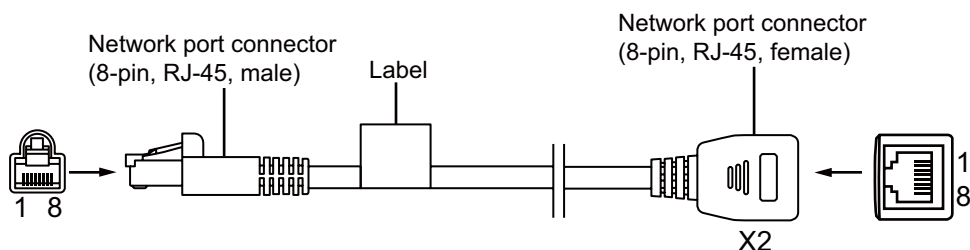


Table 6-106 lists the pin assignments of an adapter cable.

Table 6-106 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

X1 (Male)	Signal	Direction	X2 (Female)
7	CTS	←	Brown
8	RTS	→	White and orange

Figure 6-67 shows the structure of a straight-through cable.

Figure 6-67 Structure of a straight-through cable

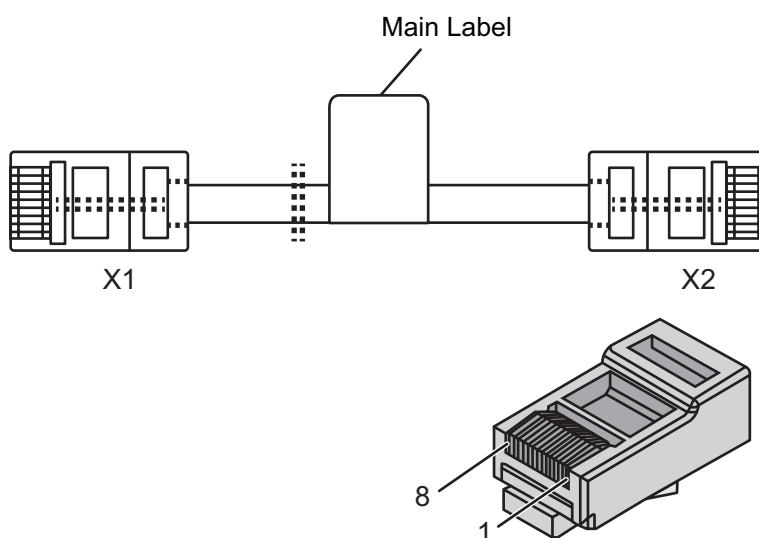


Table 6-107 lists the pin assignments of a straight-through cable.

Table 6-107 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 6-68 shows the structure of an adapter cable.

Figure 6-68 Structure of an adapter cable

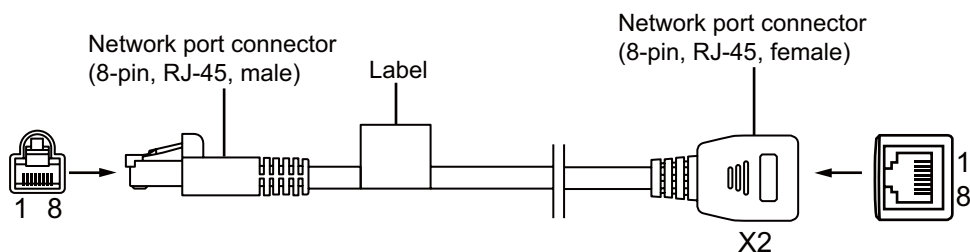


Table 6-108 lists the pin assignments of an adapter cable.

Table 6-108 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 6-69 shows the structure of an asynchronous serial cable.

