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

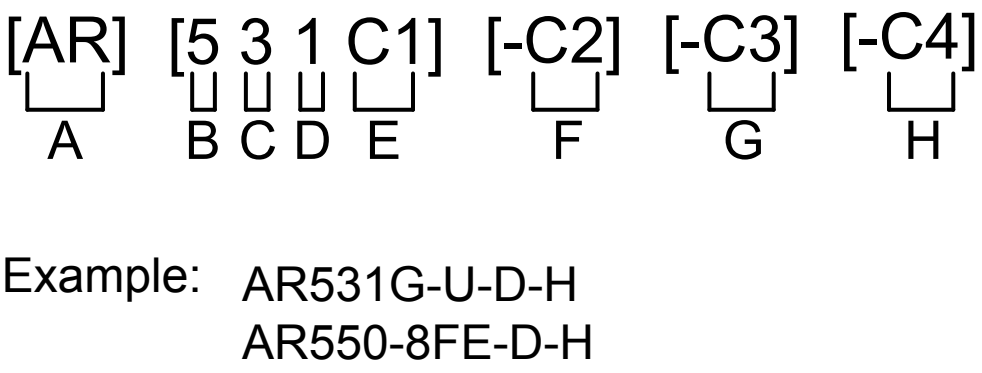

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Table 3-1 AR500&AR510&AR530&AR550 series naming conventions

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	● 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: ● 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.

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Field	Meaning	Description
F	(Optional) Supplementary information about interfaces **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.	● 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. – 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. – M3: supports an SD card. – M7: supports a mini Serial Advanced Technology

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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	● 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

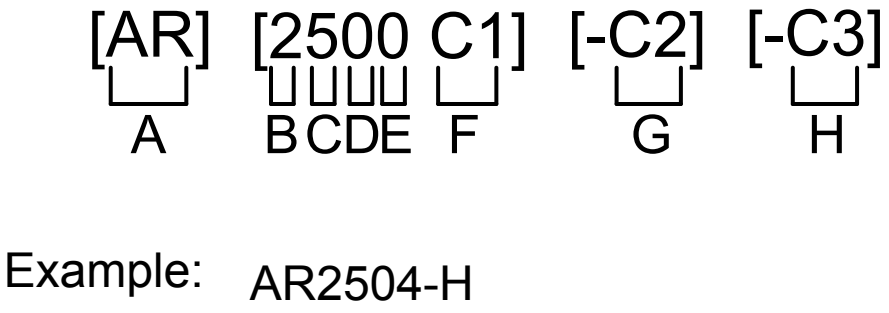

Table 3-2 AR2500 series naming conventions

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.

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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	● C: C series. ● F: F series. ● E: E series.
G	(Optional) power supply information	● 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.

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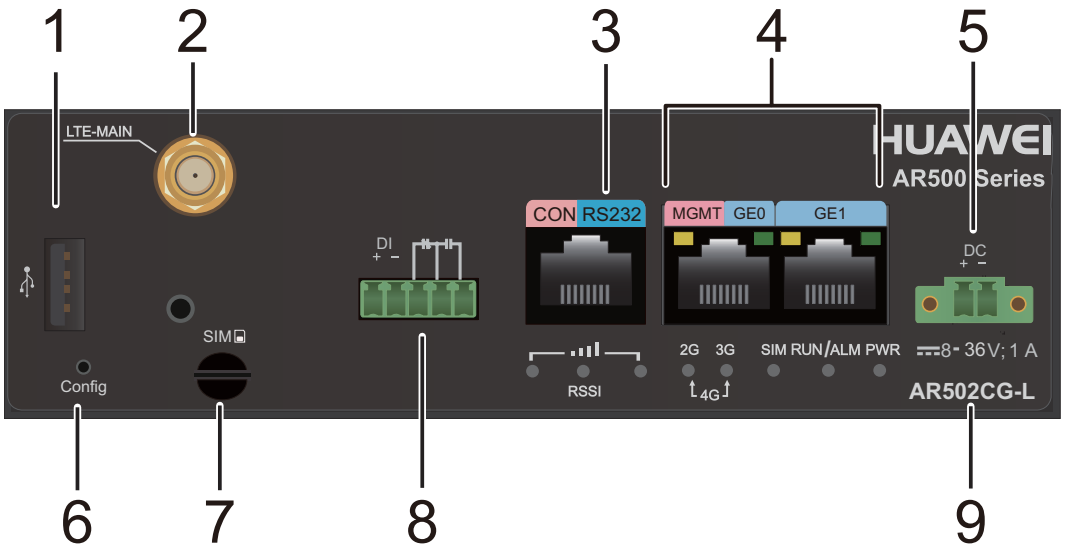
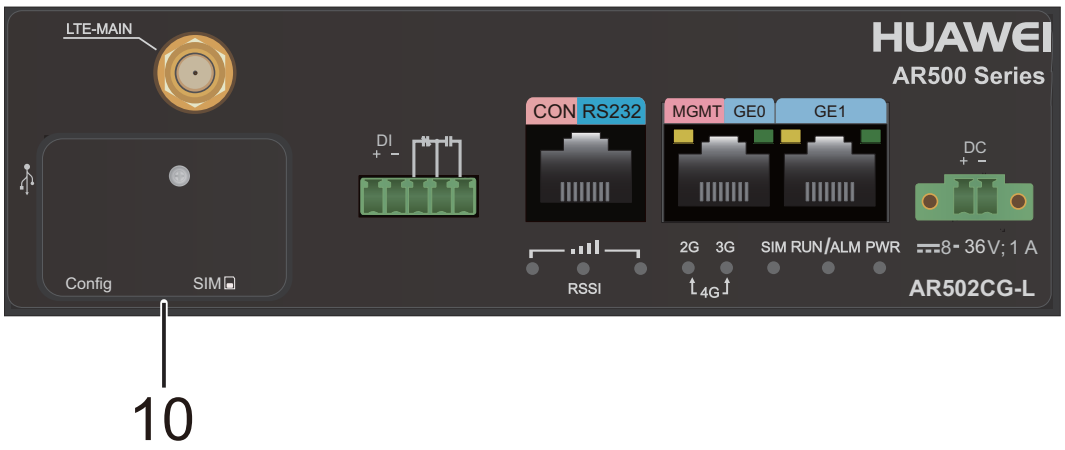
Figure 3-3 AR502CG-L appearance

SIM card cover removed:



SIM card cover installed:



1	USB interface	2	WAN interface: LTE antenna interface **NOTE** ● 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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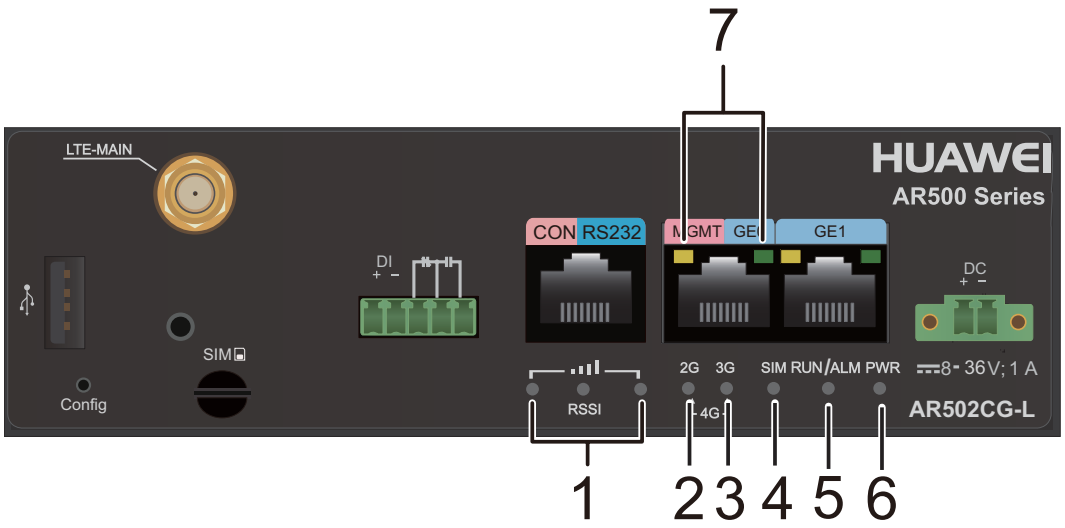
3	CON/RS232 interface	4	LAN interfaces: two GE electrical interfaces **NOTE** ● GE0 is a management interface and is used to upgrade the router. ● The GE LAN interface can be used as a WAN interface.
5	Power socket Applicable power modules: ● The router supports Huawei **4.5 60 W Industrial AC Power Module**. ● Self-provided power modules of customers: see **Technical Specifications** for the recommended power parameters	6	Config button **NOTE** The Config button is used to restore the factory settings and switch 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 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.
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



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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.

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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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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.

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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	● 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	● 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** ● **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	● DI: 9.6-60 V DC power input ● DO: Boolean value (short circuit and open circuit)

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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	● 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	● 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

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Item	Specification
Environment parameters	
Operating temperature	● 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.

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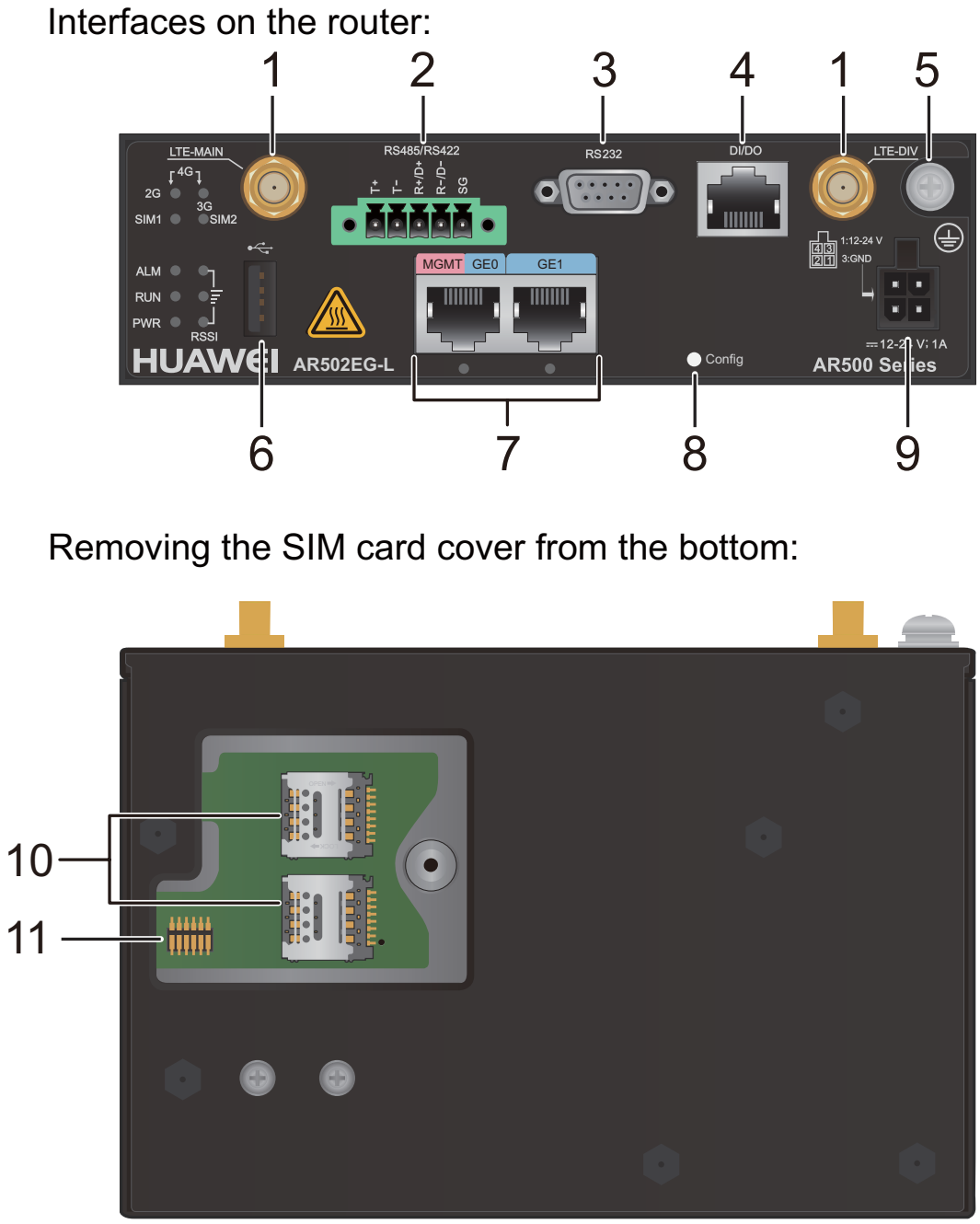
Figure 3-5 AR502EG-L appearance



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

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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. ● 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** ● 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** ● 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 3-6 shows indicators on the AR502EG-L.

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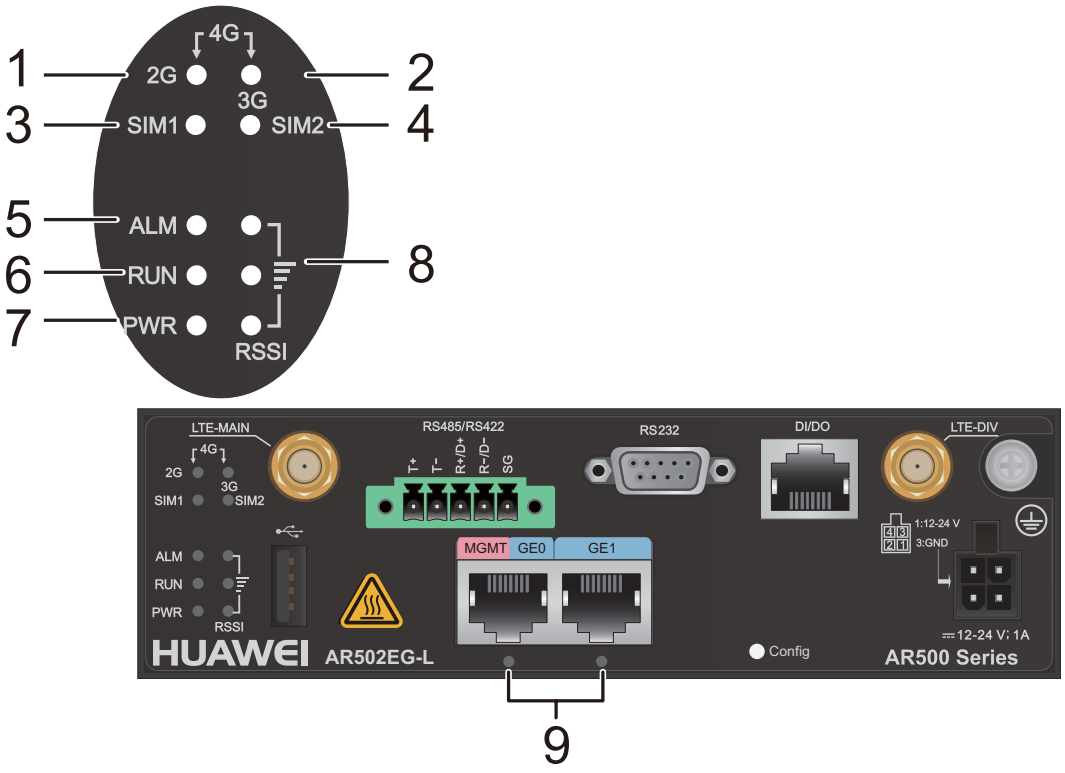
Figure 3-6 Indicators on the AR502EG-L



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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)

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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** ● 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.

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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	● 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	● 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** ● **6.3.4 Outdoor LTE Antenna** ● **6.3.3 LTE Indoor Remote Antenna**

DI/DO interface

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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	● 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

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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	● 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: LVTTL
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	● 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)

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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.

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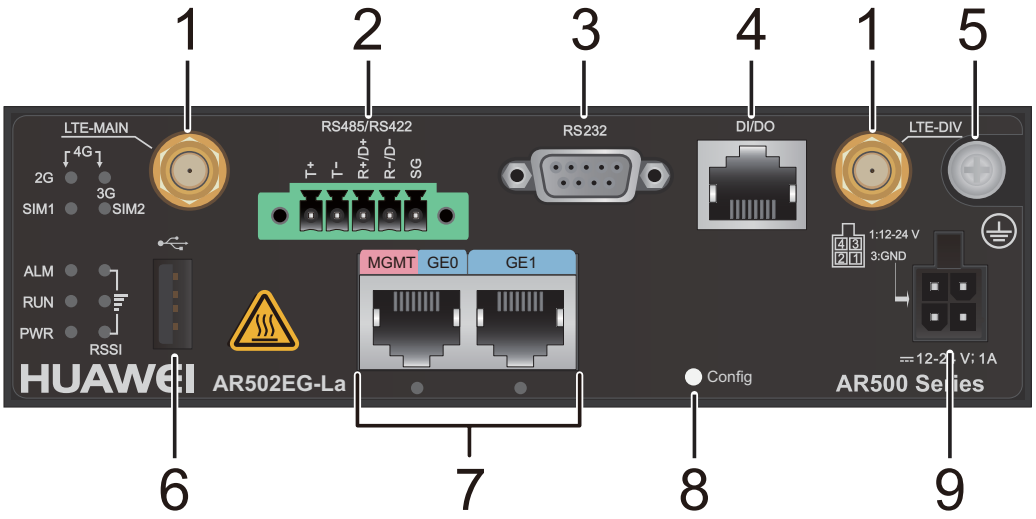
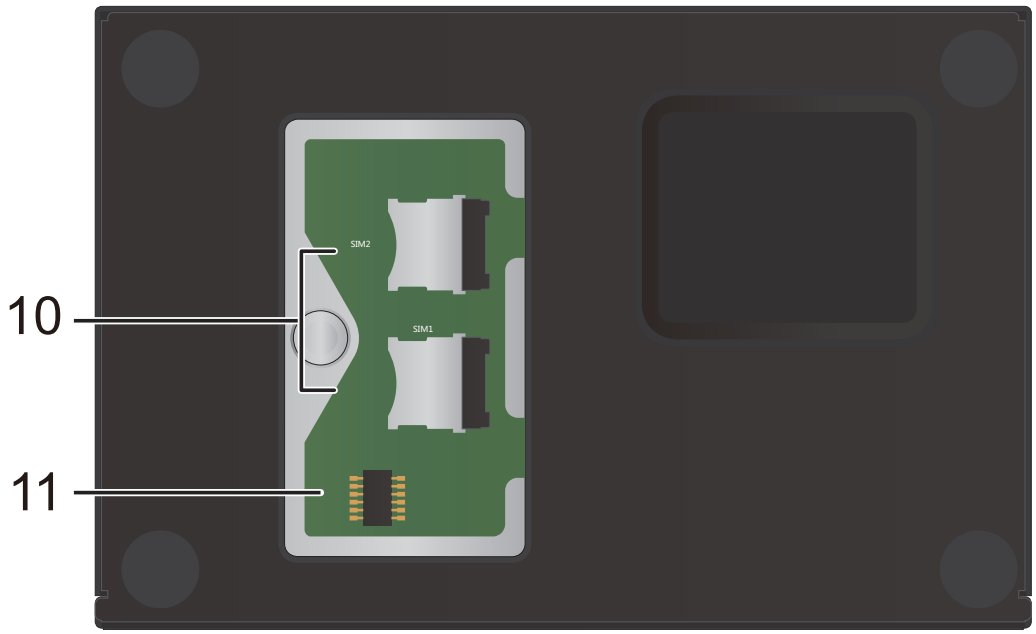
Figure 3-7 AR502EG-La appearance

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

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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. ● 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. ● 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** ● 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** ● 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 3-8 shows indicators on the AR502EG-La.

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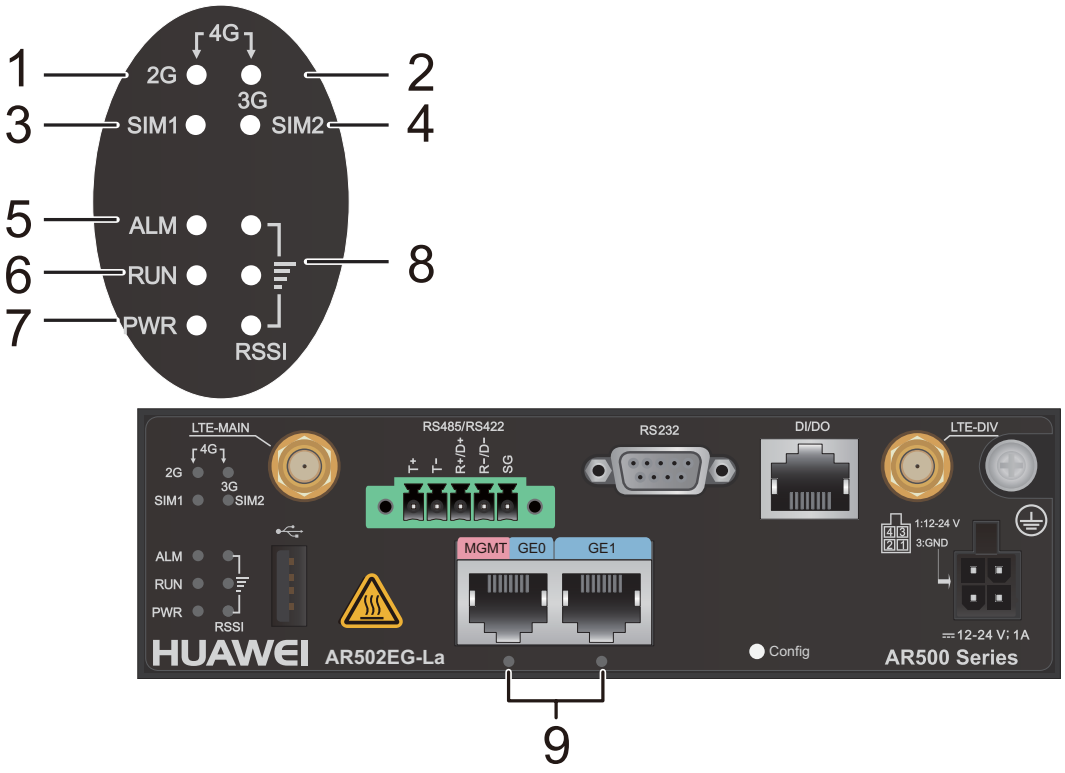
Figure 3-8 Indicators on the AR502EG-La



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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)

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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** ● 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.

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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	● LTE FDD: bands 2/4/12 ● WCDMA: bands 2/4/5
Rate	● 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	● **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

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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	● 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	

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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	● 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: LVTTL
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	● 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.

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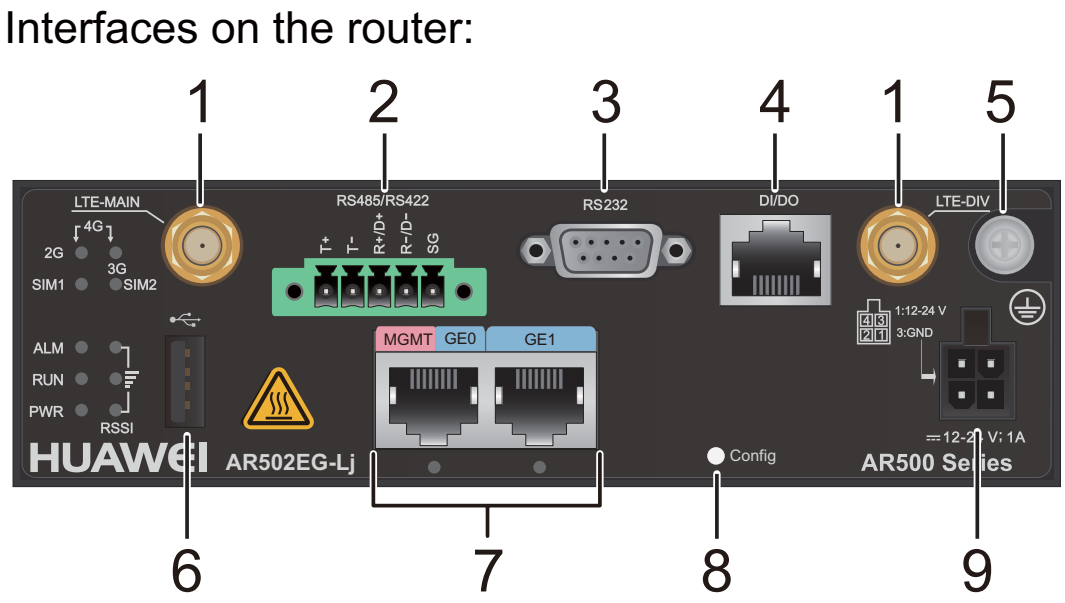
Table 3-26 Mapping between the AR502EG-Lj router and software versions

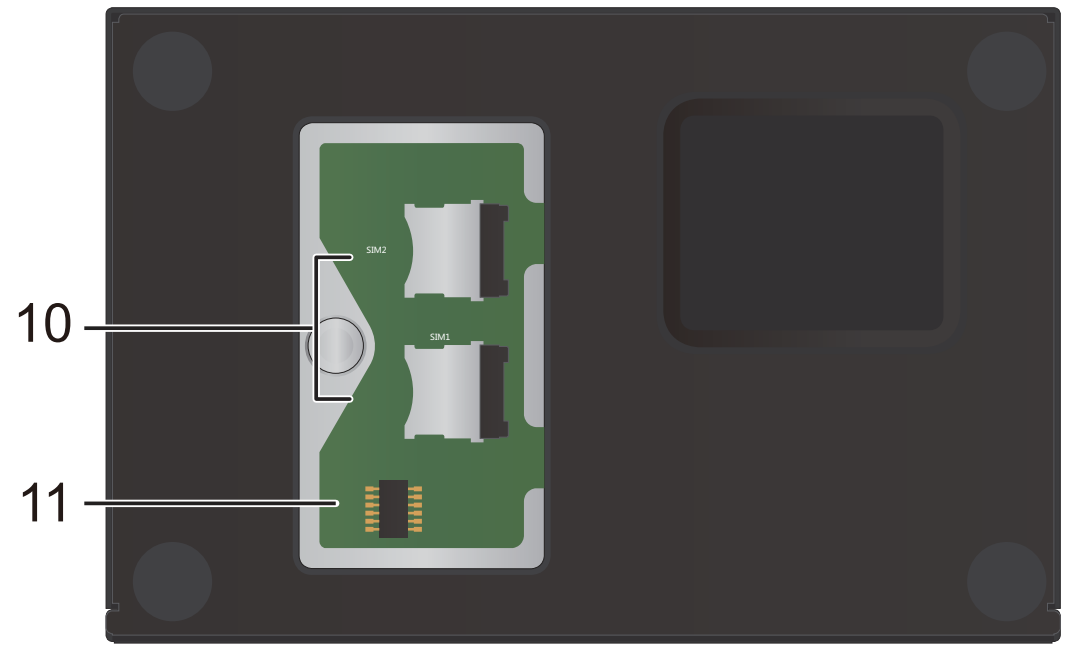
Device Model	Software Version
AR502EG-Lj	V200R010C10 and later versions

Appearance and Structure

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

Figure 3-9 AR502EG-Lj appearance





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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. ● 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. ● 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** ● 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** ● 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.

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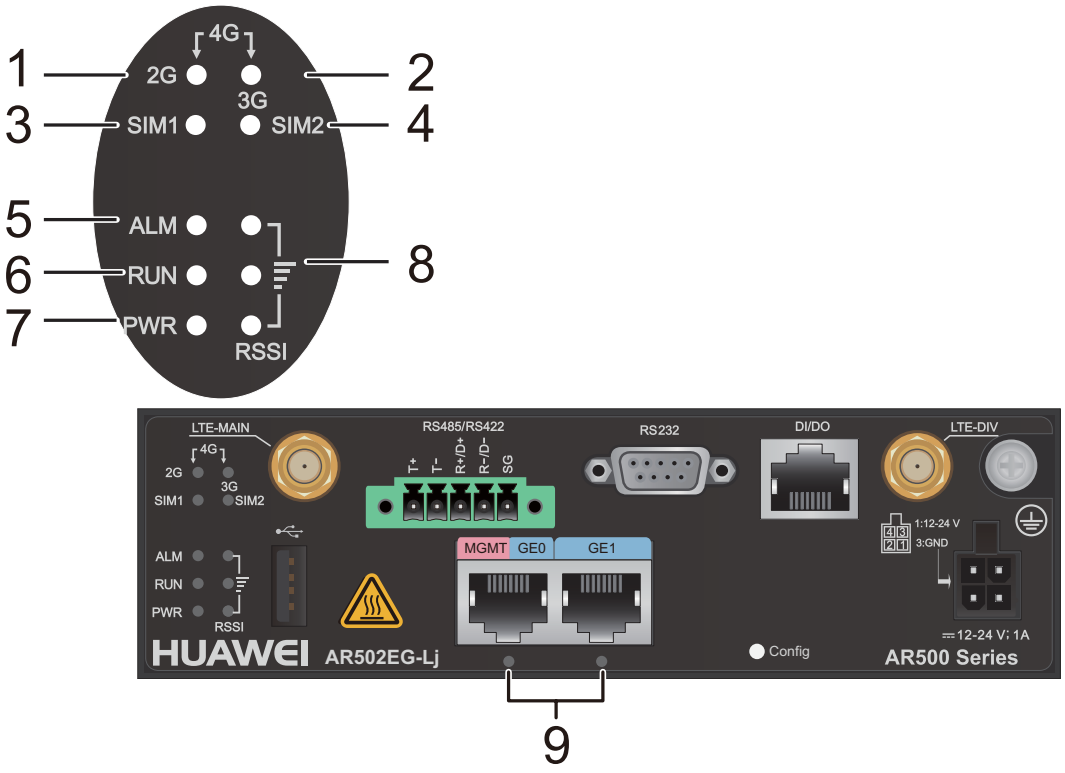
Figure 3-10 Indicators on the AR502EG-Lj



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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

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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** ● 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

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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	● LTE FDD: Band 1/3/19 ● WCDMA: Band 1/6/19
Rate	● 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	● **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.

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Table 3-32 RS485/RS422 interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Standards compliance	RS485/RS422
Working mode	● 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	● 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: LVTTL

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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	● 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	-40ºC to +85ºC (-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.

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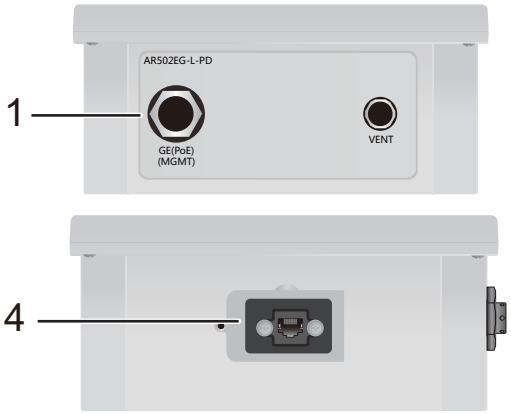
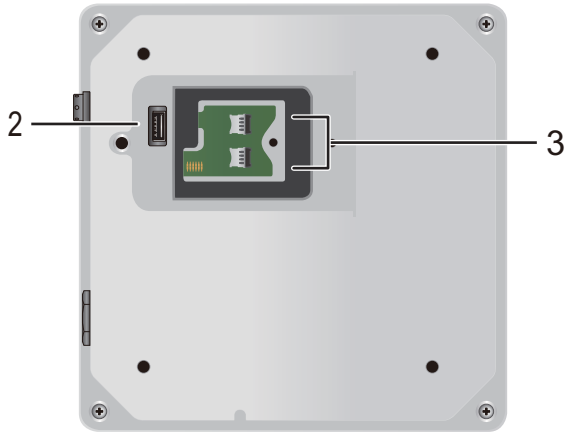
Figure 3-11 AR502EG-L-PD appearance



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** ● 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.

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Table 3-35 GE(PoE) electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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.

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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

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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.

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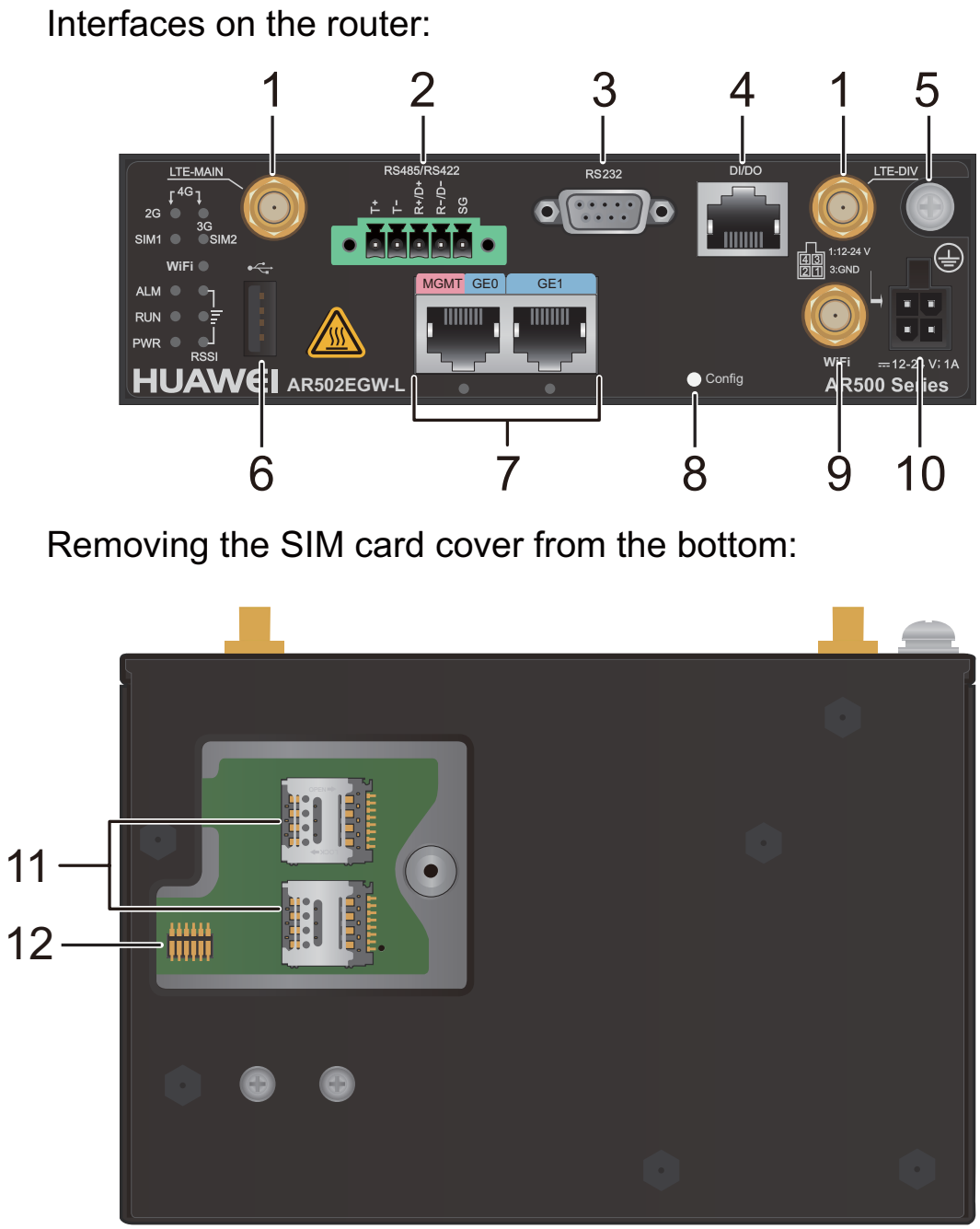
Figure 3-12 AR502EGW-L appearance



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

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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 used to upgrade the router.	8	Config button **NOTE** The Config button is used to restore the factory settings and switch 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 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	LAN interface: Wi-Fi antenna interface	10	Power socket **NOTE** ● 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	Two SIM card slots **NOTE** ● 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 3-13 shows indicators on the AR502EGW-L.

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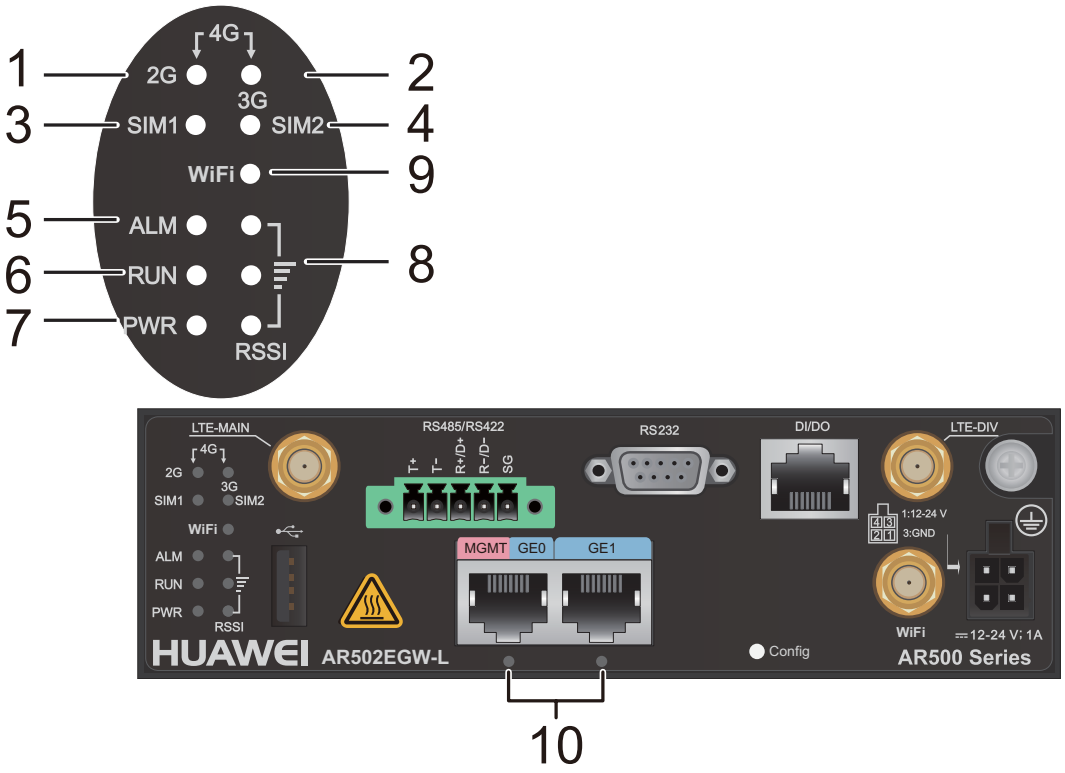
Figure 3-13 Indicators on the AR502EGW-L



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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

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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** ● 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.

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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	● 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	● 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** ● **6.3.4 Outdoor LTE Antenna** ● **6.3.3 LTE Indoor Remote Antenna**

Wi-Fi antenna interface

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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	● 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

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Attribute	Description
Working mode	● 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	● 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: LVTTL
Interface density	
Management interfaces	1

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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.

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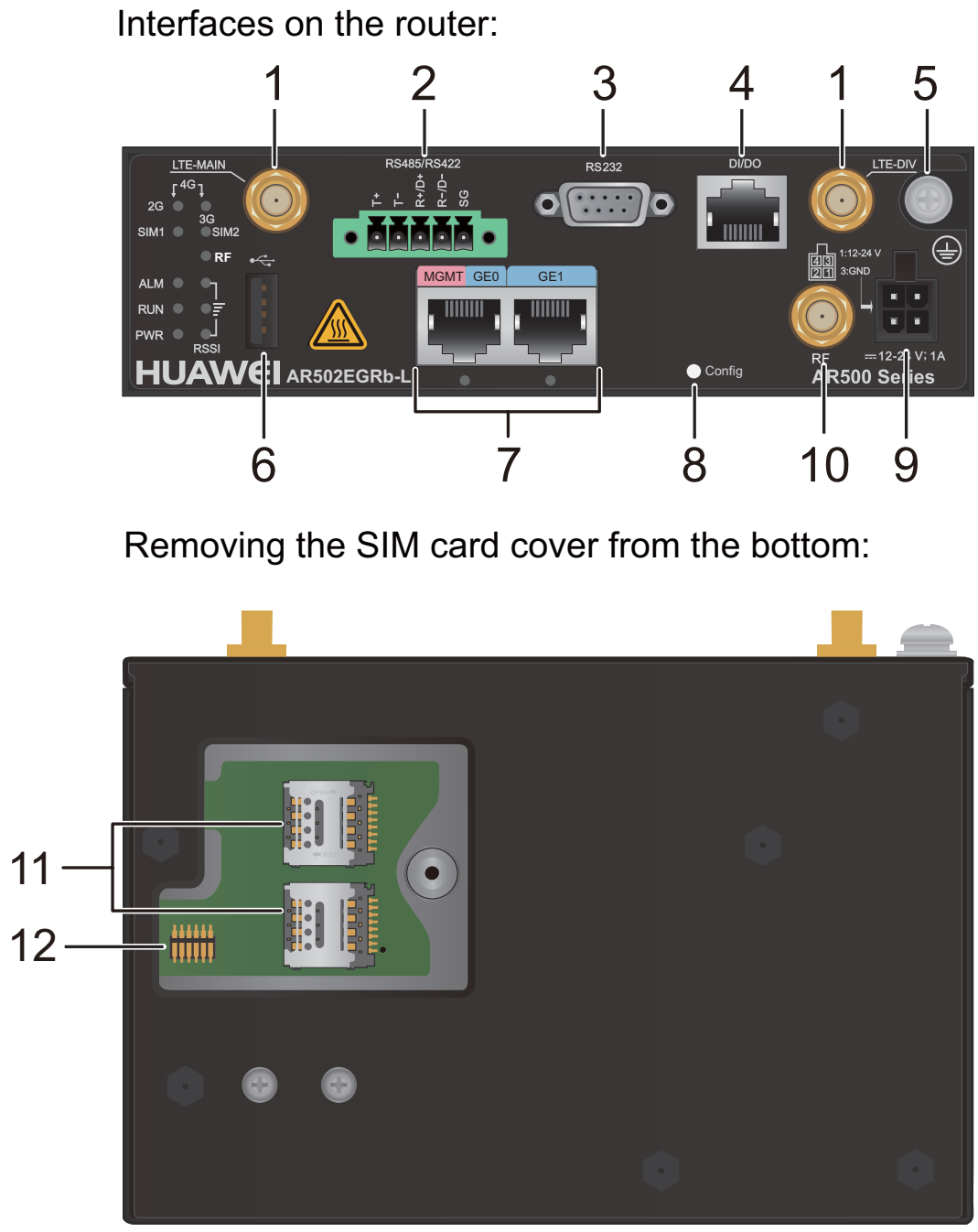
Figure 3-14 AR502EGRb-L appearance



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

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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. ● 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** ● 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** ● 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.

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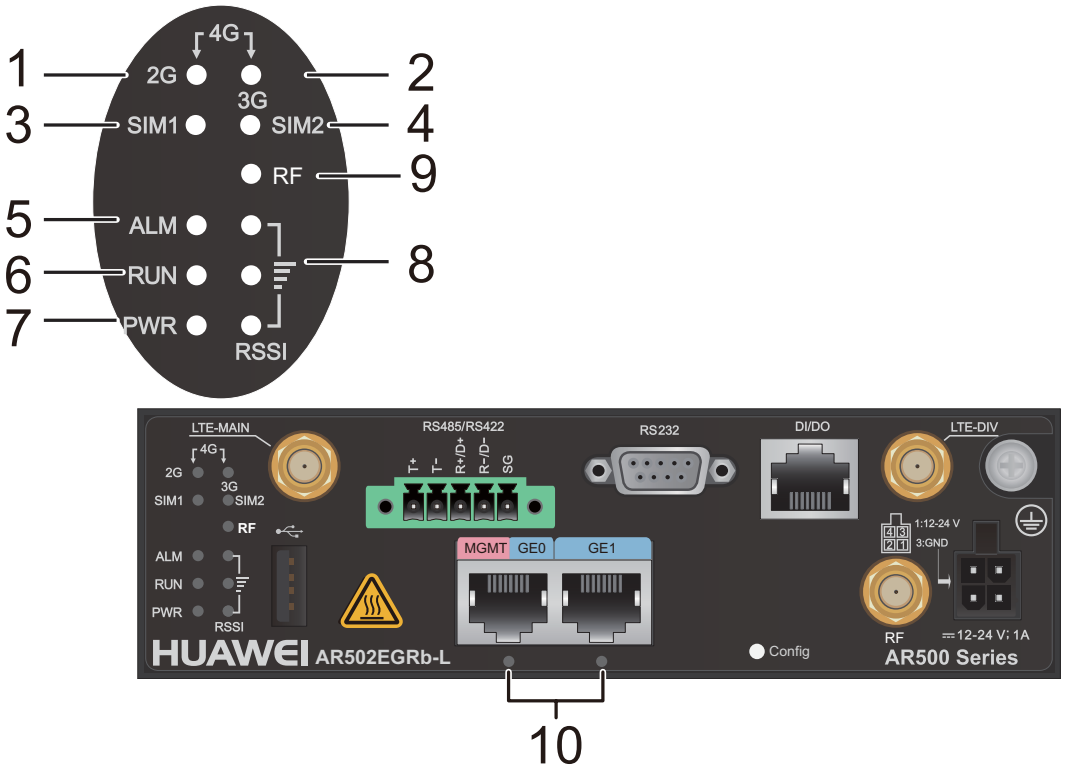
Figure 3-15 Indicators on the AR502EGRb-L



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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 or configured using the USB flash drive.
6	RUN	Green	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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.

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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** ● 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.

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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	● 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	● 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

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Attribute	Description
Cable type	● 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	● 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.

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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	● 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: LVTTL
Interface density	
Management interfaces	1

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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	● 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.

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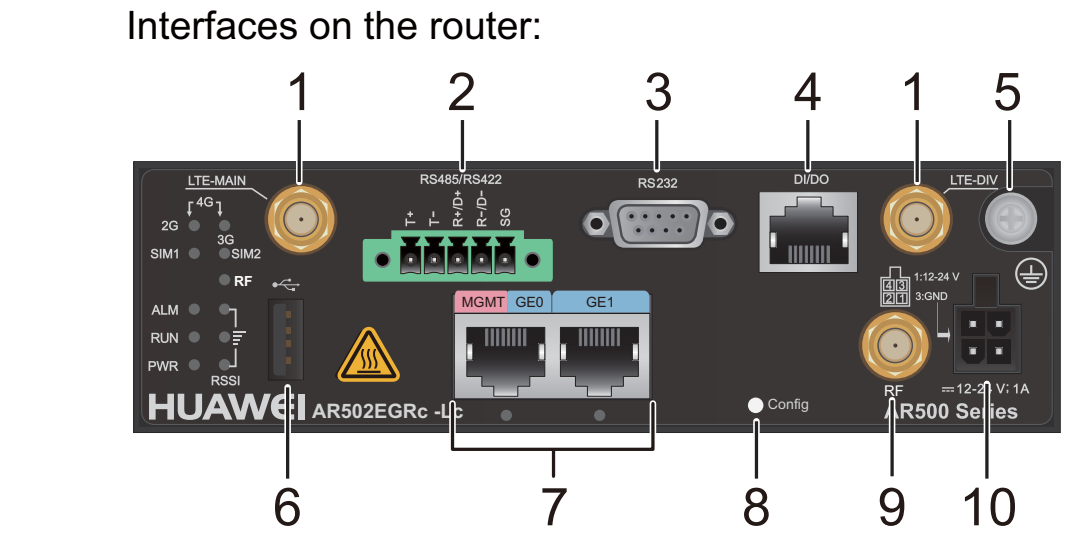
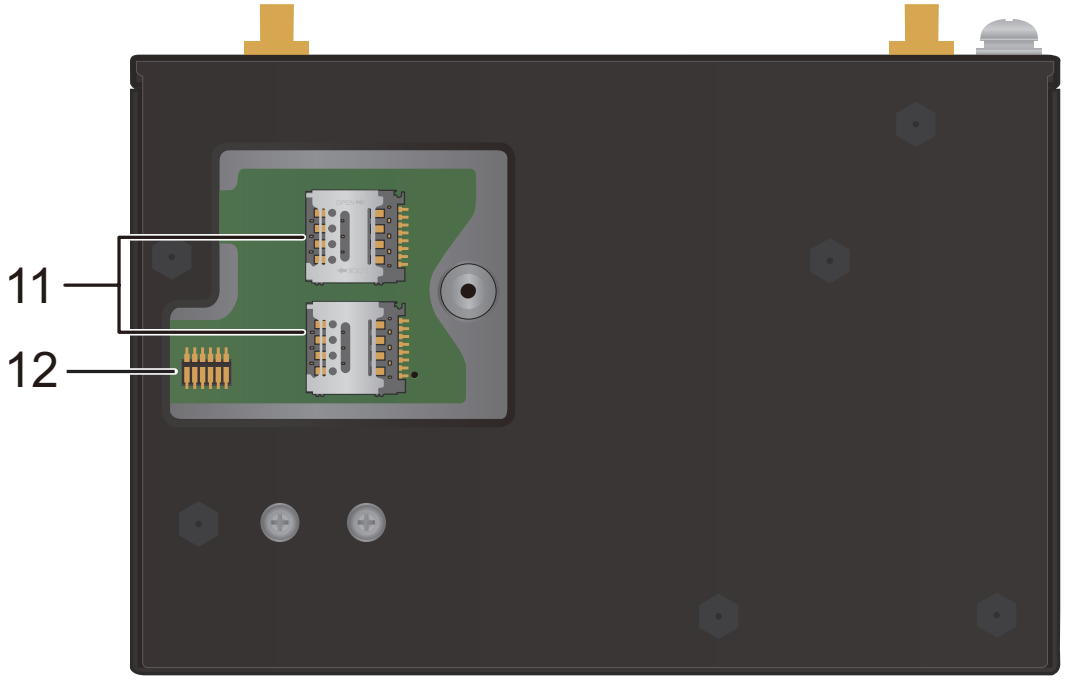
Figure 3-16 AR502EGRc-Lc appearance



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

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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. ● 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	RF antenna interface	10	Power socket **NOTE** ● 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	Two SIM card slots **NOTE** ● 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 3-17 shows indicators on the AR502EGRc-Lc.