Figure 6-69 Structure of an asynchronous serial cable

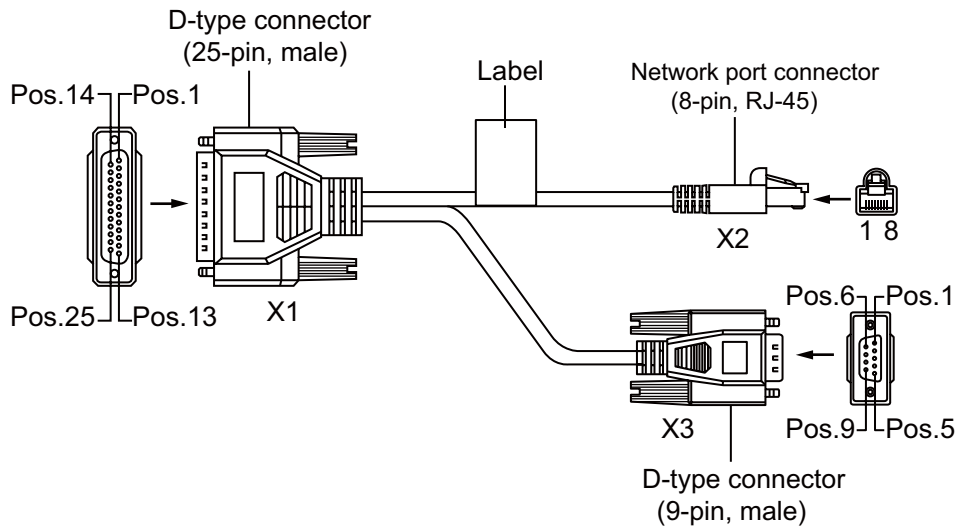


Table 6-109 lists the pin assignments of an asynchronous serial cable.

Table 6-109 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

Self-made Cable: Connecting to a Serial Port Server

Figure 6-70 shows the structure of a self-made cable.

Figure 6-70 Structure of a self-made cable

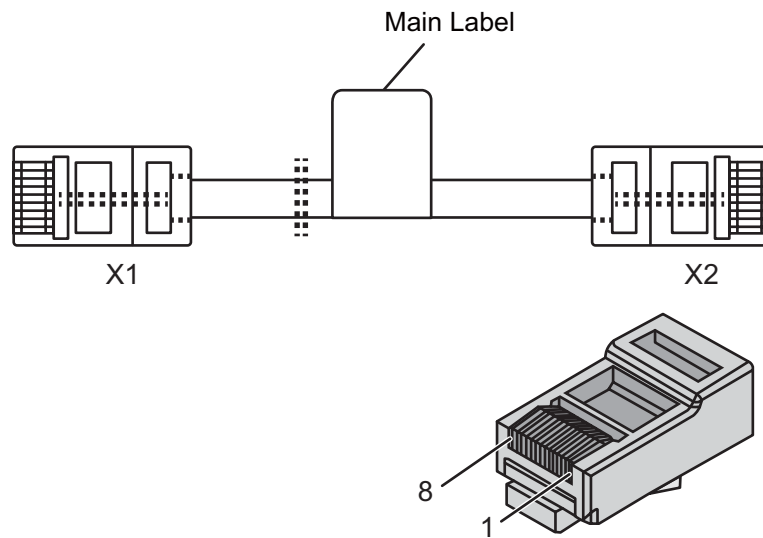


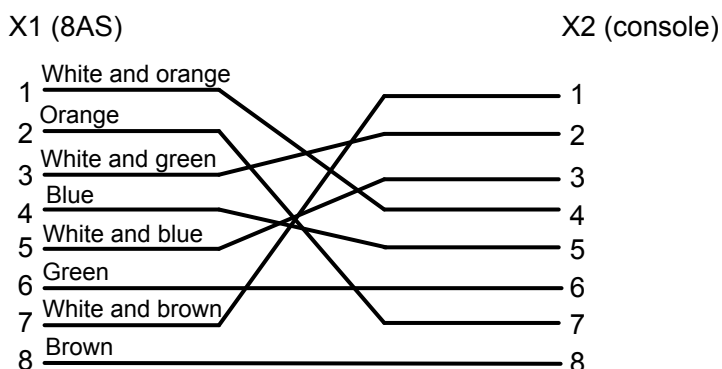
Table 6-110 lists the pin assignments of a self-made cable.

Table 6-110 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 6-71 shows the pin connections of a self-made cable.

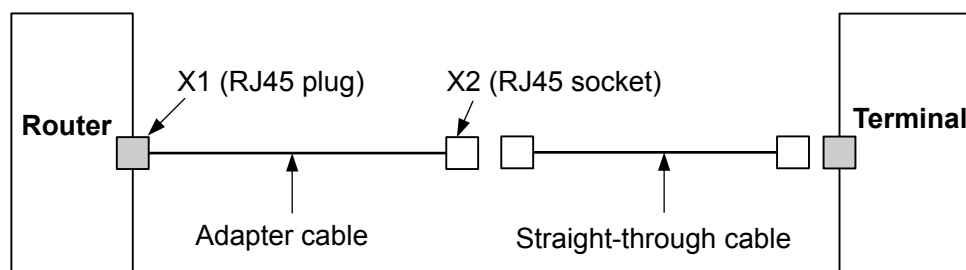
Figure 6-71 Pin connections of a self-made cable



Connection

- Financial dumb terminal connection: Connect one end of a straight-through cable to an 8AS card and the other end to a dumb terminal.
- Telecommunications terminal connection: Connect the X1 end (RJ45 plug) of an adapter cable to an 8AS card and the other end to a straight-through cable. Then connect the other end of the straight-through cable to a telecommunications terminal. See [Figure 6-72](#).

Figure 6-72 Telecommunications terminal connection



- Common network device connection: Connect the RJ45 connector of an asynchronous serial cable to an 8AS 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 an 8AS card, and the X2 end (RJ45) to a serial port server.

Ordering Information

[Table 6-111](#) provides the 8AS cable ordering information.

Table 6-111 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

7 Pluggable Modules for Interfaces

About This Chapter

[7.1 Important Notes About Using Optical Modules Certified for Huawei Routers](#)

[7.2 Understanding Optical Modules](#)

[7.3 Understanding Copper Modules](#)

[7.4 Models and Parameters](#)

7.1 Important Notes About Using Optical Modules Certified for Huawei Routers

7.1.1 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, contact Huawei Technical Assistant Center (TAC).

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 "HUAWEI", as shown in [Figure 7-1](#).