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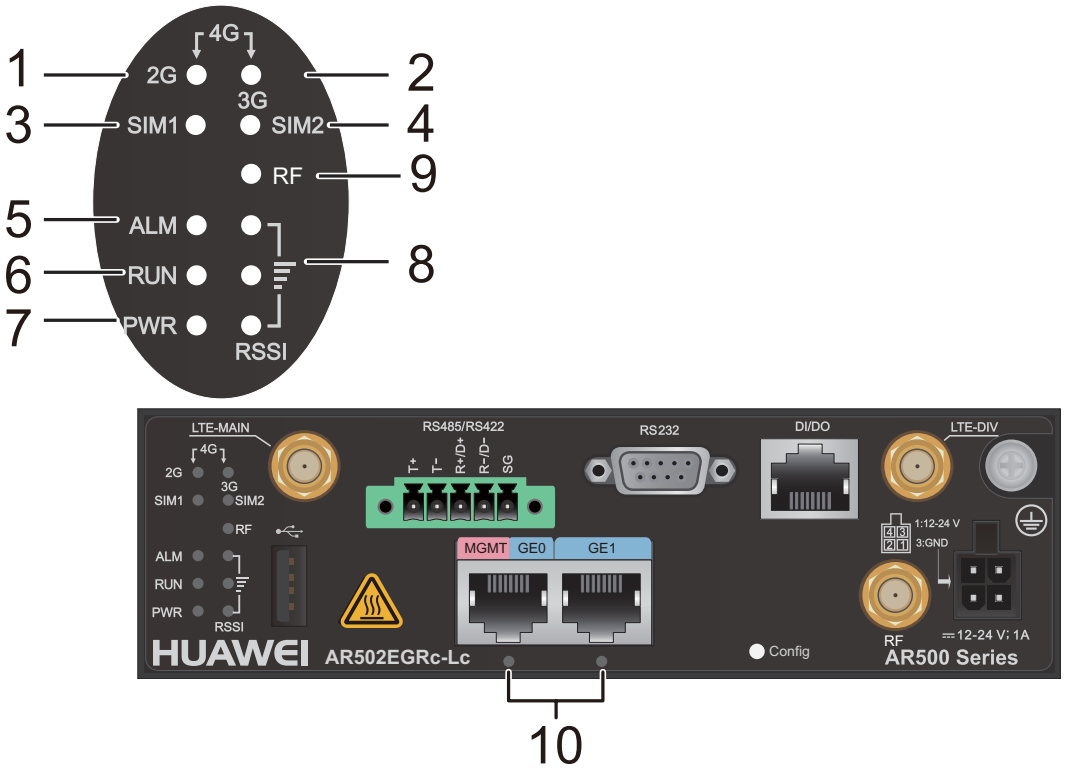
Figure 3-17 Indicators on the AR502EGRc-Lc



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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 or configured using the USB flash drive.
6	RUN	Green	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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

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Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	**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** ● 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.

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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	● 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)

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Attribute	Description
Rate	● 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

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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	● 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.

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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	● 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: LVTTL
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	● 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

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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.

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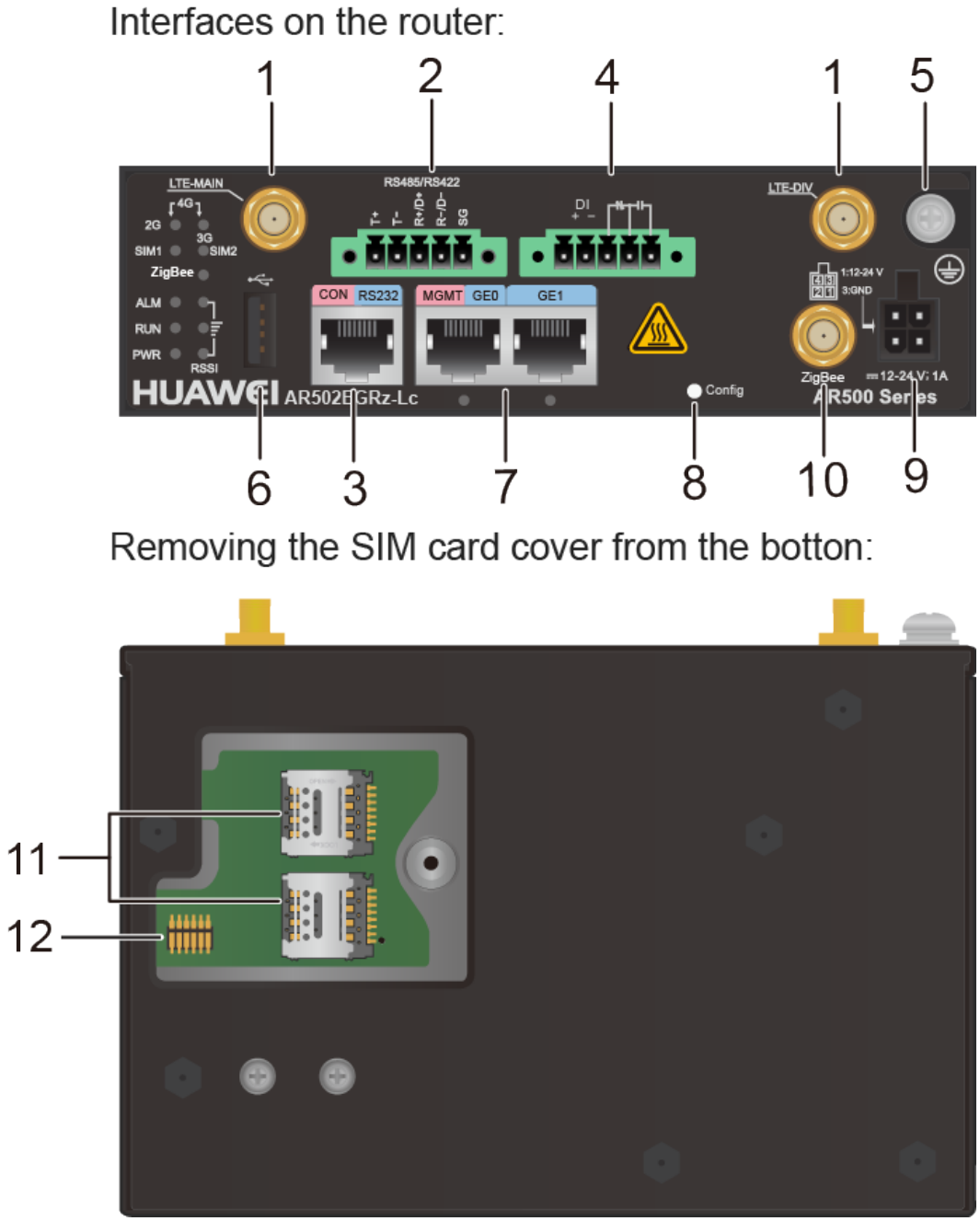
Figure 3-18 AR502EGRz-Lc appearance



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

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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. ● 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** ● 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** ● 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.

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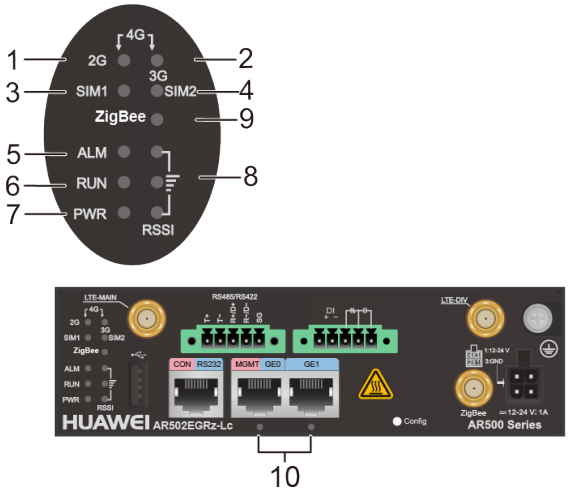
Figure 3-19 Indicators on the AR502EGRz-Lc



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	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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.

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Number	Indicator/ Button	Color	Description
6	RUN	Green	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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.

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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	● 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	● 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.

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Table 3-71 DI/DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	● 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	● 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

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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	● 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

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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	● 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.

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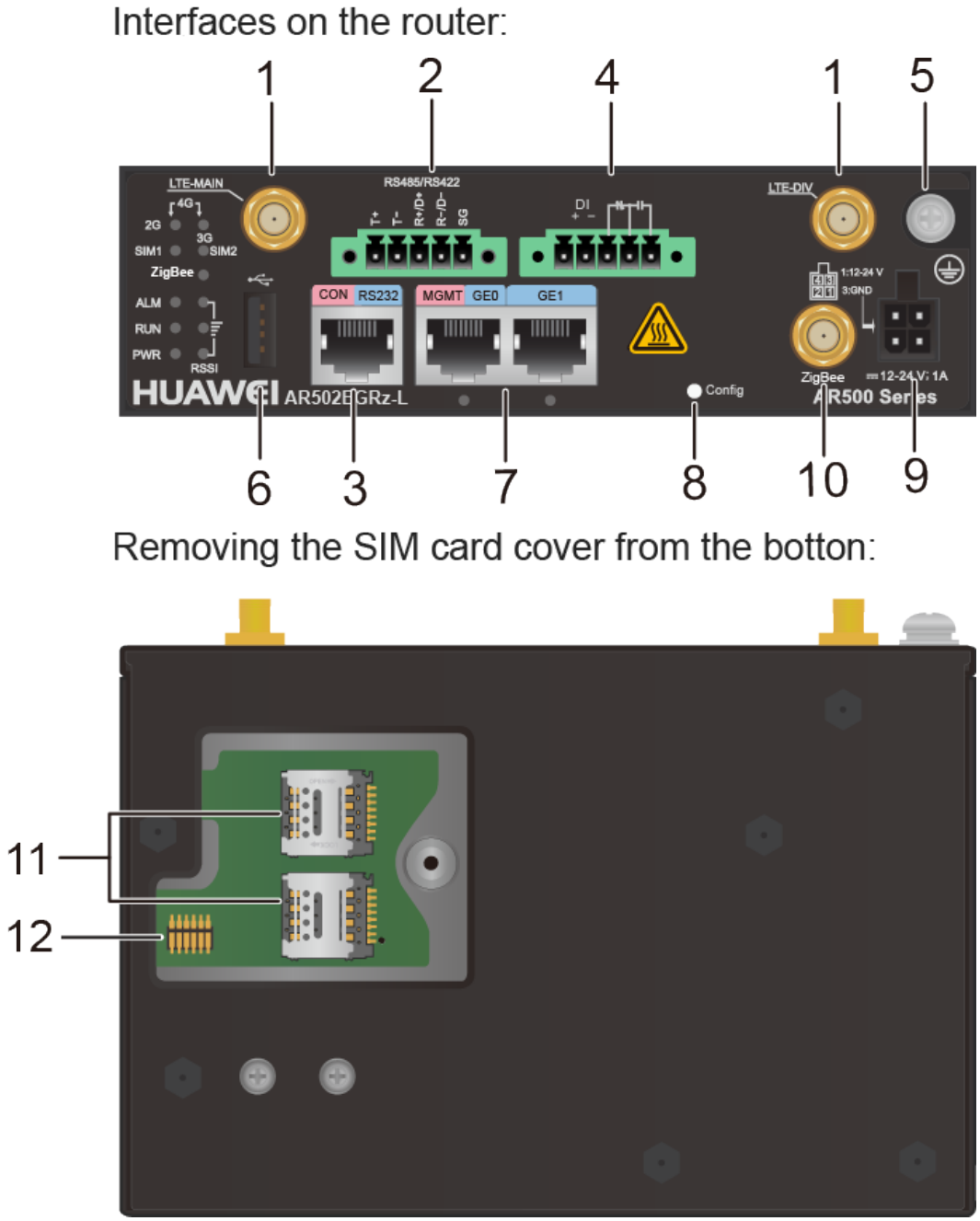
Figure 3-20 AR502EGRz-L appearance



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

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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. ● 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** ● 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** ● 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.

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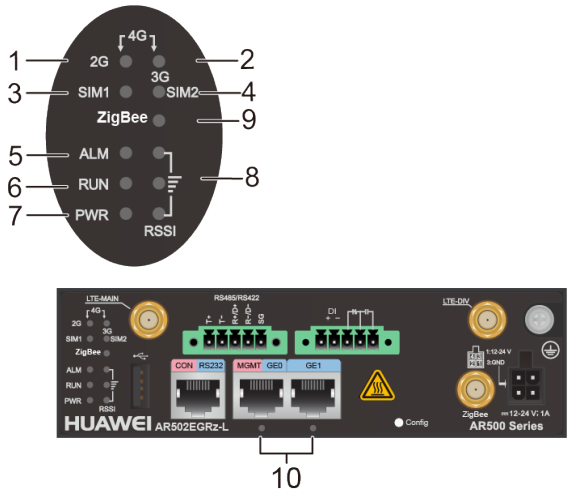
Figure 3-21 Indicators on the AR502EGRz-L



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.
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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.

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Number	Indicator/ Button	Color	Description
6	RUN	Green	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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.

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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	● 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	● 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** ● **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	● DI: 9.6-60 V DC power input ● DO: Boolean value (short circuit and open circuit)

RS485/RS422 interface

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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	● 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.

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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	● 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	● 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

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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.

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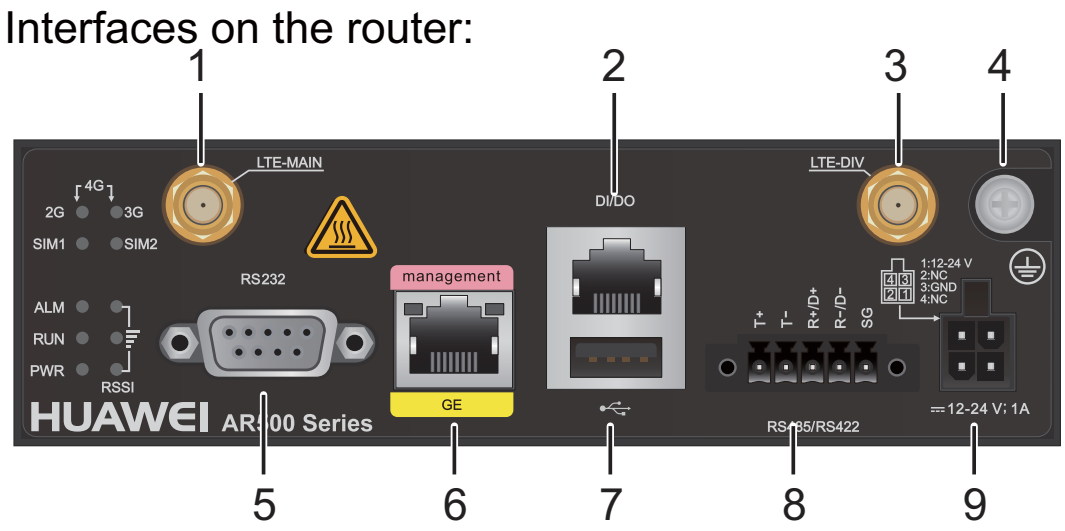
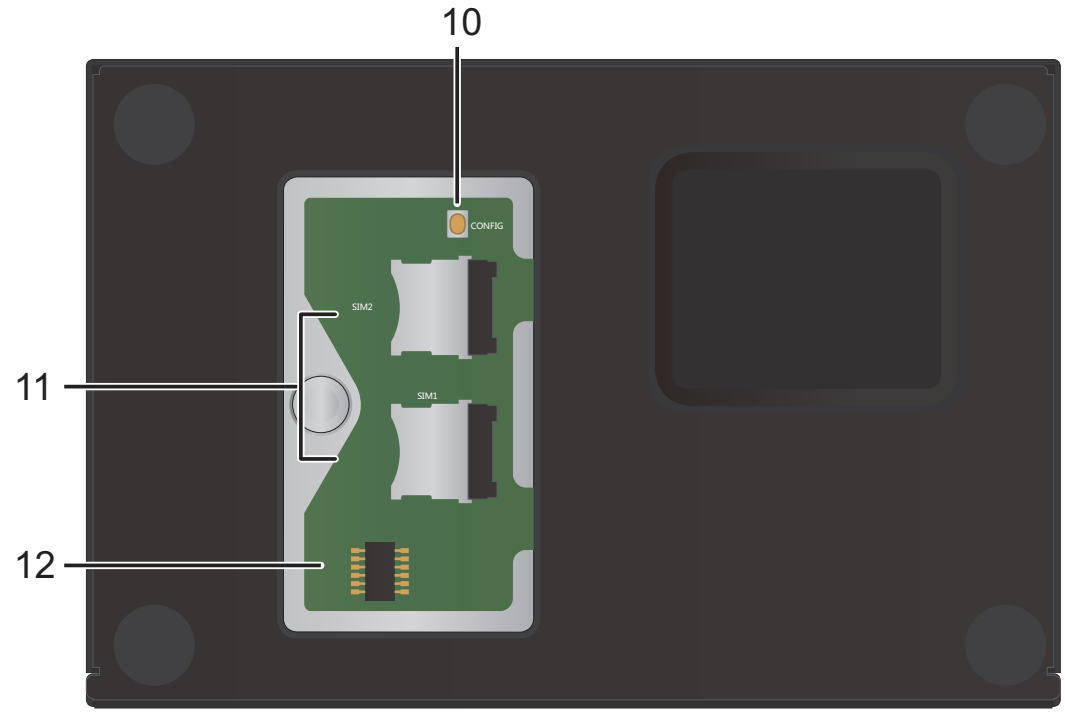
Figure 3-22 AR502G-L-D-H panel





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.

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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** ● 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** ● 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.

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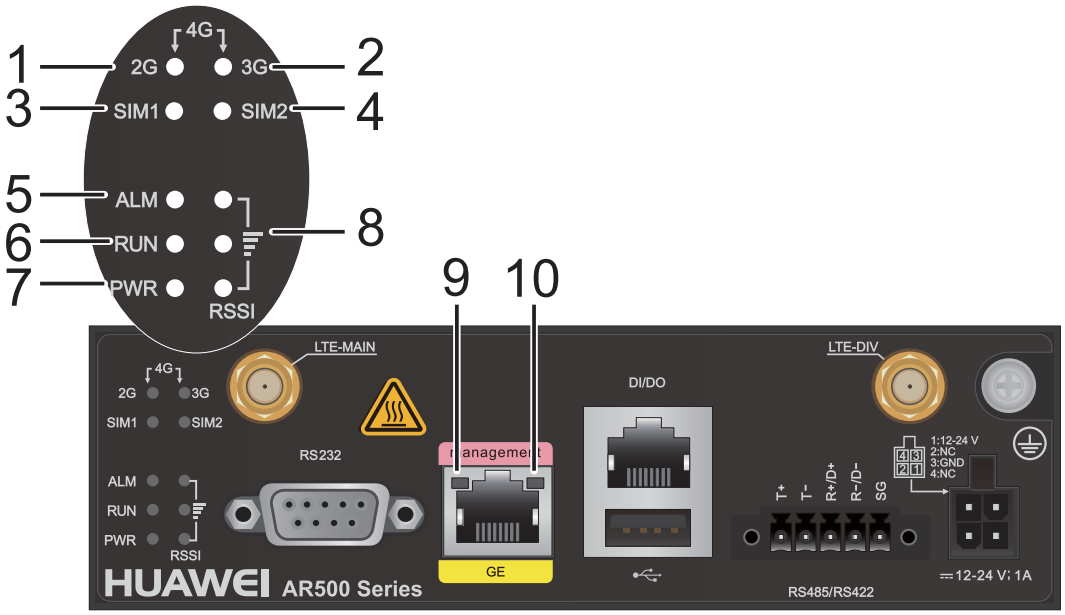
Figure 3-23 Indicators on the AR502G-L-D-H



Number	Indicator/ Button	Color	Description
1 and 2	Signal 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 slot.
5	ALM	Red	● Steady on: A system fault has occurred and requires manual intervention. ● Off: The system is running properly.
6	RUN	Green	● 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.

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Number	Indicator/ Button	Color	Description
7	PWR	Green	● 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	● 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	● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
10	GE interface indicator	Green	● 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.

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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** ● 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.

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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	● GSM/GPRS/EDGE: bands 2/3/5/8 ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/8 ● LTE FDD: band 3

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Attribute	Description
Maximum rate	● 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	● **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)**

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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	● 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	

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Item	Specification
DC power input	● 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: LVTTL
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	● 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) **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.
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.

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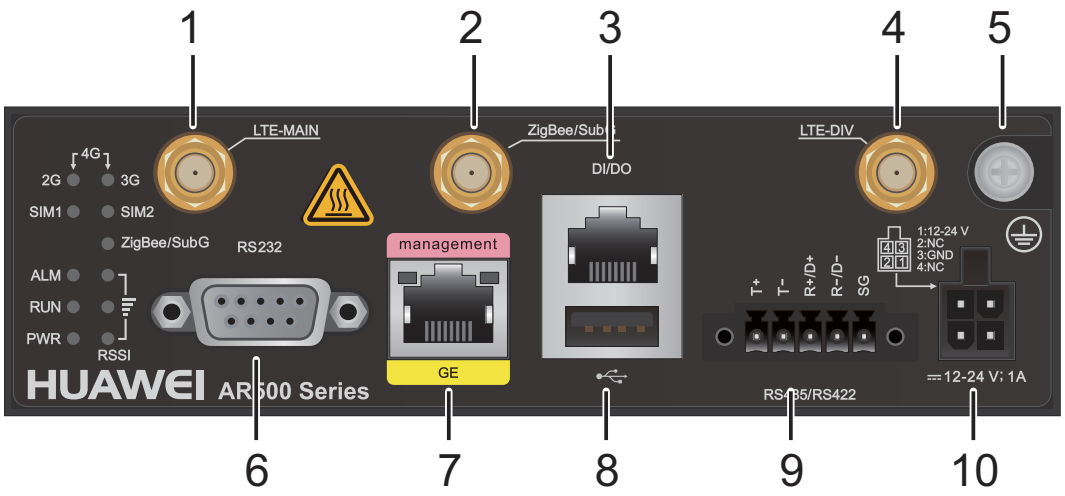
Table 3-92 Mapping between the AR502GR-L-D-H router and software versions

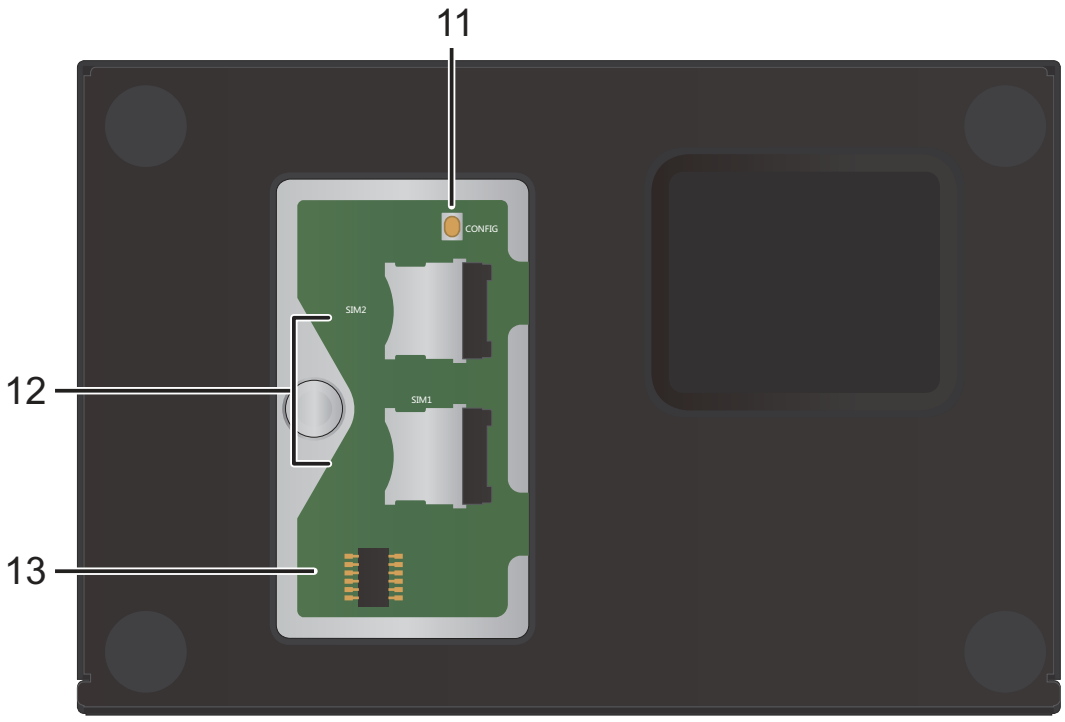
Router Model	Software Version
AR502GR-L-D-H	V200R007C00

Appearance and Structure

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

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





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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** ● 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** ● 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.

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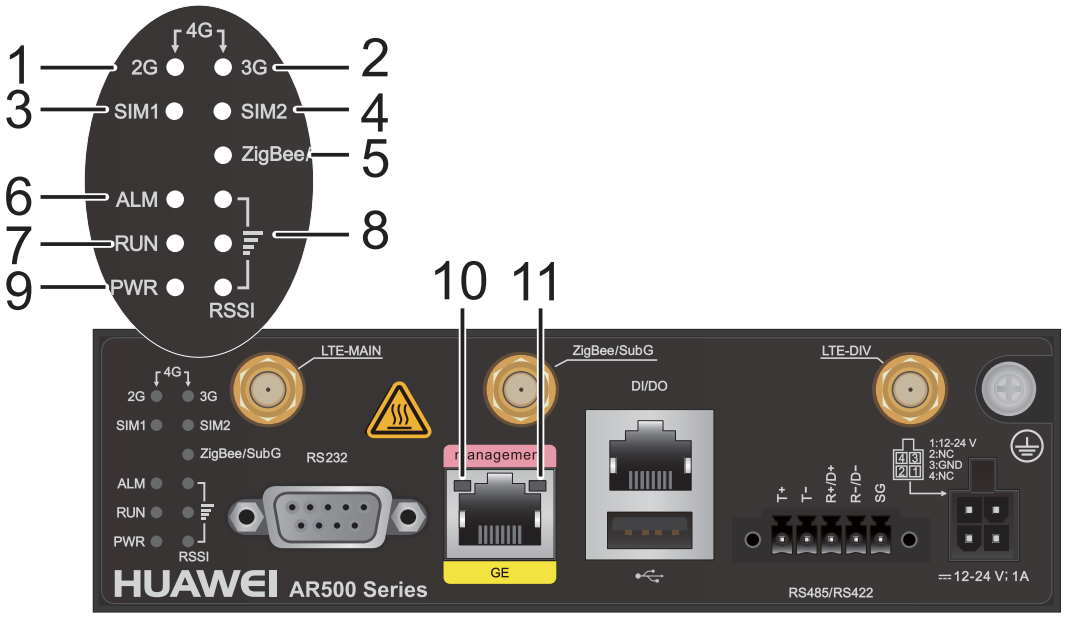
Figure 3-25 Indicators on the AR502GR-L-D-H



Number	Indicator/ Button	Color	Description
1 and 2	Signal 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 slot.

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Number	Indicator/ Button	Color	Description
5	ZigBee/ SubG	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: ● 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	● Steady on: A system fault has occurred and requires manual intervention. ● Off: The system is running properly.
7	RUN	Green	● 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	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.

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Number	Indicator/ Button	Color	Description
9	PWR	Green	● 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	● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
11	GE interface indicator	Green	● 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.

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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** ● 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.

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Table 3-96 LTE antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance	● GSM/GPRS/EDGE: bands 2/3/5/8 ● WCDMA/HSDPA/HSUPA/HSPA+: bands 1/8 ● LTE FDD: band 3
Maximum rate	● 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	● **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.

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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	● 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

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Attribute	Description
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Antenna type	● **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	

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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	● 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: LVTTL
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	● 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) **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.
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404 ft.)
Part number	50010276

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3.2.13 AR503EDGW-Lc

Version Mapping

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

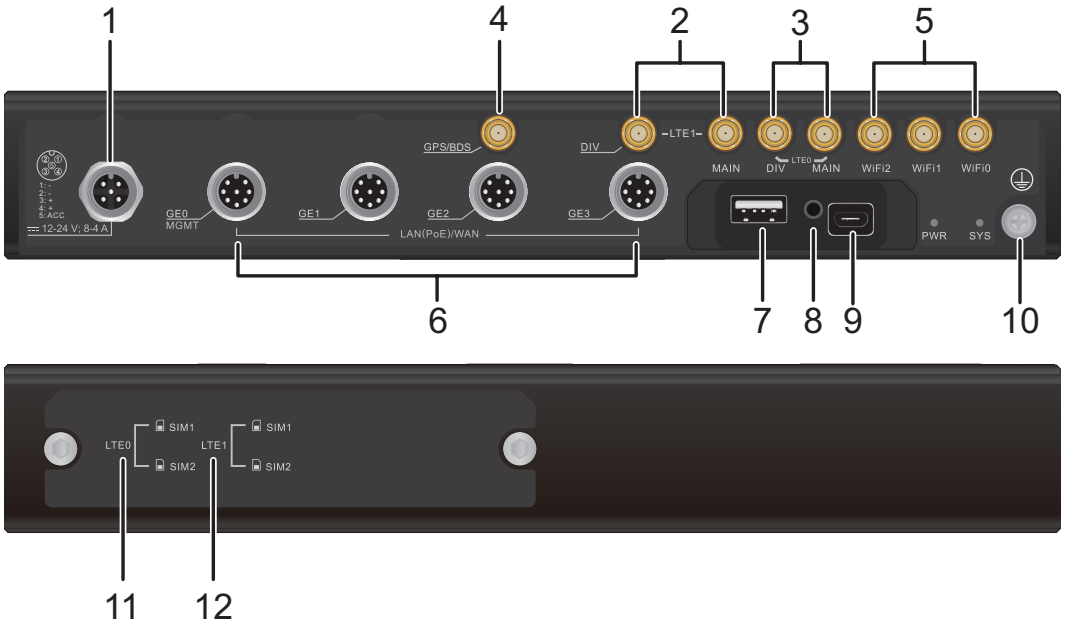
Table 3-102 Mapping between the AR503EDGW-Lc router and software versions

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

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5	Three Wi-Fi antenna interfaces	6	LAN interfaces: four GE electrical interfaces **NOTE** ● 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. ● 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** ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards.	12	Two SIM card slots of LTE1 **NOTE** ● 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.

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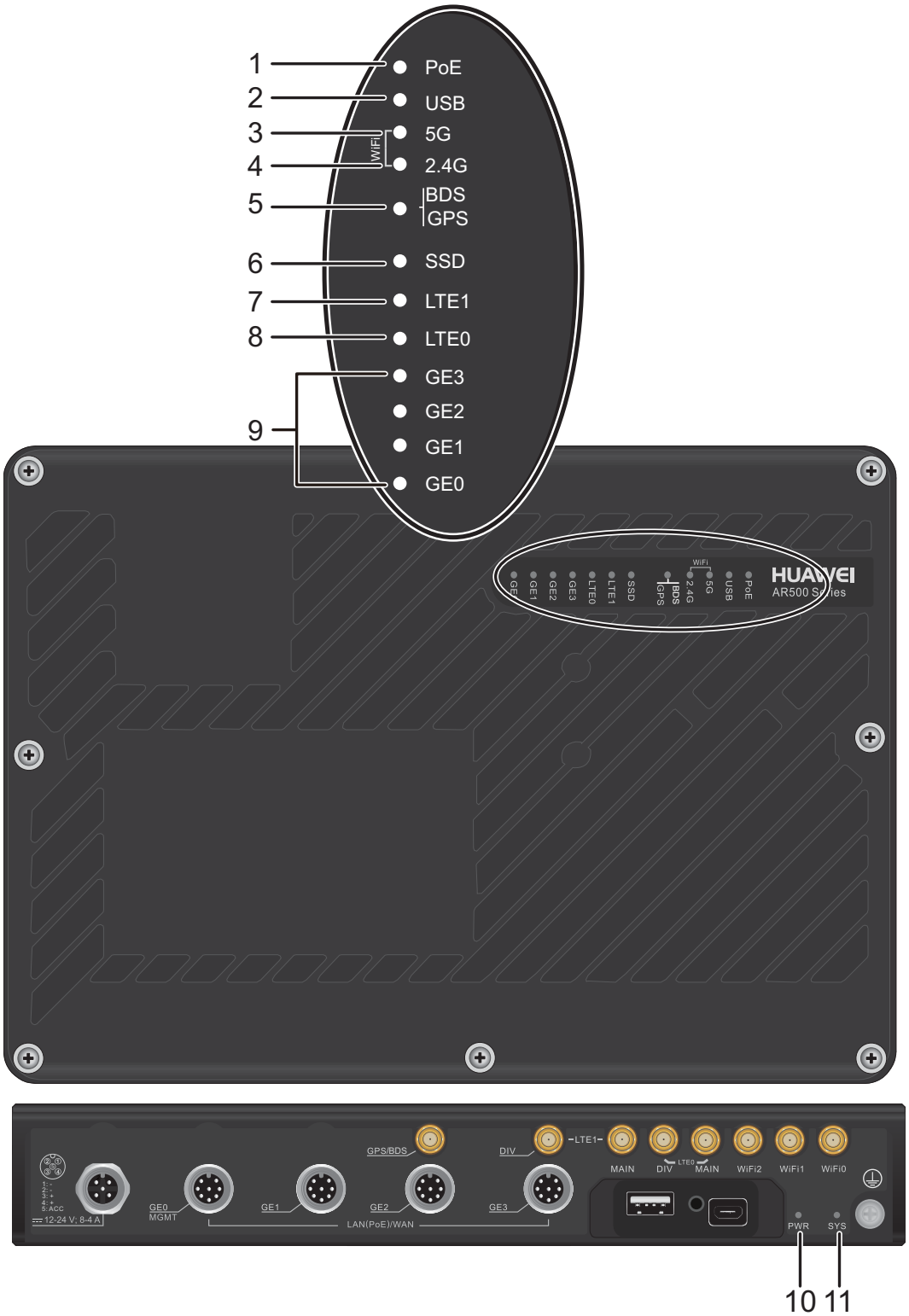
Figure 3-27 Indicators on the AR503EDGW-Lc



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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.

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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.

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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	● 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	● 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.

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Table 3-105 GPS/BDS antenna interface attributes

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

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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	● 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	● 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

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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	

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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.

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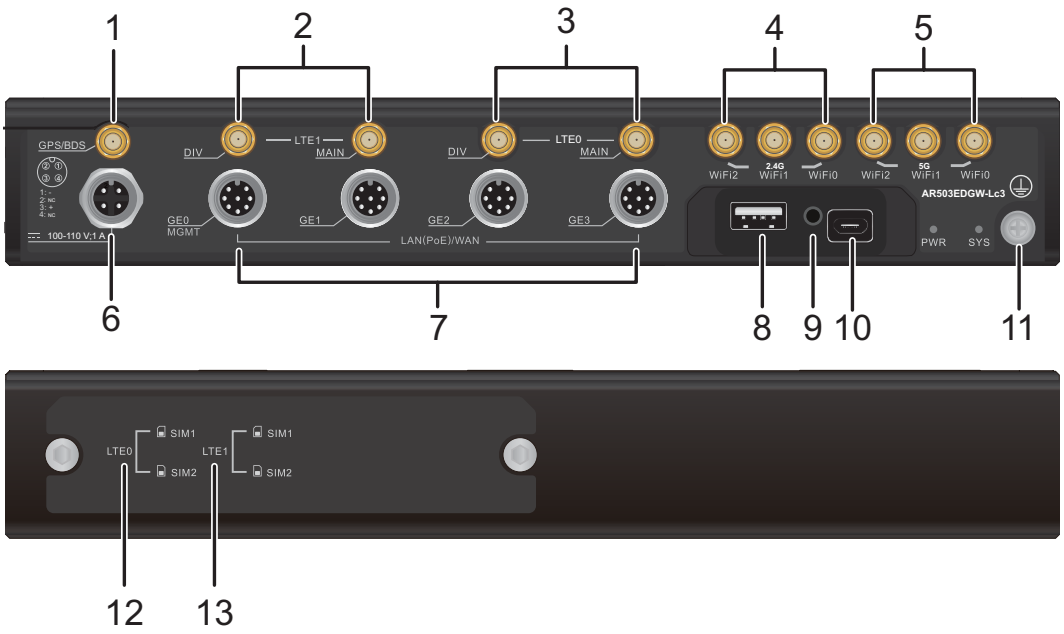
Figure 3-28 AR503EDGW-Lc3 appearance



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** ● 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. ● 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

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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** ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards.
13	Two SIM card slots of LTE1 **NOTE** ● 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.

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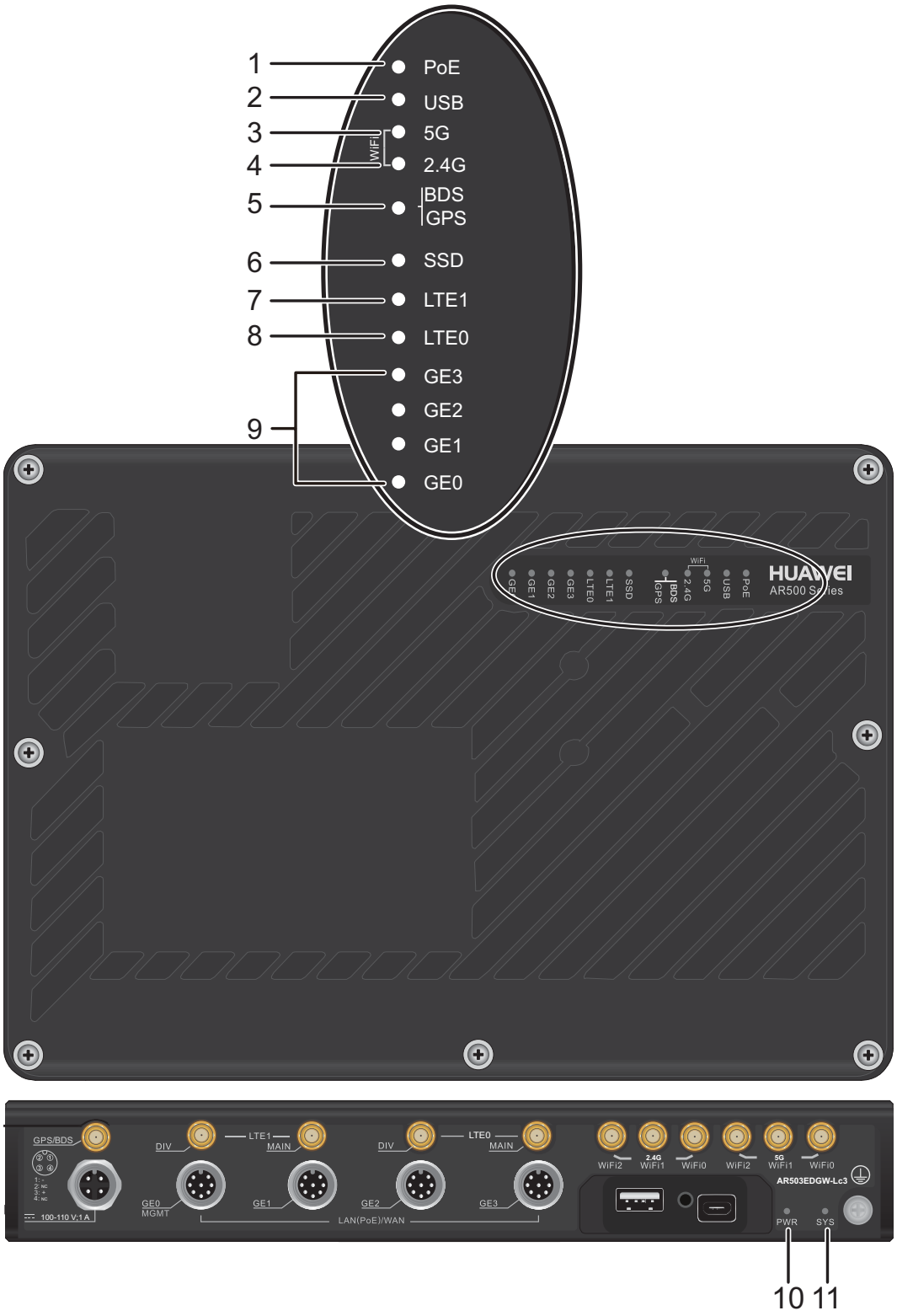
Figure 3-29 Indicators on the AR503EDGW-Lc3



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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.

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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

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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	● 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	● 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.

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Table 3-113 GPS/BDS antenna interface attributes

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

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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	● 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	● 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

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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	

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Item	Specification
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 1800-5000 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.).
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.

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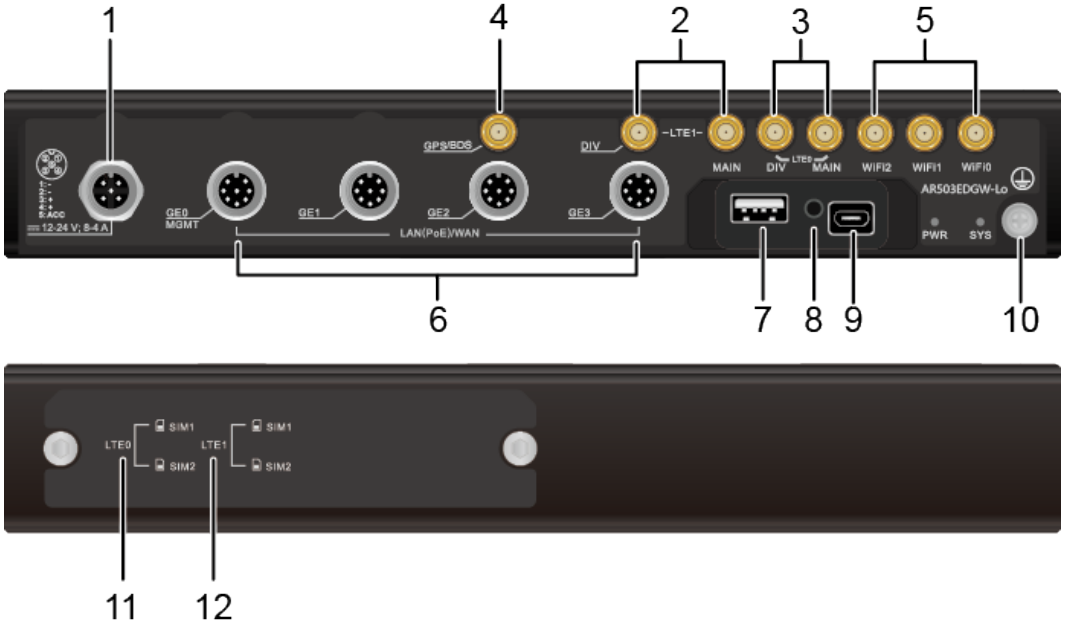
Figure 3-30 AR503EDGW-Lo appearance



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** ● 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. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

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9	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** ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards.	12	Two SIM card slots of LTE1 **NOTE** ● 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.

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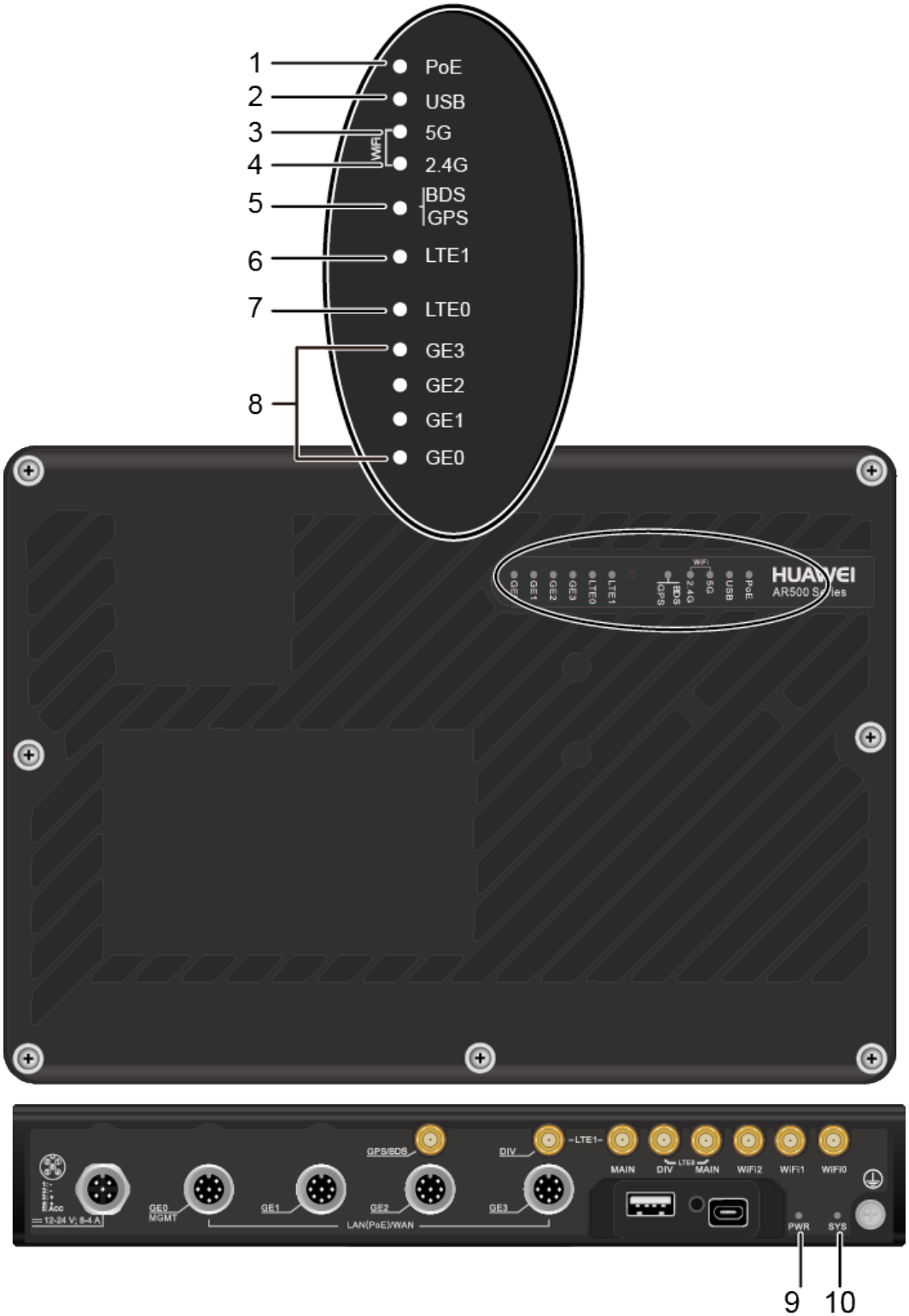
Figure 3-31 Indicators on the AR503EDGW-Lo



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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.

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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)

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Attribute	Description
Standards compliance and frequency bands supported	● 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	● 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)

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Attribute	Description
Frequency bands supported	● 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** ● 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

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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	● 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	● 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	

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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)

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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.

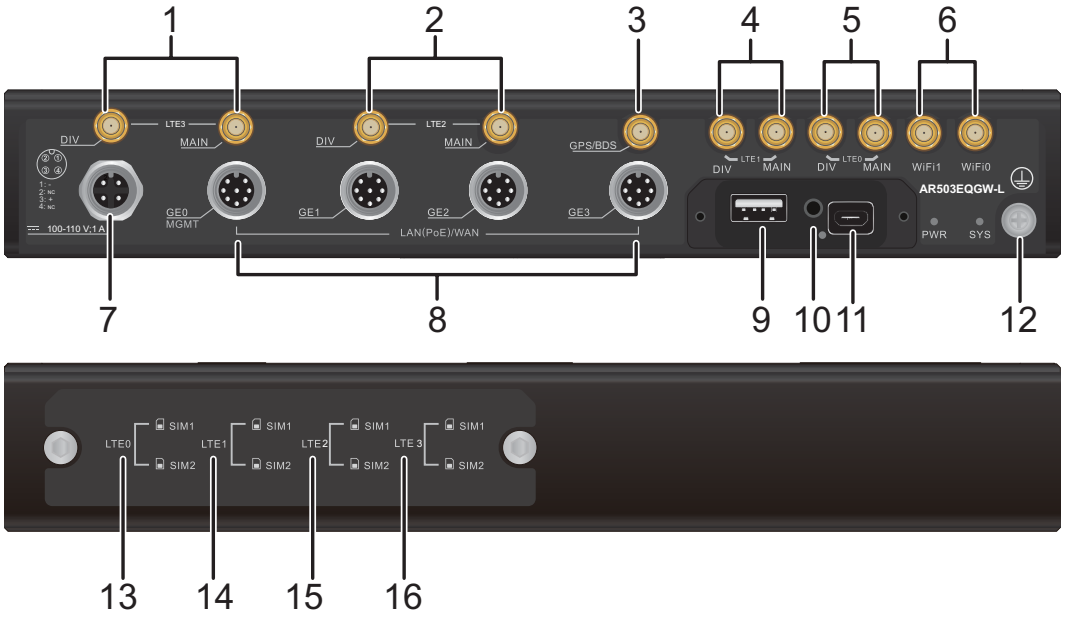
Table 3-126 Mapping between the AR503EQGW-L router and software version

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



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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** ● 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. ● 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** ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards.	14	Two SIM card slots of LTE1 **NOTE** ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards.
15	Two SIM card slots of LTE2 **NOTE** ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards.	16	Two SIM card slots of LTE3 **NOTE** ● 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.