Figure 7-1 "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
  Vendor Part Number   :02315208
  Ordering Name        :
-----
Manufacture information:
  Manu. Serial Number  :210231520810E4000803
  Manufacturing Date   :2013-09-11
  Vendor Name          :HUAWEI
```

7.1.2 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.

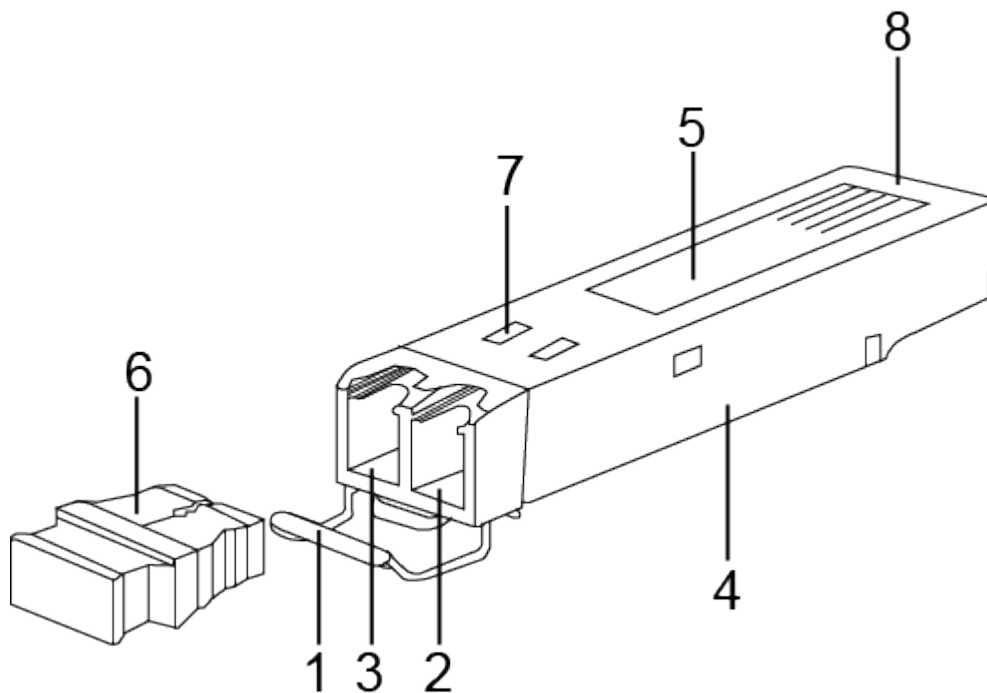
- Some non-Huawei-certified optical modules are not designed in compliance with EMC standards and have low anti-interference capability. Additionally, they bring electromagnetic interference to nearby devices.
- The operating temperature ranges of non-Huawei-certified optical modules cannot meet service requirements. When they are used under relatively high temperature, the optical power decreases, resulting in service interruption.

7.2 Understanding Optical Modules

7.2.1 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 7-2](#) shows the structure of an optical module.

Figure 7-2 Structure of an optical module



1. Handle	2. Receiver	3. Transmitter
4. Shell	5. Label	6. Dust plug
7. Spring	8. Connector	-

7.2.2 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+.

- 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 7-1** 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 7-1 provides optical module classification based on different factors.

Table 7-1 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.
		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.

Encapsulation Type	Rate	Standard	Description
		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.
<ul style="list-style-type: none"> ● 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.
		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.

Encapsulation Type	Rate	Standard	Description
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.

7.2.3 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.

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, multimode 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.
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.

7.2.4 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.

7.3 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.

7.4 Models and Parameters



- 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.

7.4.1 SFP/eSFP Optical Module

Appearance

Figure 7-3 shows the appearance of an SFP/eSFP optical module.

Figure 7-3 Appearance of an SFP/eSFP optical module

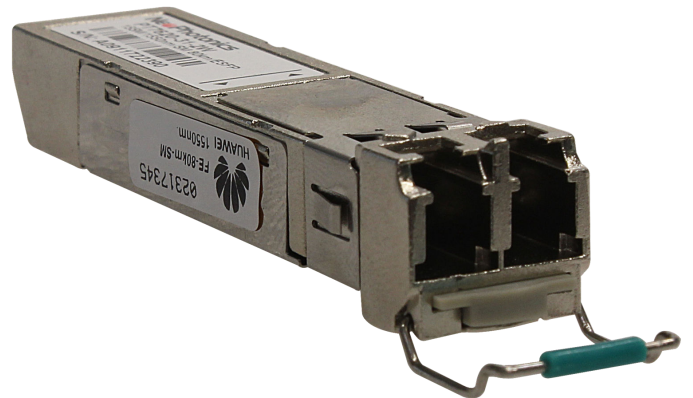


Figure 7-4 shows the appearance of a GE copper module.