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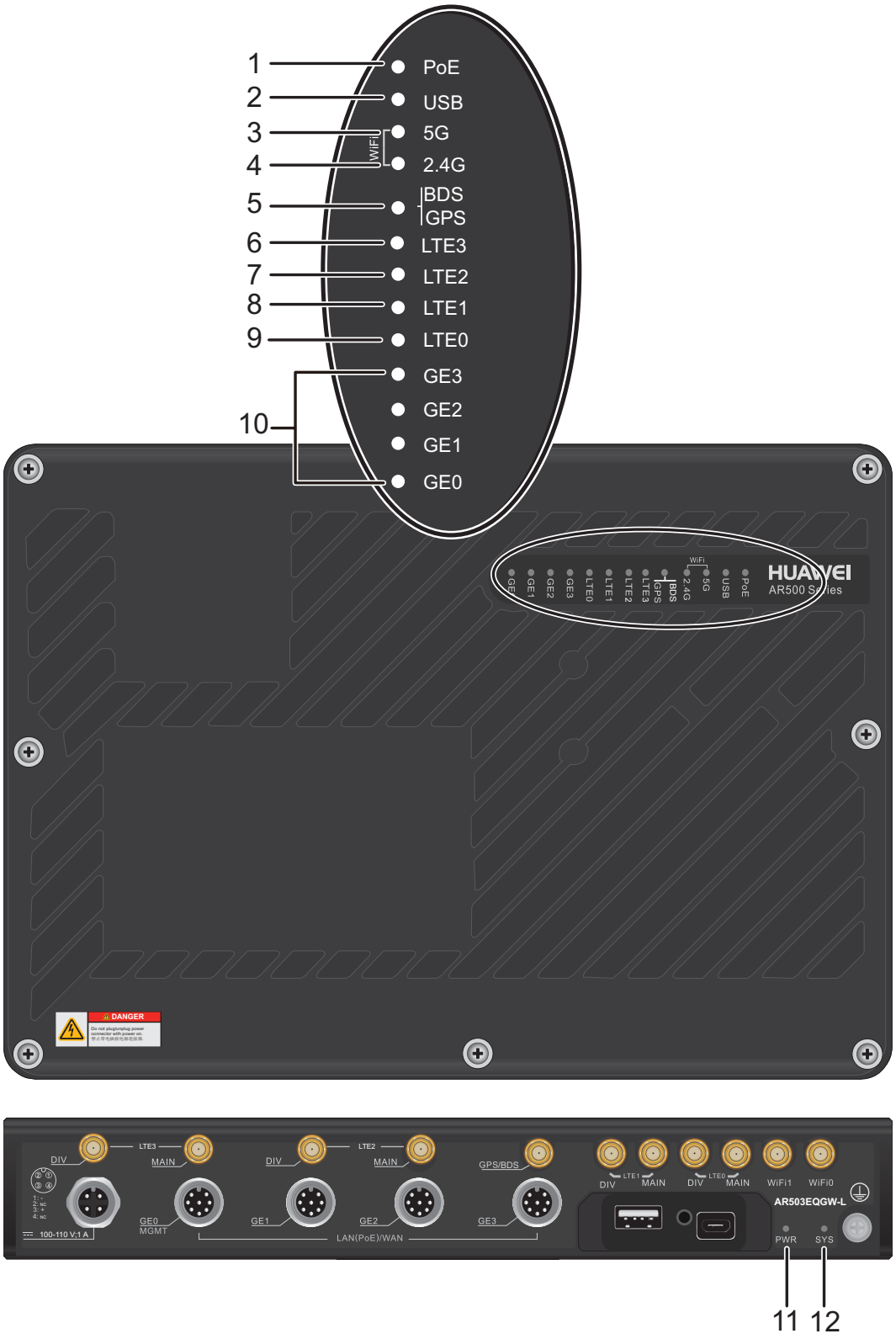
Figure 3-33 Indicators on the AR503EQGW-L



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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.

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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

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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	● 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	● 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	● GPS: 1575.42 MHz ● BDS: 1561.098 MHz
Cable type	**6.3.15 GPS/BDS Remote Antenna**

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GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 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** ● 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.

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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	● 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	● 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	

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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.)

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Item	Specification
Part number	02350UGC

3.2.17 AR503EW

Version Mapping

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

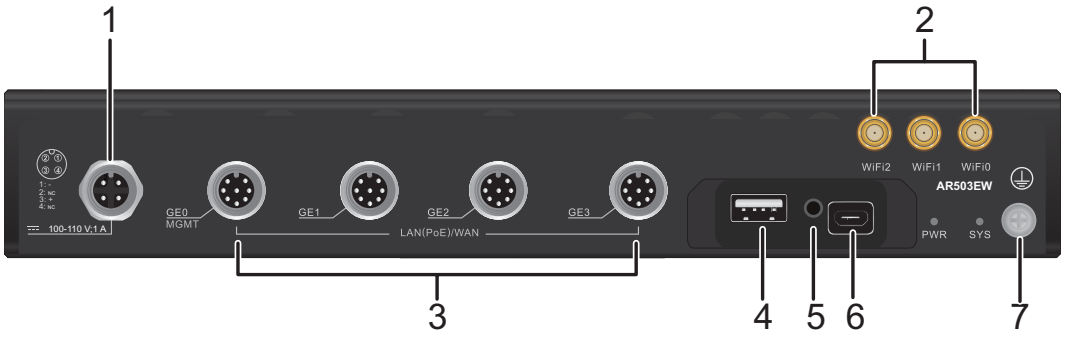
Table 3-134 Mapping between the AR503EW router and software versions

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** ● 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)

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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.

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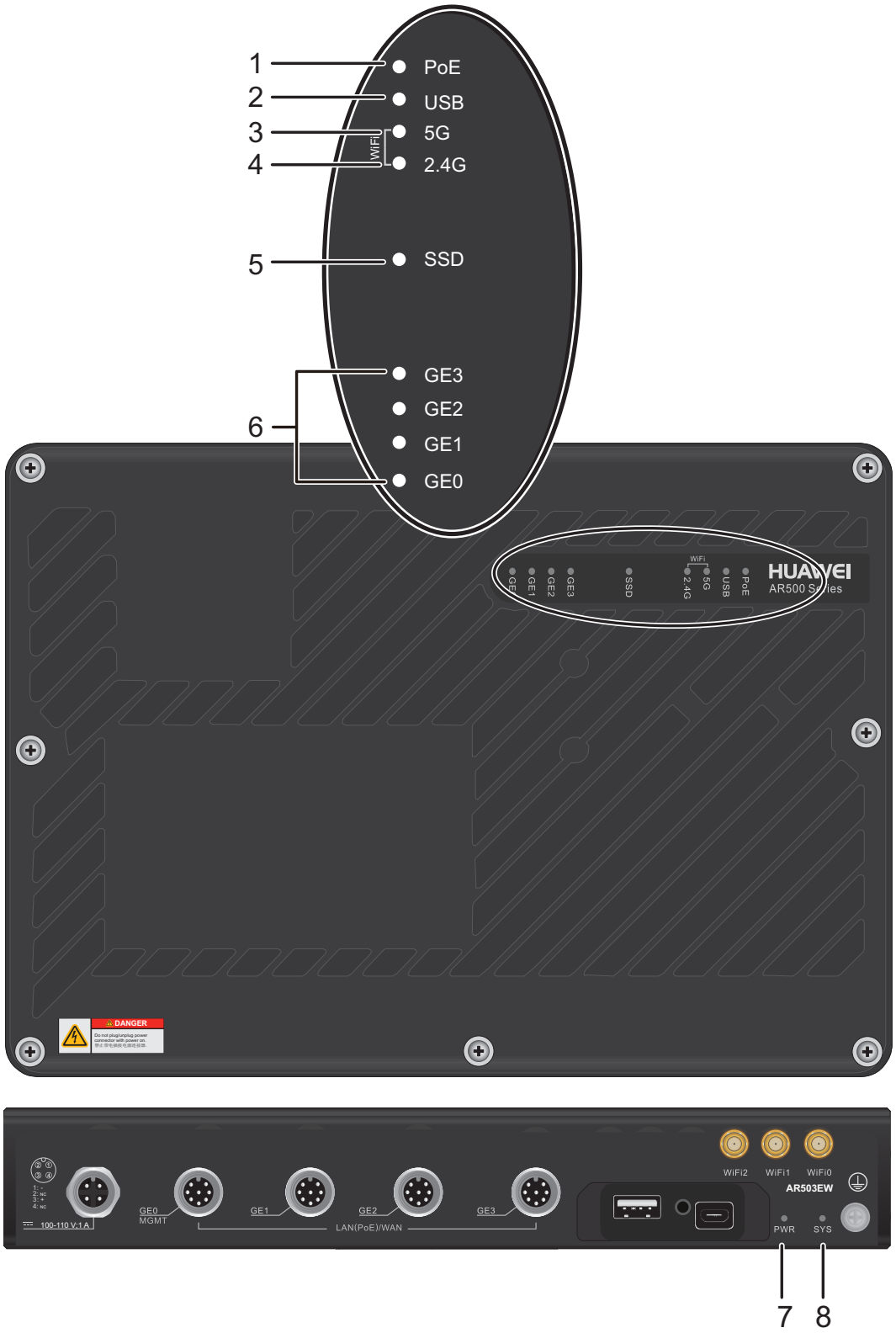
Figure 3-35 Indicators on the AR503EW



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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.

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Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.

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** ● 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.

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Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	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	● 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	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security

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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

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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

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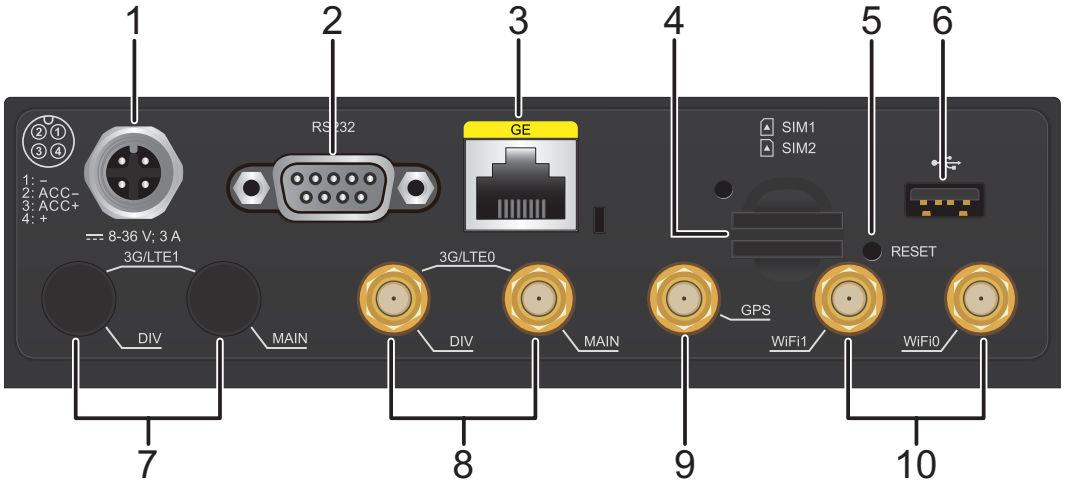
Appearance and Structure

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** ● 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. ● 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

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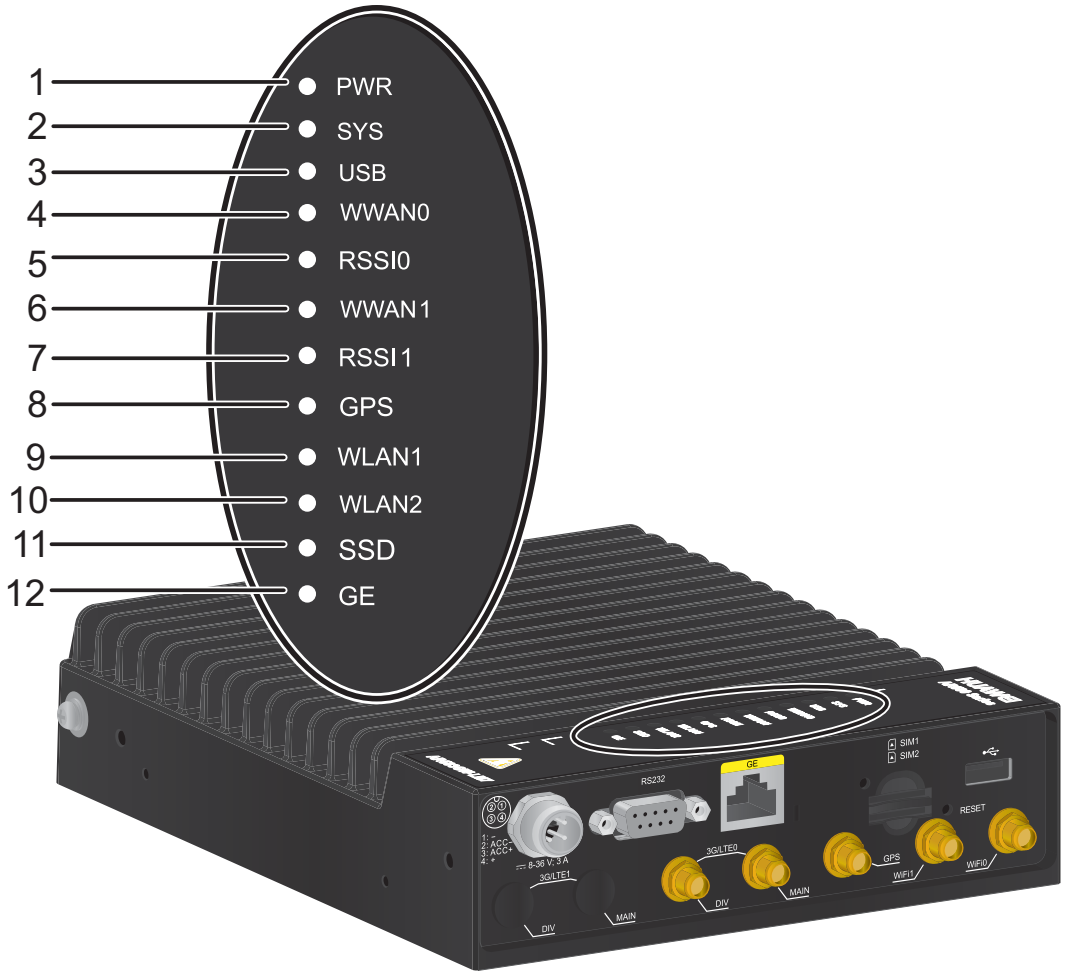
Indicator Description

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.

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Number	Indicator	Color	Description
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	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.

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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**

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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	● 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	● 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	● 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

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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** ● 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.

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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)

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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

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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.

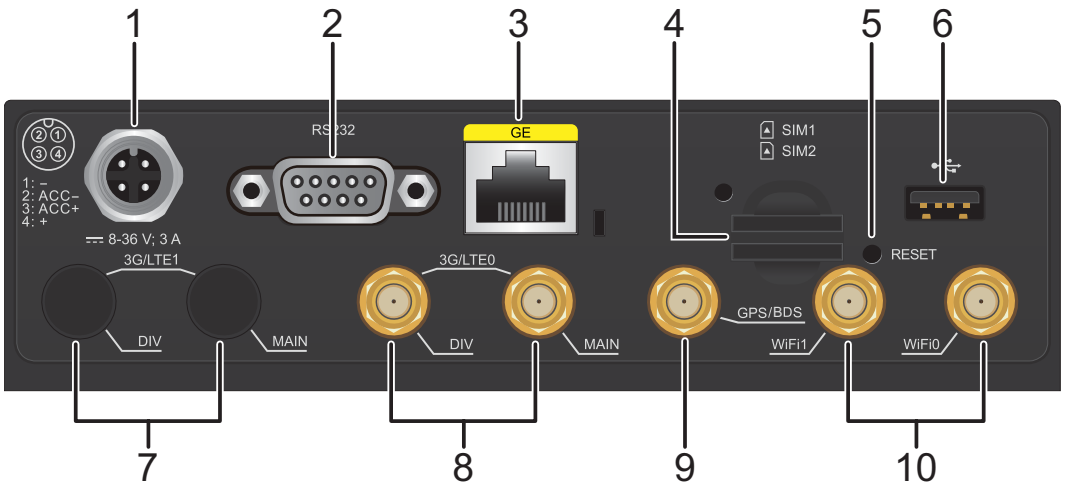
Table 3-148 Mapping between the AR503GW-LcM7 router and software versions

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.

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3	WAN interface: GE electrical interface	4	Two SIM card slots **NOTE** ● 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. ● 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.

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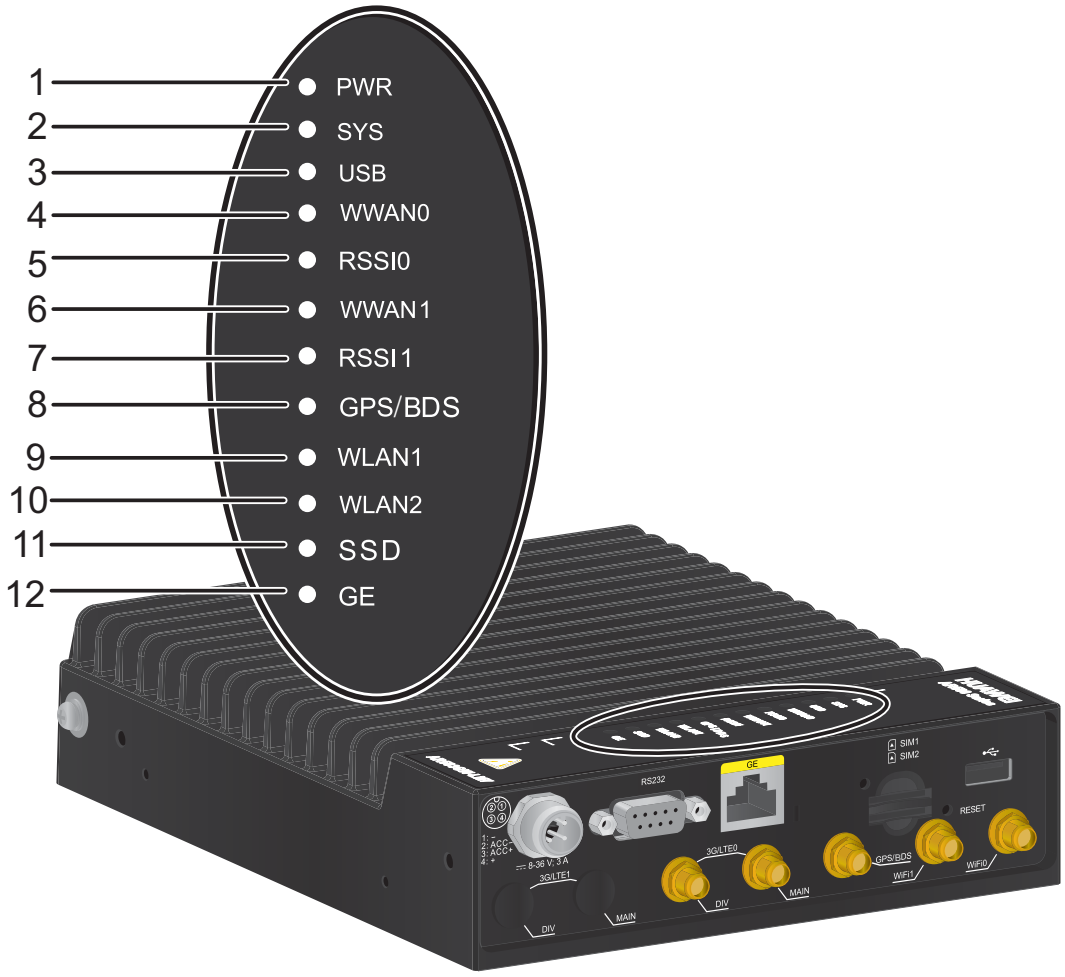
Figure 3-39 Indicators on the AR503GW-LcM7



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.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	WWAN1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
7	RSSI1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
8	GPS/BDS	Green	Steady on: The GPS/BDS function is enabled.
			Off: The GPS/BDS function is disabled.
9	WLAN1 (working at	Green	Blinking: Data is being transmitted on the WLAN link.

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Number	Indicator	Color	Description
	the 2.4 GHz frequency band)		Off: The WLAN link is shut down.
10	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
11	SSD	Red and green	Steady green: A solid state drive (SSD) card is available and accessible. Blinking green: The system is performing read-write operation on the SSD card.
			Steady red: The SSD does not work normally.
			Off: No SSD card is available.
12	GE electrical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

RS232 Interface

The RS232 interface 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

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together. The primary antenna transmits and receives 3G/LTE signals, and the secondary antenna helps improve the quality of received 3G/LTE signals. **Table 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	● 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	● 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	● 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.

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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** ● 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

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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

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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

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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.

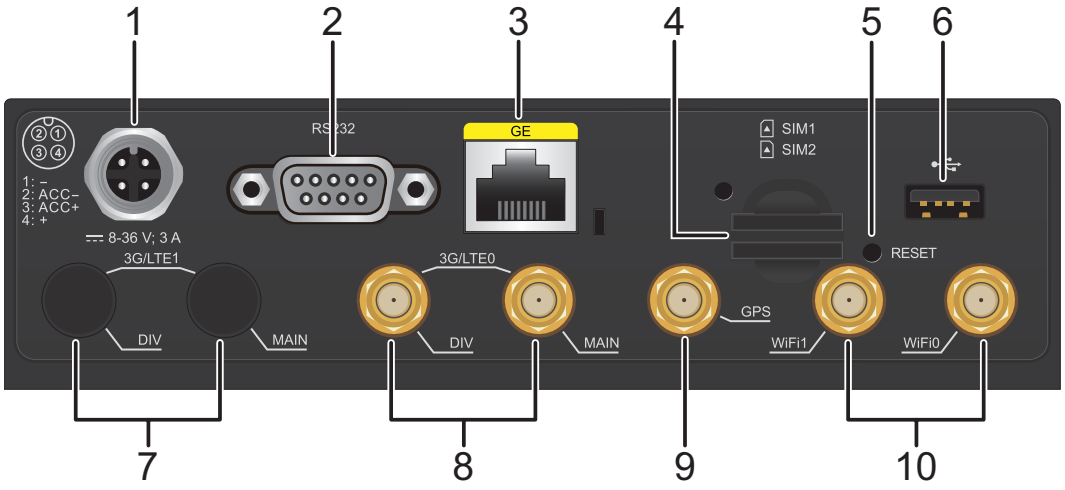
Table 3-156 Mapping between the AR503GW-Lo router and software versions

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



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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** ● 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. ● 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.

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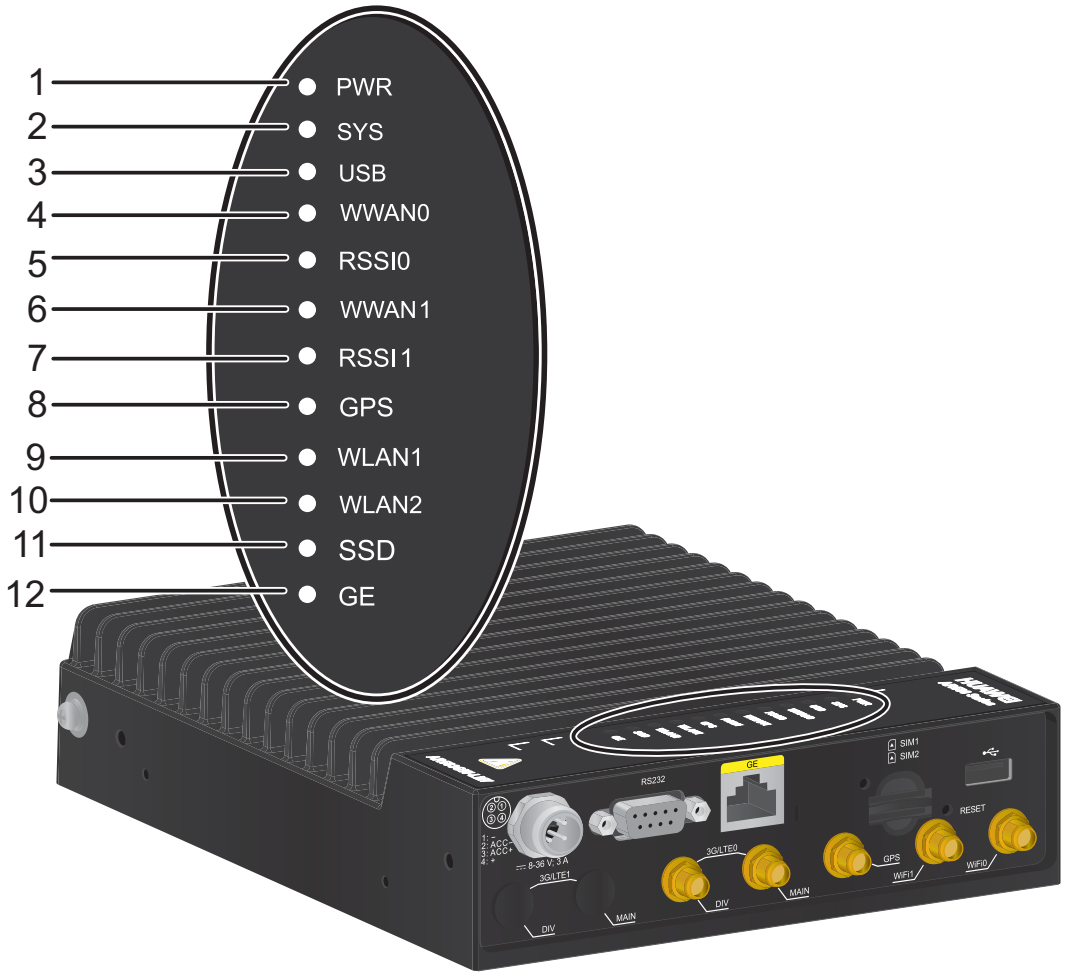
Figure 3-41 Indicators on the AR503GW-Lo



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.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	WWAN1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
7	RSSI1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
8	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
9	WLAN1 (working at	Green	Blinking: Data is being transmitted on the WLAN link.

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Number	Indicator	Color	Description
	the 2.4 GHz frequency band)		Off: The WLAN link is shut down.
10	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
11	SSD	Red and green	Steady green: A solid state drive (SSD) card is available and accessible. Blinking green: The system is performing read-write operation on the SSD card.
			Steady red: The SSD does not work normally.
			Off: No SSD card is available.
12	GE electrical interface indicators	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
			Off: No link is established.

Interface Description

RS232 Interface

The RS232 interface 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

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together. The primary antenna transmits and receives 3G/LTE signals, and the secondary antenna helps improve the quality of received 3G/LTE signals. **Table 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	● 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	● 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	● 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)

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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** ● 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

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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

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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)

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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.

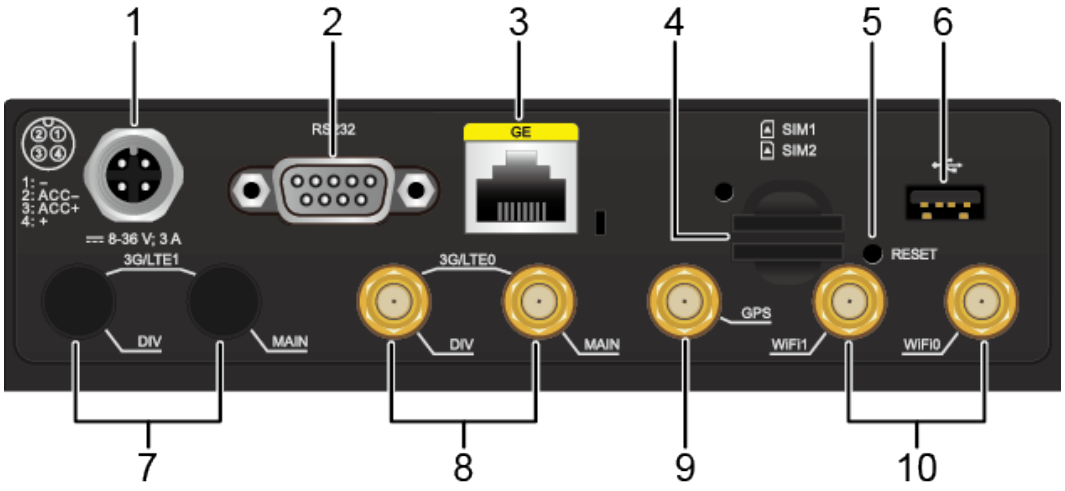
Table 3-164 Mapping between the AR503HGW-L router and software versions

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



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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** ● 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. ● 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.

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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.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	WWAN1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
7	RSSI1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
8	GPS 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.

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Number	Indicator	Color	Description
	the 2.4 GHz frequency band)		Off: The WLAN link is shut down.
10	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
11	SSD	Red and green	Steady green: A solid state drive (SSD) card is available and accessible.
			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

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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	● 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	● 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** ● **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

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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** ● 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

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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	● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	● 2.4GHz:2.75dBi ● 5GHz:4.52dBi
Services provided	● 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	

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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.).

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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.

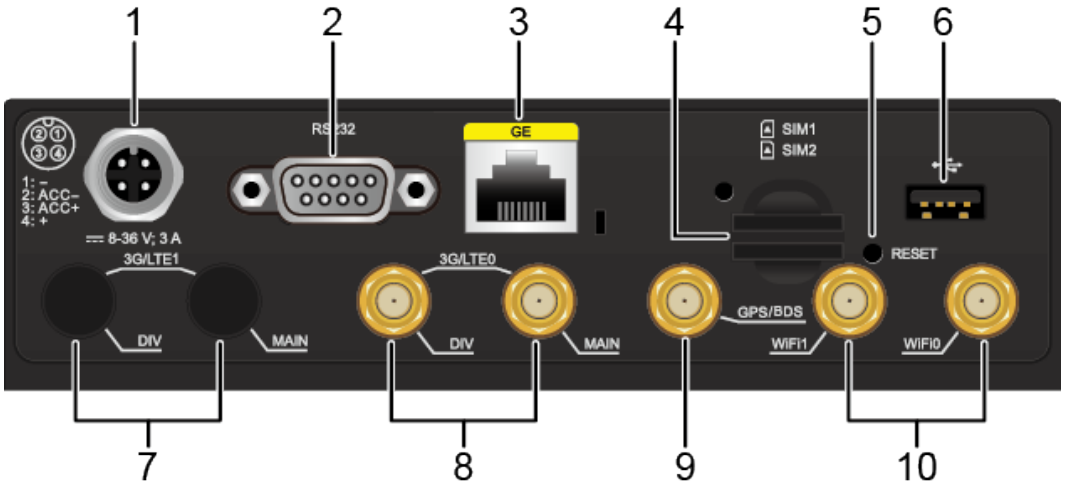
Table 3-172 Mapping between the AR503HGW-Lc router and software versions

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



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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** ● 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. ● 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.

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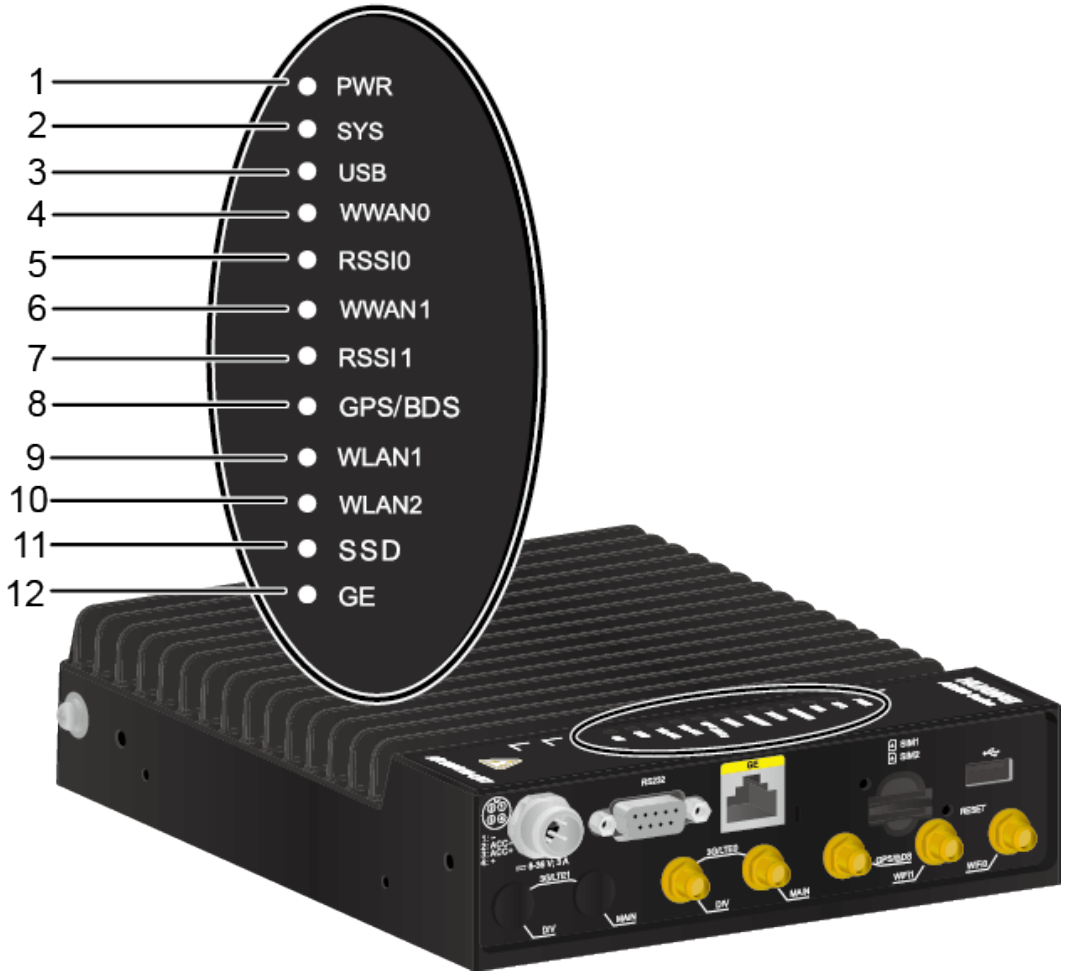
Figure 3-45 Indicators on the AR503HGW-Lc



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.

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Number	Indicator	Color	Description
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI0 (indicator for the 3G/LTE0 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	WWAN1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
7	RSSI1 (indicator for the 3G/LTE1 antenna interface)	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
8	GPS/BDS	Green	Steady on: The GPS/BDS function is enabled. (BDS stands for BeiDou Navigation Satellite System.)
			Off: The GPS/BDS function is disabled.

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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**

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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	● 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	● 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.

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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** ● 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

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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	● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	● 2.4GHz:2.75dBi ● 5GHz:4.52dBi
Services provided	● 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

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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	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

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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.

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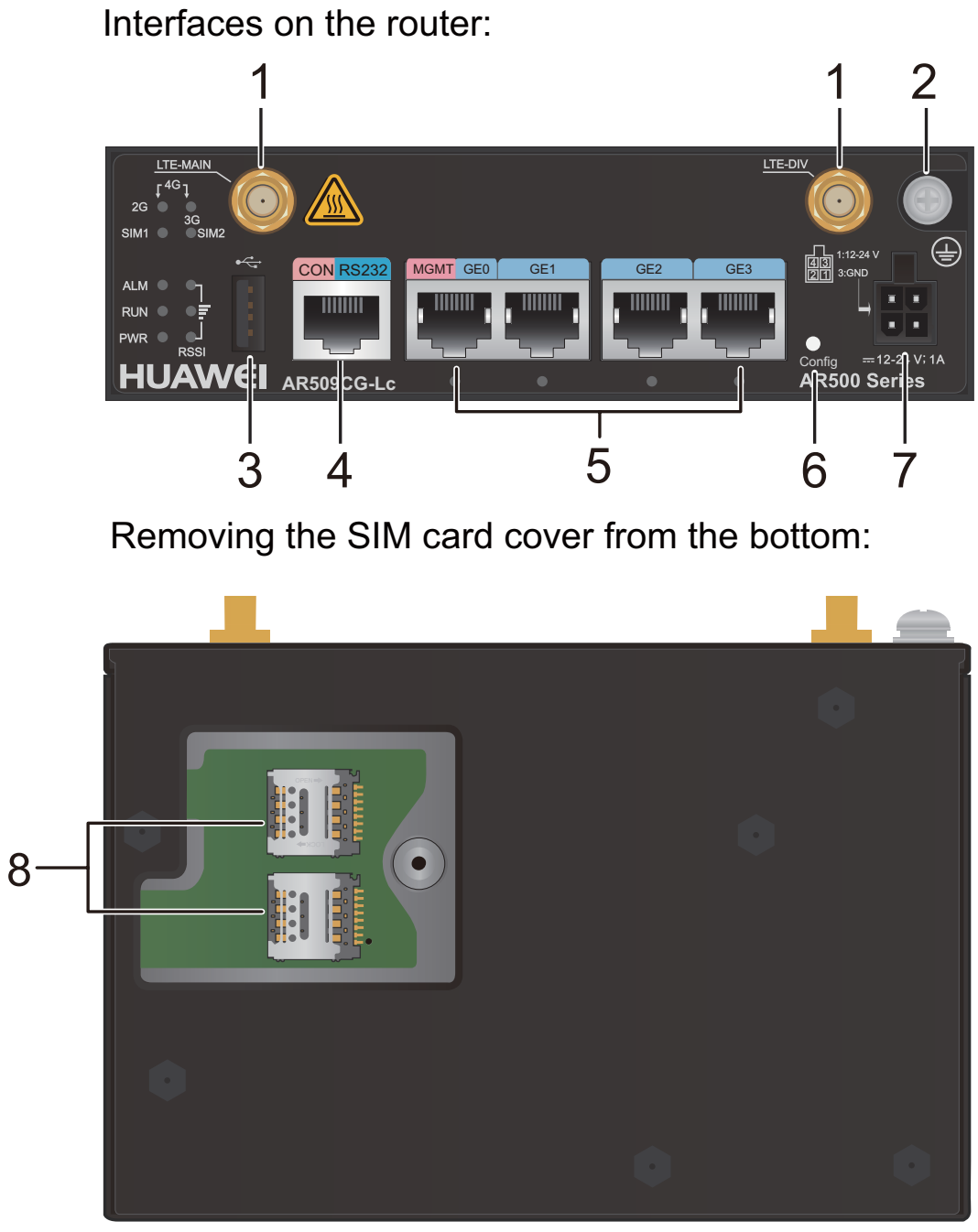
Figure 3-46 AR509CG-Lc appearance



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

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5	LAN interfaces: four GE electrical interfaces **NOTE** ● 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** ● 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** ● 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** ● 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.

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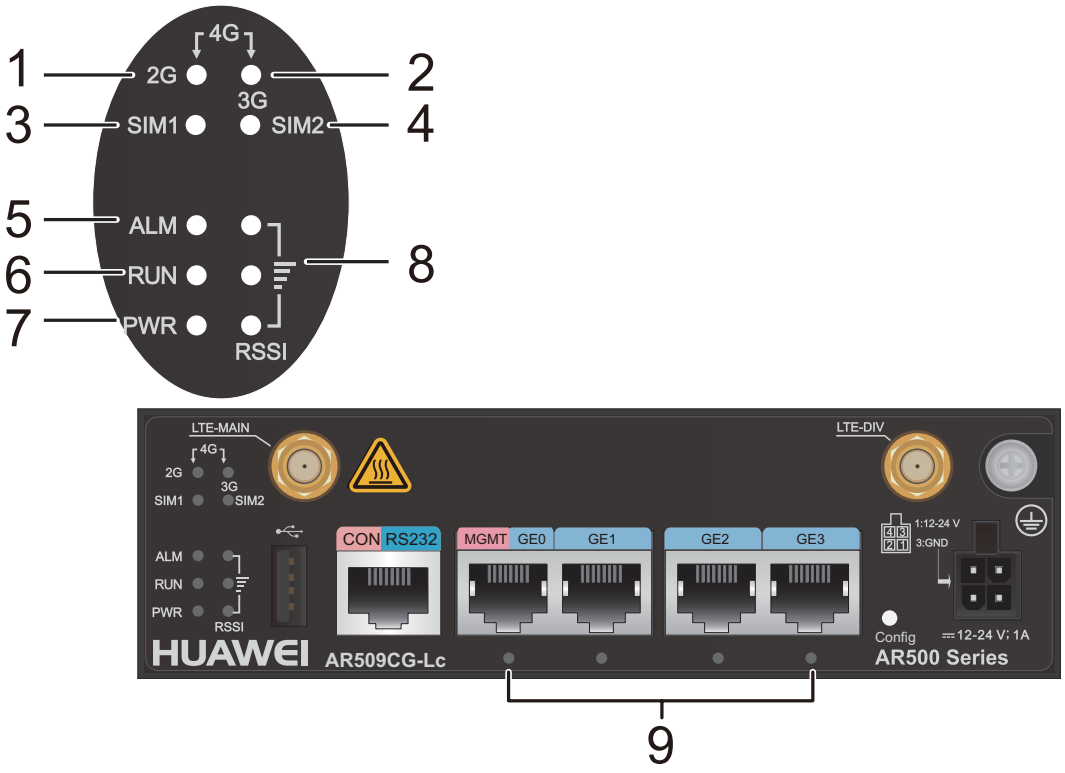
Figure 3-47 Indicators on the AR509CG-Lc



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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)

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GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-182** 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** ● 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.

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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	● 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	● 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.

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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	● 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	● 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

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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.

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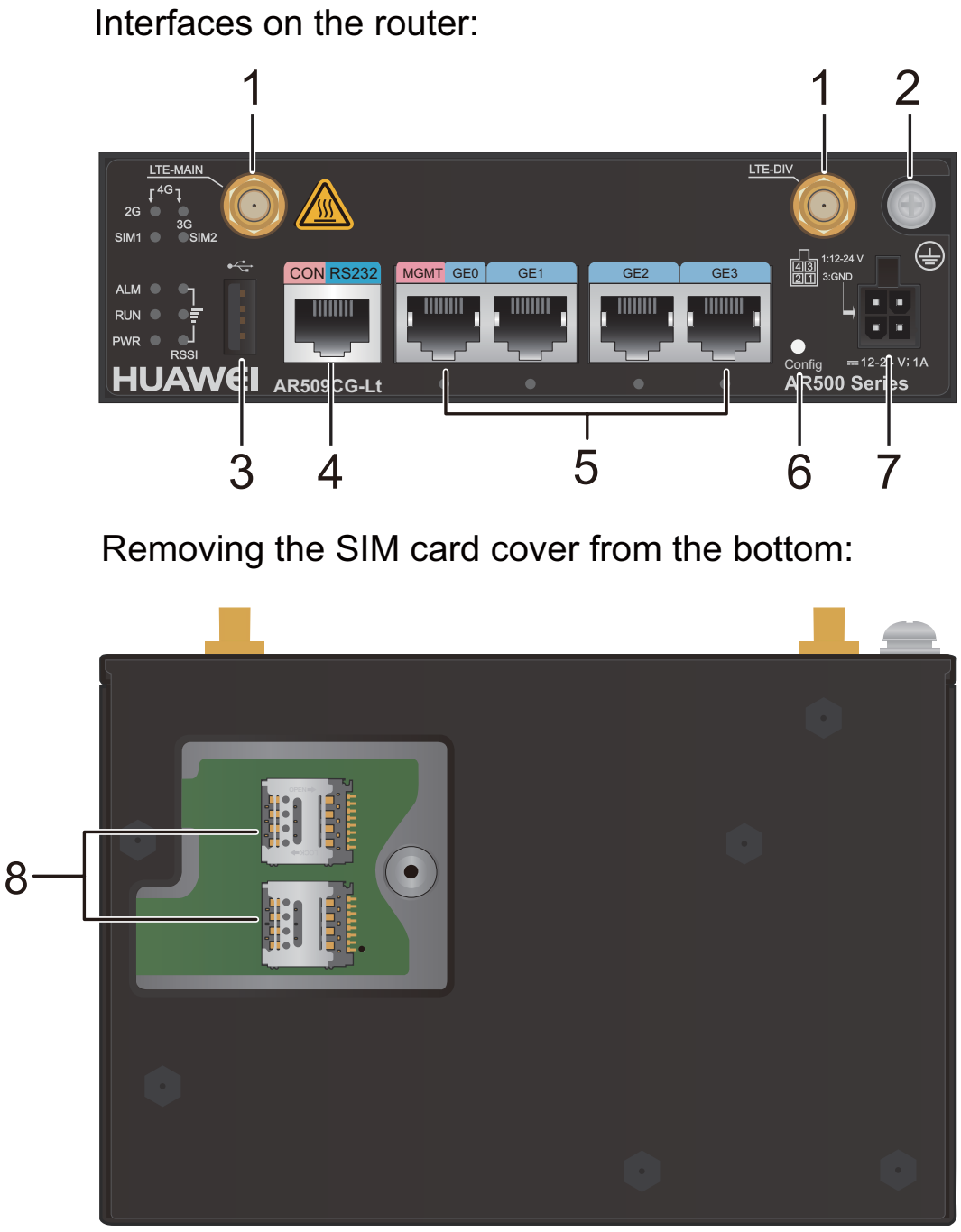
Figure 3-48 AR509CG-Lt appearance



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

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5	LAN interfaces: four GE electrical interfaces **NOTE** ● 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** ● 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** ● 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** ● 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.

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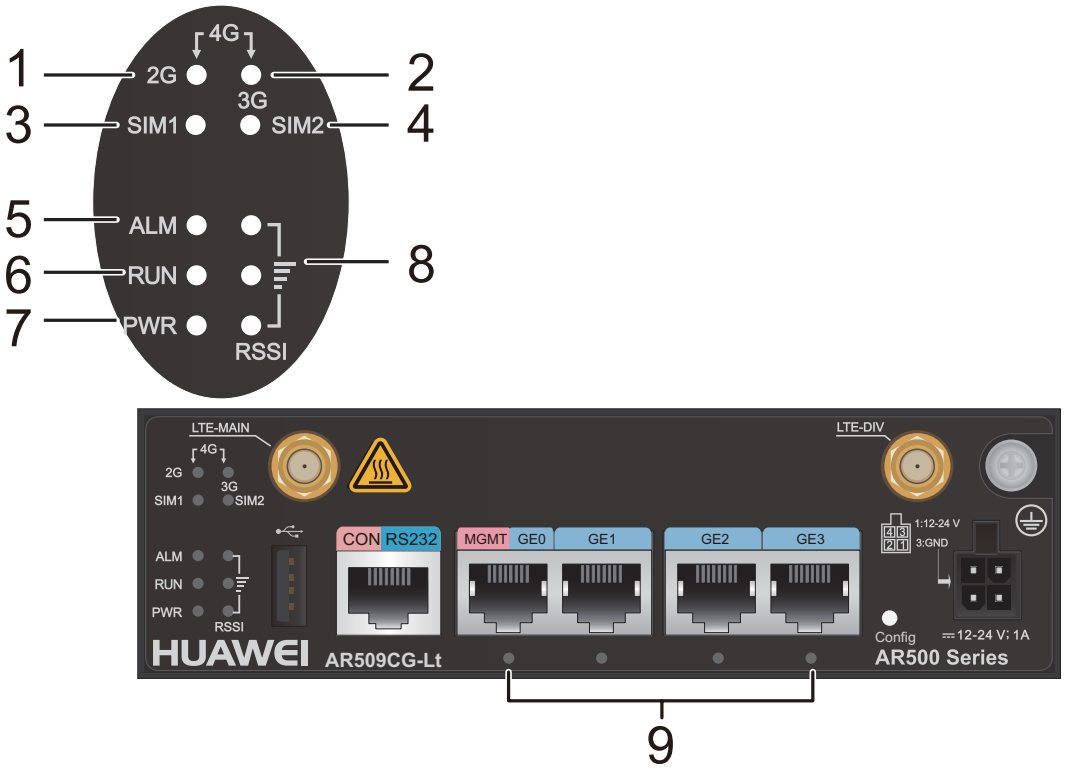
Figure 3-49 Indicators on the AR509CG-Lt



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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)

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GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-188** 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** ● 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.

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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	● 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	● 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.

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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	● 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: LVTTL
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	● 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.)

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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.