Figure 7-4 Appearance of a GE copper module



FE Optical Module

Table 7-2 and **Table 7-3** list the attributes and optical parameters of an FE optical module.

Table 7-2 Attributes of an FE optical module

Model/Part Number	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
SF15S1310/02310QRN	≤ 15	100base-LX	<ul style="list-style-type: none"> ● Fiber mode: single-mode ● Connector type: LC 	-40°C to +85°C (-40°F to +185°F)
SFP-155Mb/s-MM1310/02311RRM	≤ 2	100base-FX	<ul style="list-style-type: none"> ● Fiber mode: multimode ● Connector type: LC 	
eSFP-STM1-LH40-SM1310/02311KYE	≤ 40	100base-LX	<ul style="list-style-type: none"> ● Fiber mode: single-mode ● Connector type: LC 	
eSFP-STM1-LH80-SM1550/02311KYF	≤ 80	100base-LX	<ul style="list-style-type: none"> ● Fiber mode: single-mode ● Connector type: LC 	

Table 7-3 Optical parameters of an FE optical module

Model/Part Number	Center Wavelength (nm)	Transmit Optical Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
SF15S1310/02310QRN	1310	-15.0 to -8.0	≤ -31.0	-8.0	8.2
SFP-155Mb/s-MM1310/02311RRM	1310	-20.0 to -14.0	≤ -30.0	-12.0	10
eSFP-STM1-LH40-SM1310/02311KYE	1310	-5.0 to 0	≤ -34.0	-10.0	10
eSFP-STM1-LH80-SM1550/02311KYF	1550	-5.0 to 0	≤ -34.0	-10.0	10

GE Optical Module

Table 7-4 and **Table 7-5** list the attributes and optical parameters of a GE optical module.

Table 7-4 Attributes of a GE optical module

Model/Part Number	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
OGSM01880/02310 LJJ	≤ 0.55	1000base-SX	<ul style="list-style-type: none"> ● Fiber mode: multimode ● Connector type: LC 	-40°C to +85°C (-40°F to +185°F)
OGSC10DD0/02310 LJJ	≤ 10	1000base-LX/LH	<ul style="list-style-type: none"> ● Fiber mode: single-mode ● Connector type: LC 	
OGSC40DD0/02310 LJJ	≤ 40			

Table 7-5 Optical parameters of a GE optical module

Model/Part Number	Center Wavelength (nm)	Transmit Optical Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
OGSM01880/02310 LJJ	850	-10.0 to -2.5	≤ -17.0	0	9.0
OGSC10DD0/02310 LJJ	1310	-9.5 to -3.0	≤ -20.0	-3.0	9.0
OGSC40DD0/02310 LJJ	1310	-5.0 to 0	≤ -22.5	-3.0	9.0

GE Copper Module

Table 7-6 lists the attributes of a GE copper module.

Table 7-6 Attributes of a GE copper module

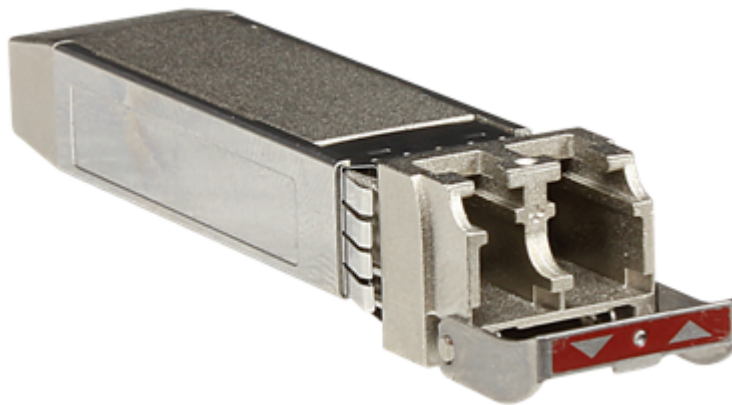
Model/Part Number	Transmission Distance (km)	Rate	Connector Type	Standard
SFP-1000BaseT/ 34100144	≤ 0.1	Supporting rates of 10 Mbit/s, 100 Mbit/s, and 1000 Mbit/s when used on a GE optical port, and supporting only the rate of 1000 Mbit/s when used on a 10GE optical port NOTE The optical port must support copper modules.	RJ45	1000Base-T