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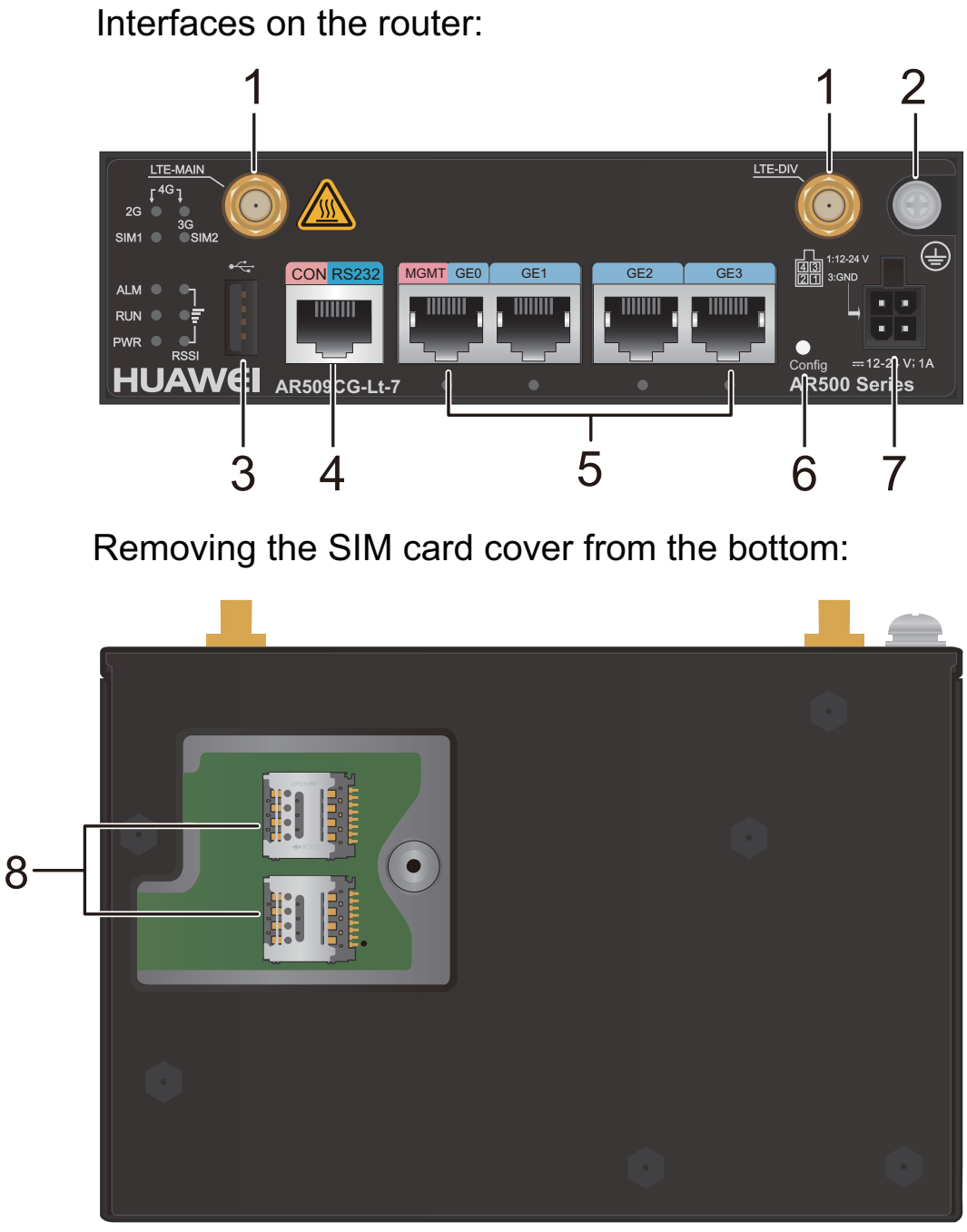
Figure 3-50 AR509CG-Lt-7 appearance



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

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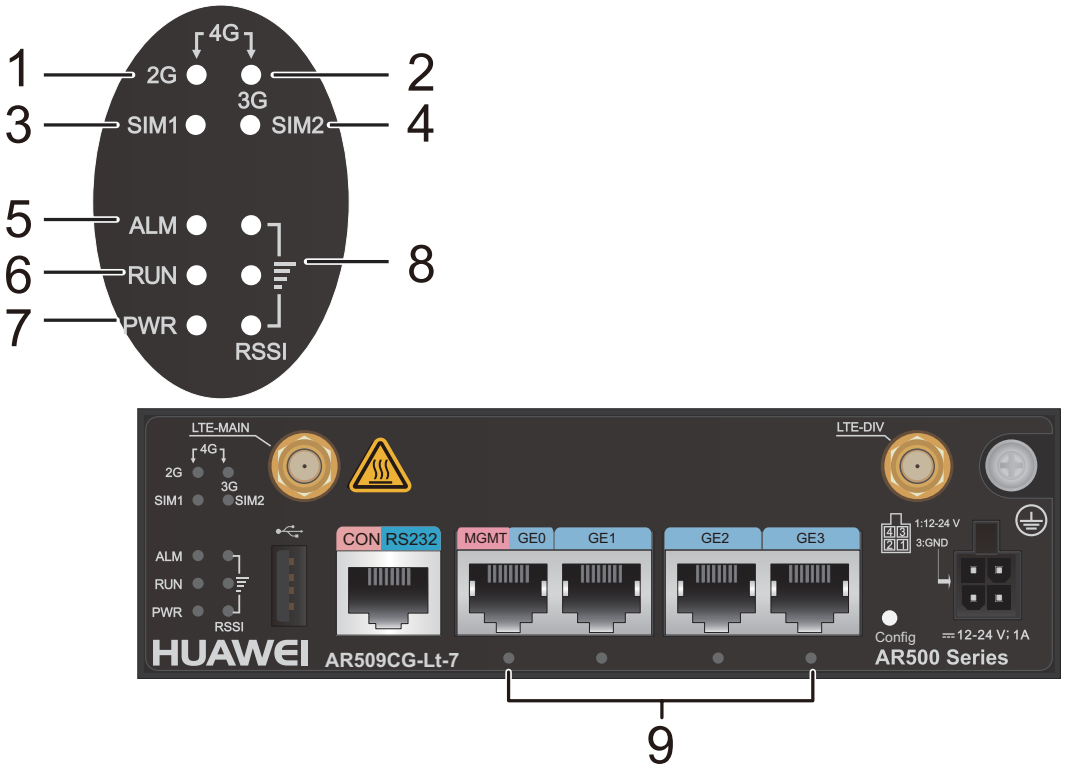
5	LAN interfaces: four GE electrical interfaces **NOTE** ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.	6	Config button **NOTE** ● The configuration button is used to restore the factory settings and switch between console 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** Use a DC power cable to connect the router to an external power source.	8	Two SIM card slots **NOTE** ● 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 3-51 shows the indicators on the AR509CG-Lt-7.

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



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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	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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 or configured using the USB flash drive.
6	RUN	Green	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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.

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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

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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** ● 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

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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	● 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	● 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**

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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	● 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	

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Item	Specification
Operating temperature	● 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) **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.
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.

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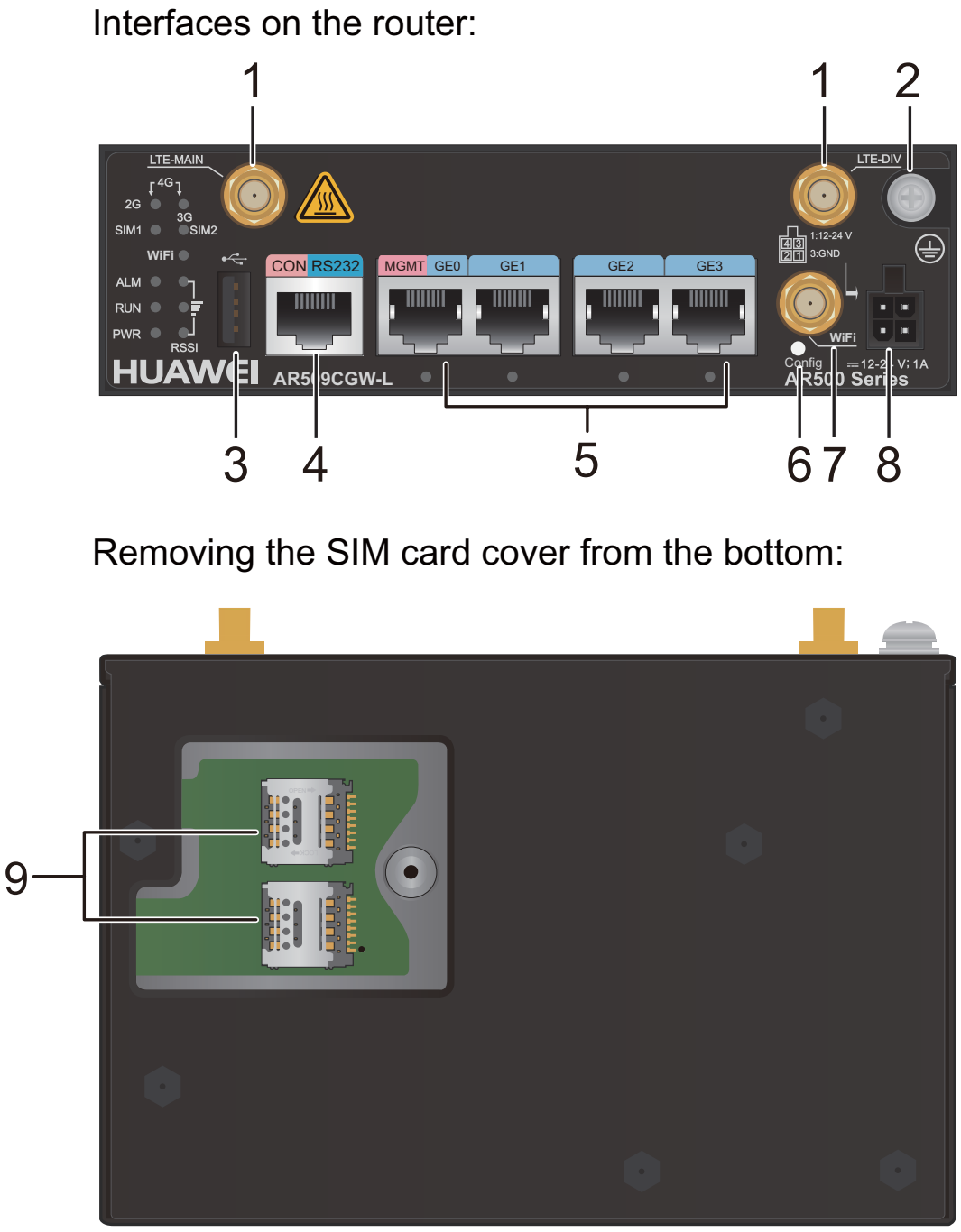
Figure 3-52 AR509CGW-L appearance



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

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5	LAN interfaces: four GE electrical interfaces **NOTE** GE0 is a management interface and is used to upgrade the router.	6	Config button **NOTE** ● 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	LAN interface: Wi-Fi antenna interface	8	Power socket **NOTE** ● 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	Two SIM card slots **NOTE** ● 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.

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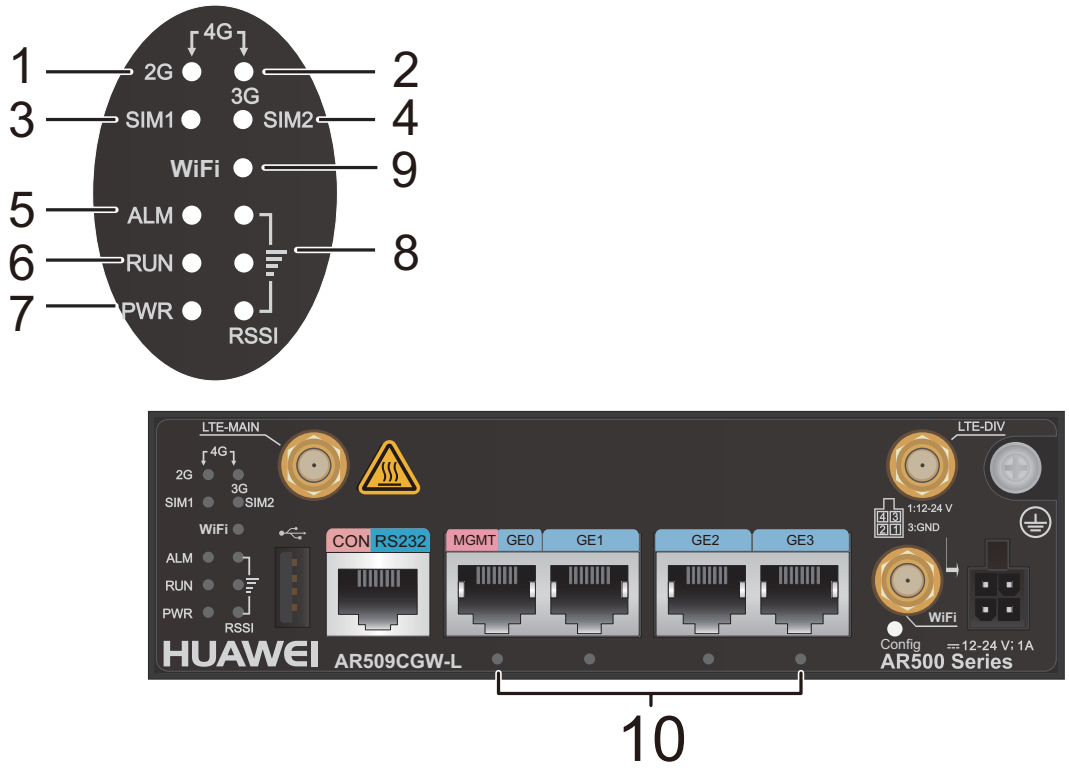
Figure 3-53 Indicators on the AR509CGW-L



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.

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Number	Indicator/ Button	Color	Description
5	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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 or configured using the USB flash drive.
6	RUN	Green	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	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.

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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

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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** ● 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.

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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	● 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	● 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** ● **6.3.4 Outdoor LTE Antenna** ● **6.3.3 LTE Indoor Remote Antenna**

Wi-Fi antenna interface

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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	● 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

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Item	Specification
Power specifications	
DC power input	● 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.

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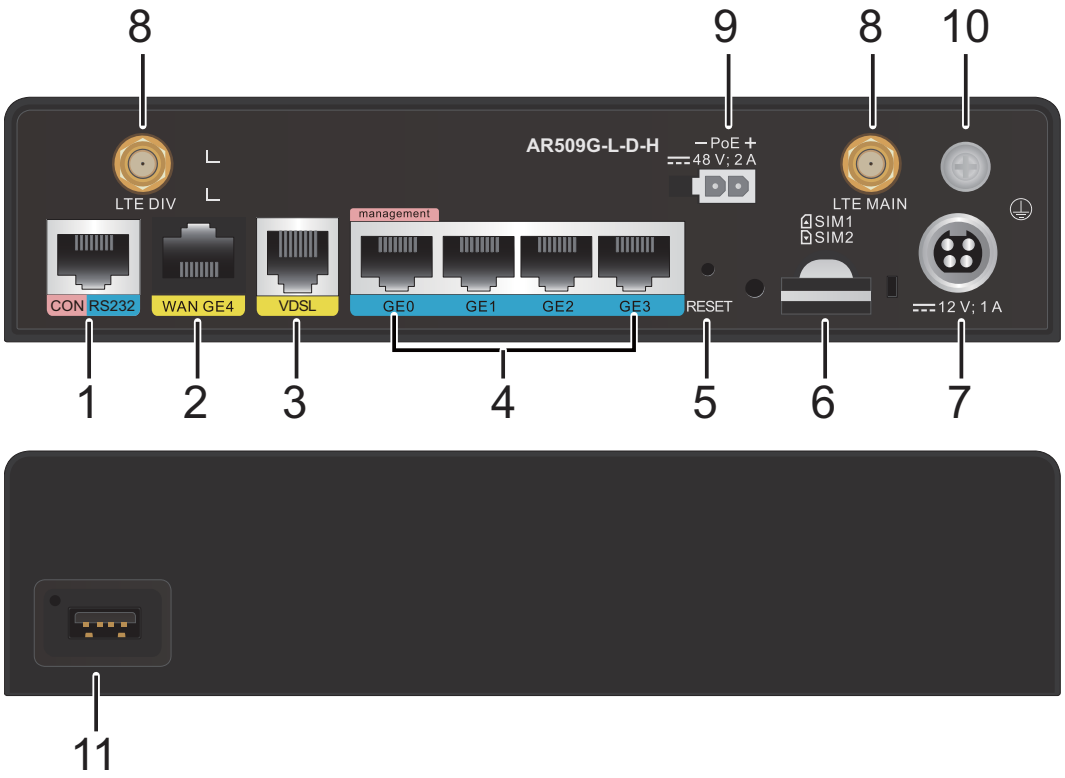
Figure 3-54 AR509G-L-D-H appearance



1	CON/RS232 interface	2	WAN interface: GE electrical interface
3	WAN interface: VDSL interface	4	LAN interfaces: four GE electrical interfaces **NOTE** ● 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+.

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5	RESET button **NOTE** This button is used to reset the router. ● To reset the system, press the button. ● To restore the factory settings, hold down the button for a period longer than 3 seconds and shorter than 10 seconds. ● 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. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Two SIM card slots **NOTE** ● 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	Power jack **NOTE** ● 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	LTE antenna interface
9	PoE power jack PoE power jack **NOTE** 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.	10	Ground point **NOTE** To protect the router from lightning and interference, reliably ground the router using a **6.8 Ground Cable**.
11	USB interface (host)	-	-

Indicator Description

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

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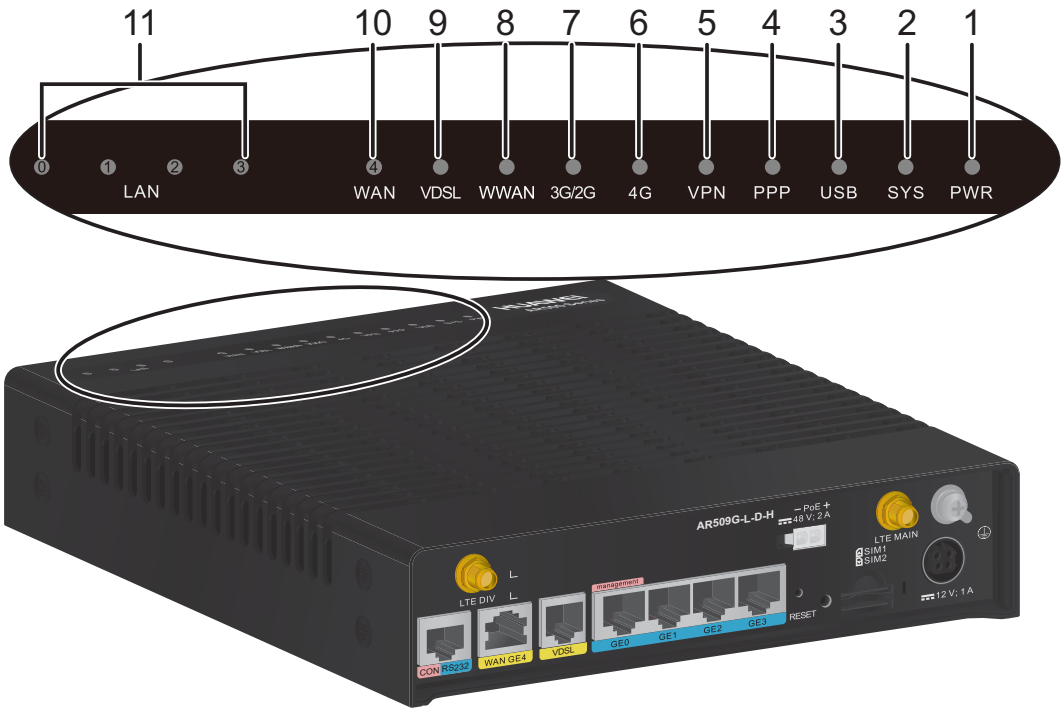
Figure 3-55 Indicators on the AR509G-L-D-H



Number	Indicator	Color	Description
1	PWR	Green	● Steady on: The system power supply is normal. ● Off: The system power is off.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking: The system is running properly. ● Fast blinking: The system is being powered on or restarting. ● Steady red: A system fault has occurred and requires manual intervention.

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

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Number	Indicator	Color	Description
10	WAN	Green	● Steady on: A link has been established on the WAN interface. ● Blinking: Data is being transmitted or received on the WAN interface. ● Off: No link is established on the WAN interface.
11	LAN	Green	● Steady on: A link 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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● 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)

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Attribute	Description
Rate	● 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	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**6.9 Standard Telephone Cable**

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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

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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	● 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

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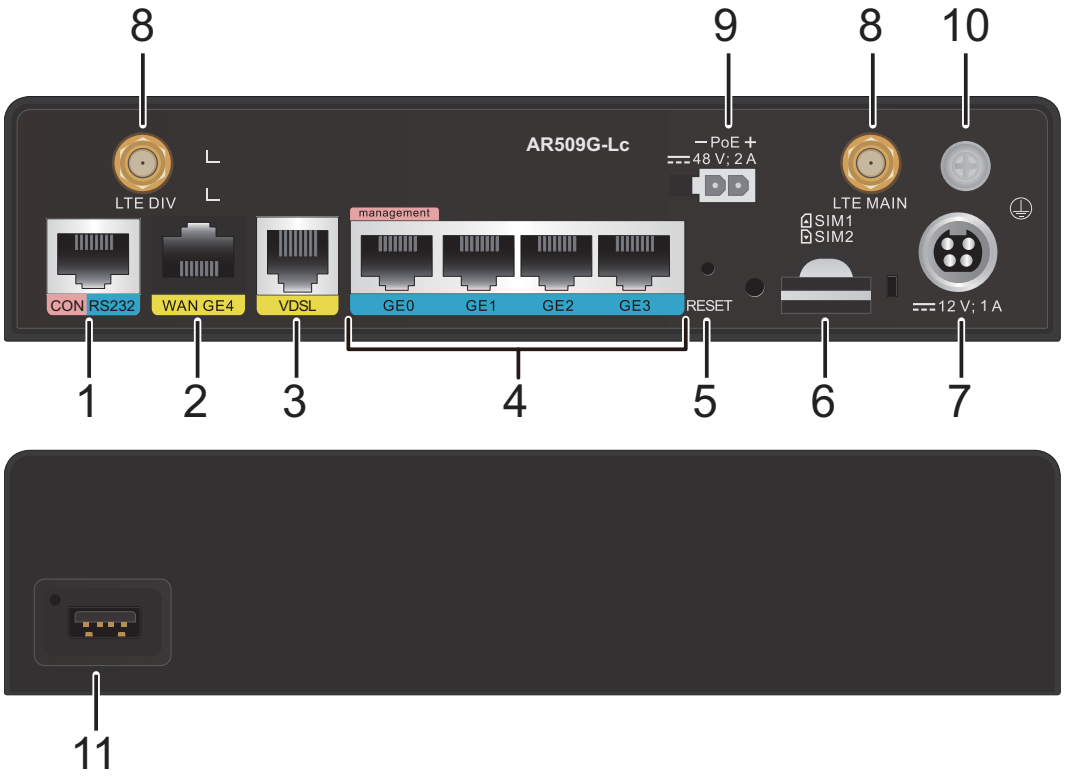
Appearance and Structure

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** ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

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5	RESET button **NOTE** This button is used to reset the router. ● To reset the system, press the button. ● To restore the factory settings, hold down the button for a period longer than 3 seconds and shorter than 10 seconds. ● 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. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Two SIM card slots **NOTE** ● 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	Power jack **NOTE** ● 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	LTE antenna interface
9	PoE power jack **NOTE** 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.	10	Ground point **NOTE** To protect the router from lightning and interference, reliably ground the router using a **6.8 Ground Cable**.
11	USB interface (host)	-	-

Indicator Description

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

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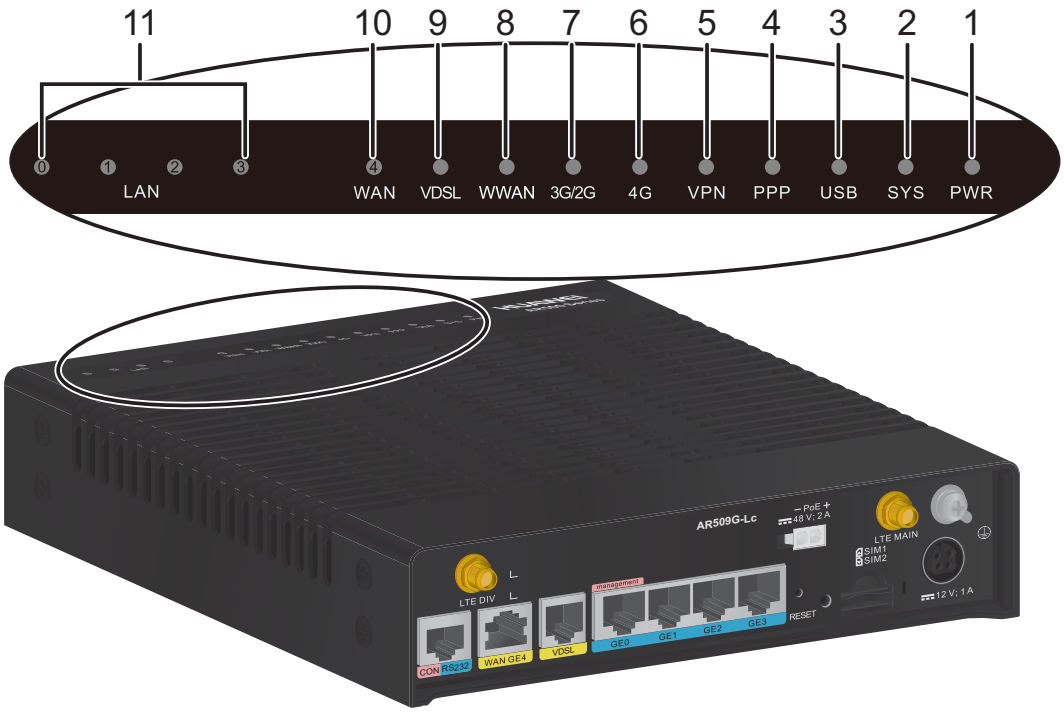
Figure 3-57 Indicators on the AR509G-Lc



Number	Indicator	Color	Description
1	PWR	Green	● Steady on: The system power supply is normal. ● Off: The system power is off.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is being powered on or is restarting. ● Steady red: A system fault has occurred and requires manual intervention.

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

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Number	Indicator	Color	Description
10	WAN	Green	● Steady on: A link has been established on the WAN interface. ● Blinking: Data is being transmitted or received on the WAN interface. ● Off: No link is established on the WAN interface.
11	LAN	Green	● Steady on: A link has been established on the LAN interface. ● Blinking: Data is being transmitted or received on the LAN interface. ● Off: No link is established on the LAN interface.