7.4.2 SFP+ Modules

Appearance

Figure 7-5 shows the appearance of an SFP+ optical module.

Figure 7-5 Appearance of an SFP+ optical module



10GE Optical Module

Table 7-7 and **Table 7-8** list the attributes of an 10GE optical module.

Table 7-7 Attributes of a 10GE optical module

Model/Part Number	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
OSX010N05/34060599	≤ 10	10GBASE-LR	<ul style="list-style-type: none"> ● Fiber mode: single-mode ● Connector type: LC 	-40°C to 85°C (-40°F to 185°F)

Table 7-8 Optical parameters of a 10GE optical module

Model/Part Number	Center Wavelength (nm)	Transmit Optical Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
OSX010N05/34060599	1310	-8.2 to 0.5	≤ -14.4	1.5	3.5

8 Assembly Box

About This Chapter

8.1 IP65 Enclosure Assembly Box

8.1 IP65 Enclosure Assembly Box

Version Mapping

Table 8-1 lists the devices that can be installed in the IP65 enclosure assembly box.

Table 8-1 Devices that can be installed in the IP65 enclosure assembly box

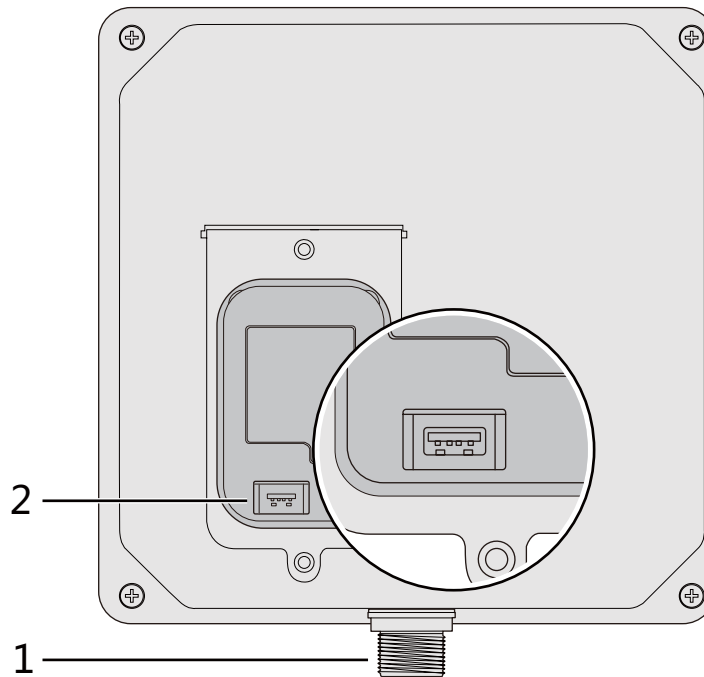
Enclosure Assembly Box	Supported Devices
IP65 enclosure assembly box	AR502EGRz-L AR502EGRz-Lc

Appearance and Structure

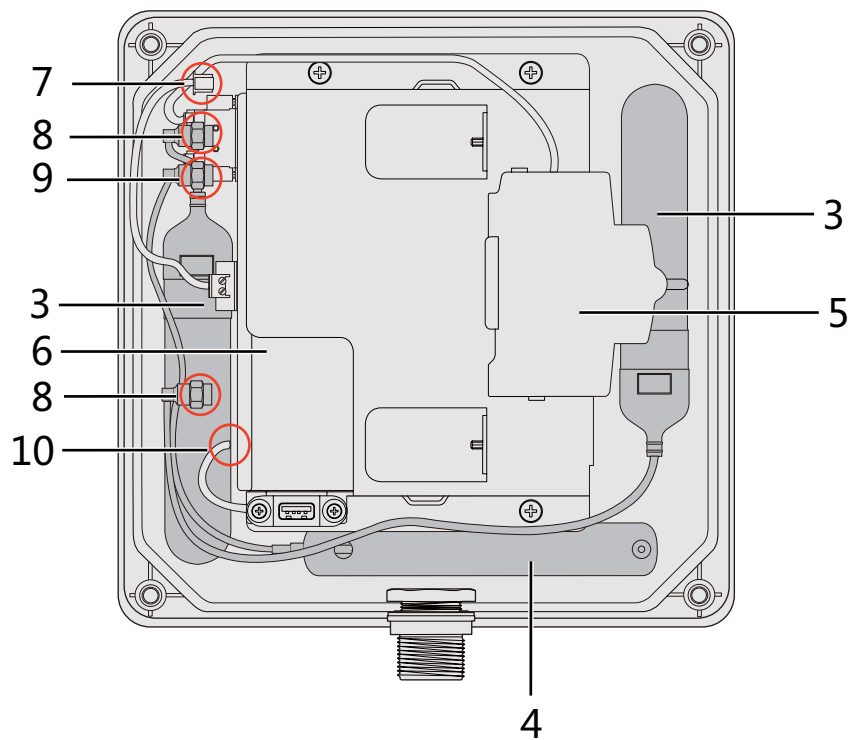
Figure 8-1 shows the appearance of the IP65 enclosure assembly box.

Figure 8-1 Appearance of the IP65 enclosure assembly box

Schematic diagram for removing the USB interface cover
from the back of the IP65 enclosure assembly box



Internal structure of the IP65 enclosure assembly box



1	Two-wire PG interface	2	USB interface NOTE <ul style="list-style-type: none"> ● This interface is the extended USB interface of the gateway in the IP65 enclosure assembly box. ● If a USB disk drive is connected to the USB interface in the back of the IP65 enclosure assembly box, power off the device before removing the USB disk drive. Do not move the USB disk drive when it is in use.
3	Two LTE antennas	4	ZigBee antenna
5	Circuit breaker NOTE A circuit breaker is a switch that will automatically cut off the circuit when the operating current exceeds the rated current or a short circuit occurs.	6	60 W AC power module
7	Power socket NOTE This interface connects to the 60 W AC power module and gateway in the IP65 enclosure assembly box.	8	Two LTE antenna interfaces NOTE The two LTE antenna interfaces connect to the antenna interfaces on the gateway in the IP65 enclosure assembly box.
9	ZigBee antenna interface NOTE This interface connects to the ZigBee antenna and gateway in the IP65 enclosure assembly box.	10	USB interface NOTE This interface is the extended USB interface connecting to the gateway in the IP65 enclosure assembly box.

Power Supply System

A 60 W AC power module is integrated inside the IP65 enclosure assembly box to provide the power supply.

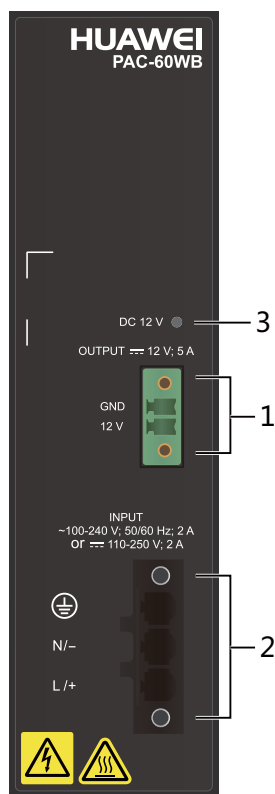
Figure 8-2 shows the appearance of the 60 W AC power module.

Figure 8-2 60 W AC power module



Figure 8-3 shows the interface panel and indicator of the 60 W AC power module.

Figure 8-3 Interface panel and indicator of the 60 W AC power module



1	2-pin DC output power socket	2	AC/DC input power socket
3	DC 12V <ul style="list-style-type: none"> ● Steady on: The power output is normal. ● Off: The power output is abnormal. ● Blinking: The power module is in hiccup protection state. 	-	-

Table 8-2 lists technical specifications of the 60 W AC power module.

Table 8-2 Technical specifications of the 60 W AC power module

Item	Specification
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 (2.0 lb)
Rated input voltage range	<ul style="list-style-type: none"> ● AC: 100 V to 240 V; 50/60 Hz; 2 A ● DC: 110 V DC to 250 V DC; 2 A

Item	Specification
Maximum input voltage range	<ul style="list-style-type: none"> ● AC: 90 V to 264 V ● DC: 88 V DC to 300 V DC
Rated output voltage	12 V DC
Rated output current	5 A
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating temperature	-40°C to +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing

Specifications

Table 8-3 lists the specifications of the IP65 enclosure assembly box.

Table 8-3 Specifications of the IP65 enclosure assembly box

Item	Specification
Product specifications	
Dimensions (W x D x H)	230 mm x 230 mm x 105 mm (9.06 in. x 9.06 in. x 4.13 in.)
Weight	3.8 kg (8.38 lb)
Protection level	IP65
Mounting mode	Wall-mounted or pole-mounted
Interface density	
Two-wire PG interface	1
Environment parameters	
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Operating temperature	-25°C to +60°C (-13°F to +140°F)
Operating relative humidity	5% to 95%, noncondensing

Item	Specification
Operating altitude	≤ 5000 m NOTE If the altitude is higher than 2000 m, derating needs to be performed according to GB/T3859.2-93.
Storage altitude	≤ 5000 m (16404 ft.)
BOM number	50030199

9 Open Source Software Notice

In V200R005C60 and later versions, you can run the **display copyright** command in the user view to view the open source software notice.