Interface Description

CON/RS232 interface

The CON/RS232 interface of a router can connect to an operation terminal for onsite configuration. **Table 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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● 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)

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Attribute	Description
Rate	● 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	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2
Rate	● ADSL2+ full rate mode (ITU-T G.992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s ● VDSL2 mode (ITU-T G.993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ● ADSL2 full rate mode (ITU-T G.992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ● ADSL full rate mode (G.992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	**6.9 Standard Telephone Cable**

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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	

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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	● 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

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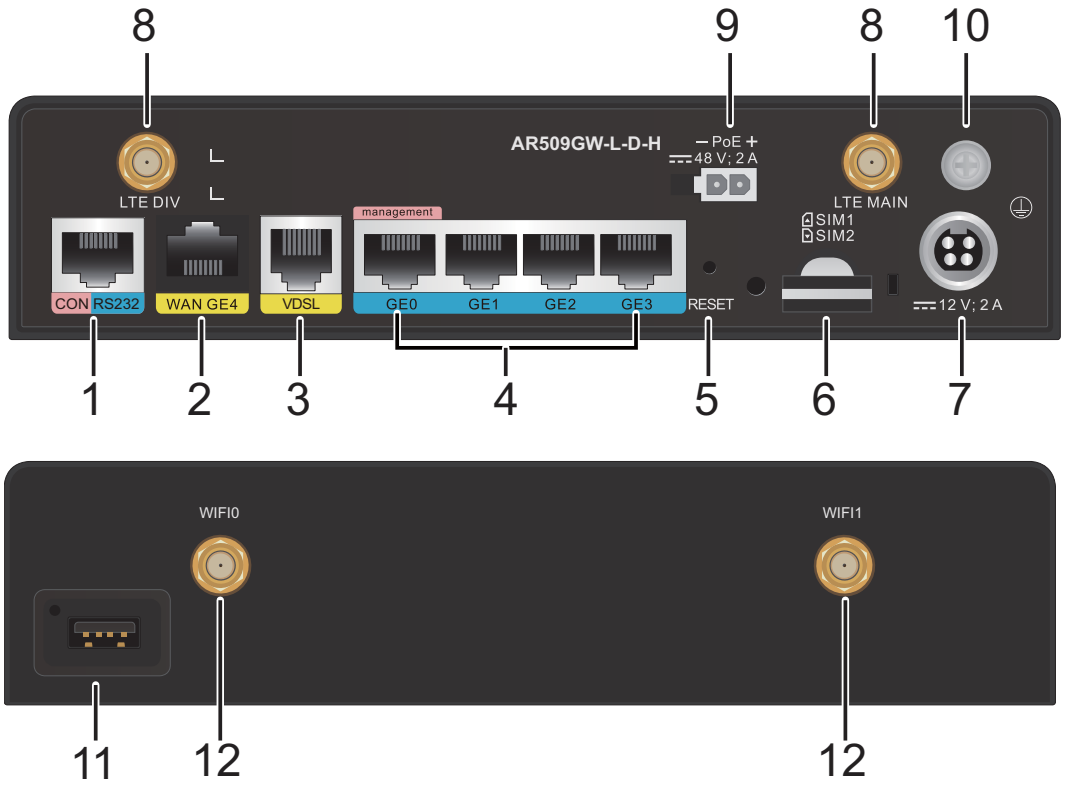
Appearance and Structure

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** ● GE0 is a management interface and is used to upgrade the router. ● All GE LAN interfaces can be configured as WAN interfaces.

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5	RESET button **NOTE** This button is used to reset the router. ● To reset the system, press the button. ● To restore the factory settings, hold down the button for a period longer than 3 seconds and shorter than 10 seconds. ● 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. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	Two SIM card slots **NOTE** ● 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	Power jack **NOTE** ● 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	LTE antenna interface
9	PoE power jack **NOTE** 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.	10	Ground point **NOTE** To protect the router from lightning and interference, reliably ground the router using a **6.8 Ground Cable**.
11	USB interface (host)	12	Two Wi-Fi antenna interfaces

Indicator Description

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

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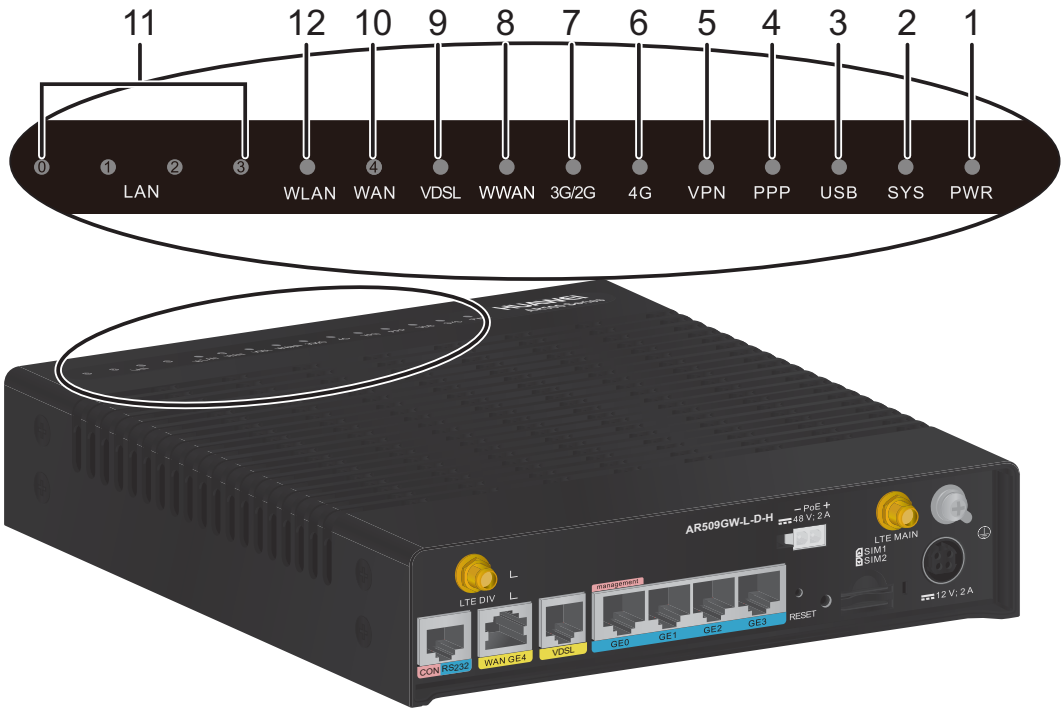
Figure 3-59 Indicators on the AR509GW-L-D-H



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.

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

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

Interface Description

CON/RS232 Interface

The CON/RS232 interface of a router can connect to an operation terminal for onsite configuration. **Table 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

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Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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)

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Attribute	Description
Standards compliance and frequency bands supported	● 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	● 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	● ITU-T G.993.2 ● ITU-T G.992.5 ● ITU-T G.992.3 ● ITU-T G.992.1 G.DMT ● ANSI T1.413 Issue 2

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

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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

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Item	Specification
Service interfaces	WAN interfaces: one GE electrical interface, one VDSL interface, and two LTE antenna interfaces LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots	Not supported
Environment parameters	
Operating environment temperature	● PoE power supply used: 0°C to +40°C (32°F to 104°F) ● PoE power supply not used: -25°C to +60°C (-13°F to +140°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to 185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 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.

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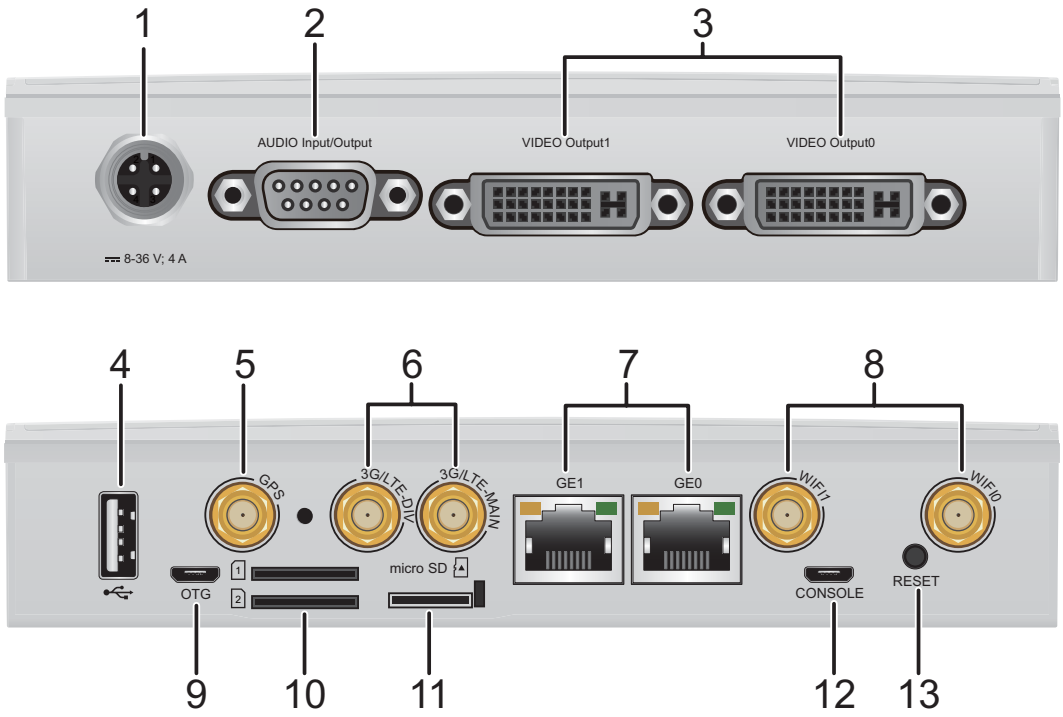
Figure 3-60 AR511GW-LAV2M3 appearance



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** ● 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

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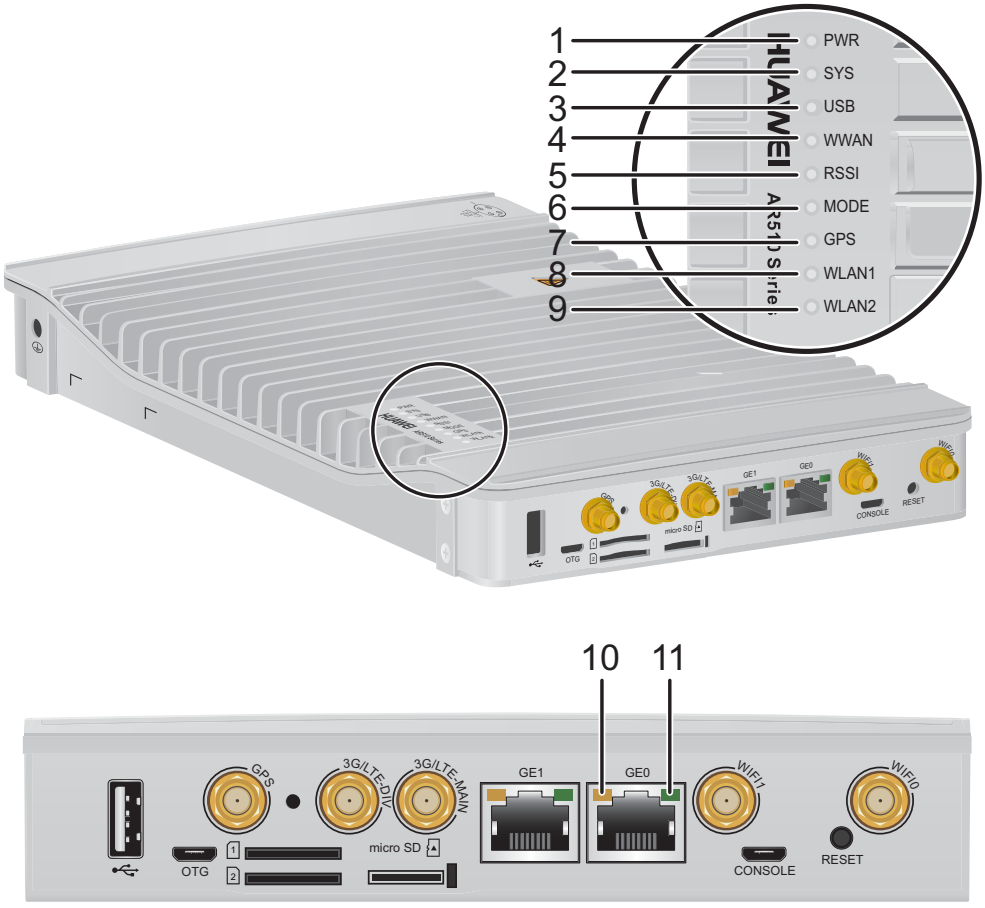
13	RESET button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-

Indicator Description

Figure 3-61 shows the indicators on the AR511GW-LAV2M3 router.

Figure 3-61 Indicators on the AR511GW-LAV2M3



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

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Number	Indicator	Color	Description
7	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: ● 10: ACT indicator ● 11: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

Audio Interface

An audio interface provides two stereo audio outputs (one of which is the internal amplifier) and one stereo audio input. **Table 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.

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Table 3-229 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	● HDMI signal ● CVBS (composite video) signal ● YPbPr (analog component) signal
Cable type	**Video cable**

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 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	● 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)

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Attribute	Description
Rate	● 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	● 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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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	

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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	

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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.

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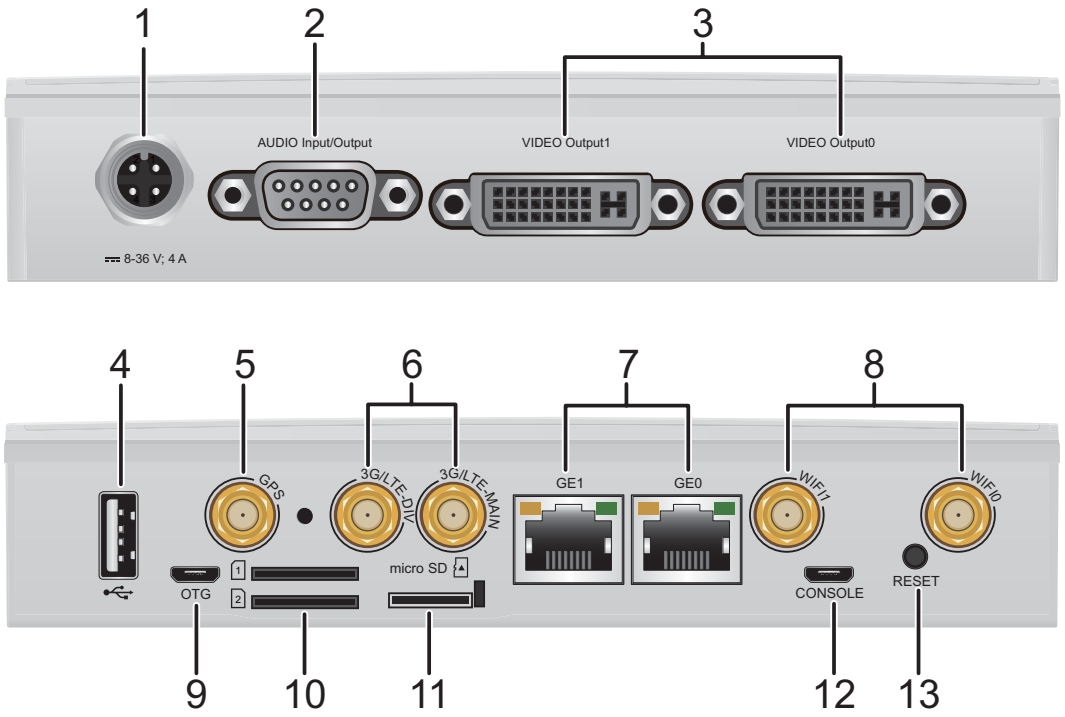
Figure 3-62 AR511CGW-LAV2M3 appearance



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** ● 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

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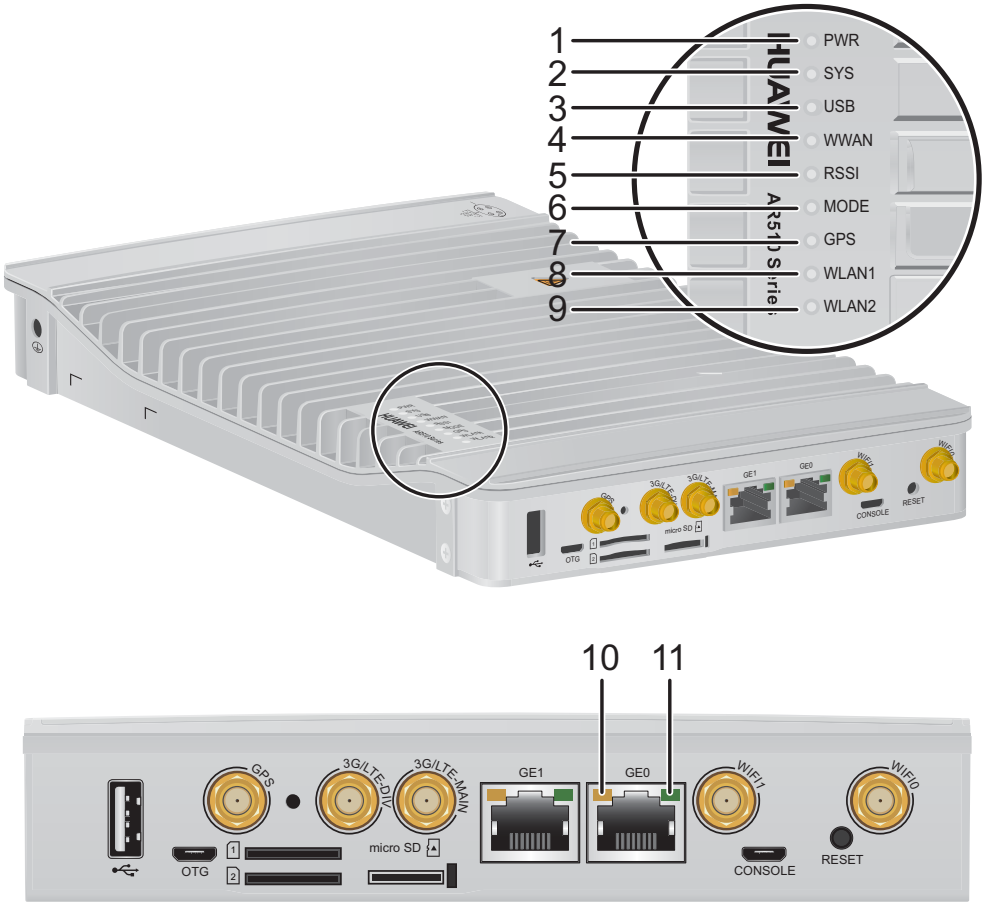
13	RESET button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-

Indicator Description

Figure 3-63 shows the indicators on the AR511CGW-LAV2M3 router.

Figure 3-63 Indicators on the AR511CGW-LAV2M3



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

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Number	Indicator	Color	Description
7	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: ● 10: ACT indicator ● 11: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

Audio Interface

An audio interface provides two stereo audio outputs (one of which is the internal amplifier) and one stereo audio input. **Table 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.

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Table 3-240 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	● HDMI signal ● CVBS (composite video) signal ● YPbPr (analog component) signal
Cable type	**Video cable**

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 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	● 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)

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Attribute	Description
Rate	● 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	● 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

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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** ● 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.

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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	

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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

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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.

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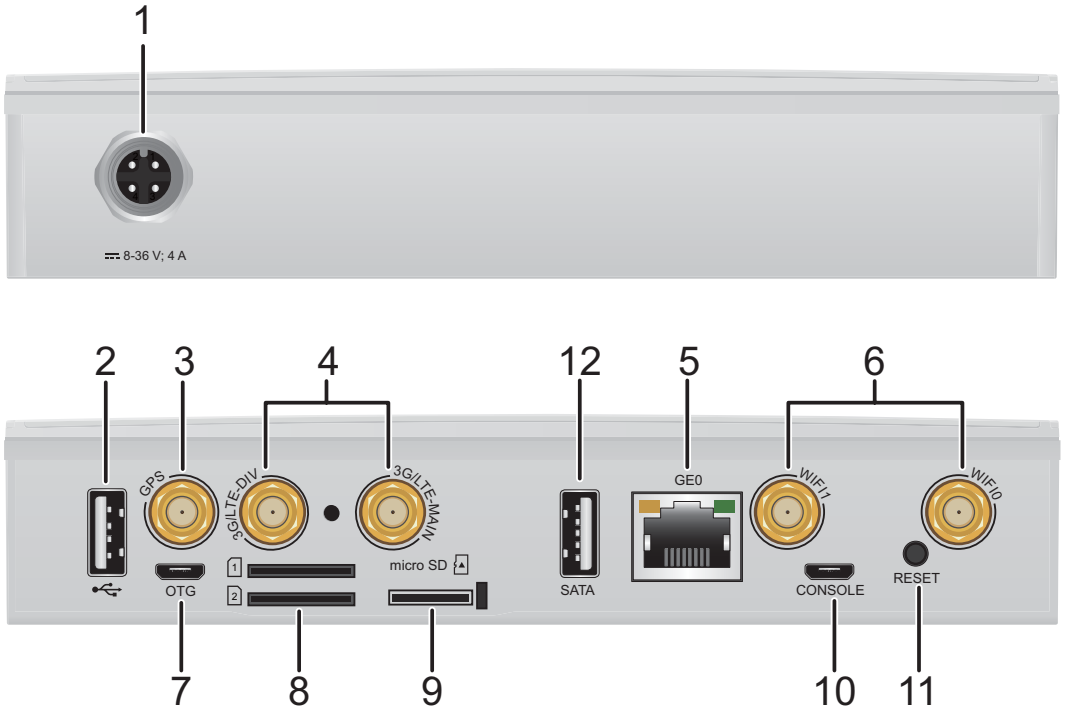
Figure 3-64 AR511GW-LM7 appearance



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** ● 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

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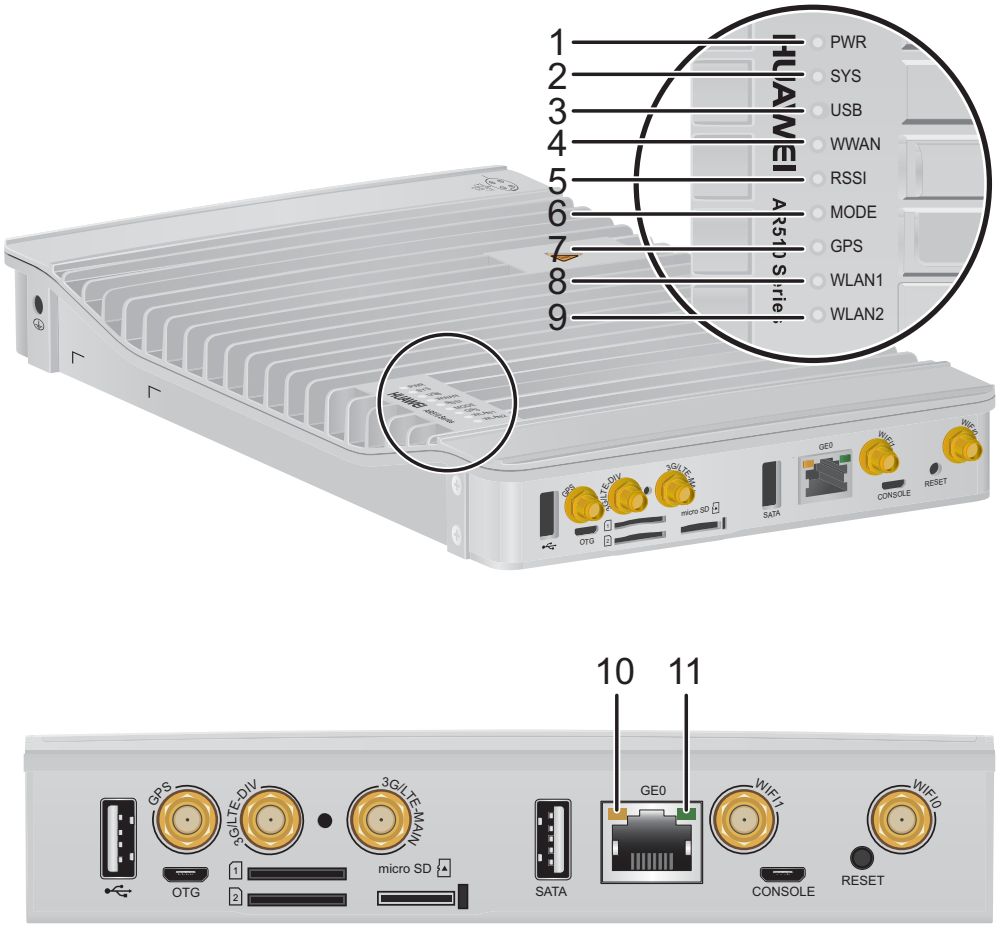
11	RESET button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	12	mSATA Interface **NOTE** This interface can have a mini SATA (mSATA) hard disk connected but the mSATA hard disk is not hot swappable.

Indicator Description

Figure 3-65 shows the indicators on the AR511GW-LM7 router.

Figure 3-65 Indicators on the AR511GW-LM7



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

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Number	Indicator	Color	Description
7	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: ● 10: ACT indicator ● 11: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 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

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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	● 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	● 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	● 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.

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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** ● 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

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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	● AHCI ● NCQ
Hard disk type	mSATA hard disk

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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

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Item	Specification
Airflow (facing the front panel)	None
Interface density	
Management interfaces	None
Console interfaces	1 (Micro USB)
USB 2.0 interfaces	1
Service interfaces (standard configuration)	WAN interfaces: one GE electrical interface and two 3G/LTE antenna interfaces LAN interfaces: two Wi-Fi antenna interfaces Multimedia interface: mSATA interface
Extended slots	Not supported
Environment parameters	
Operating temperature	0°C to +50°C (32°F to 122°F) **NOTE** When the altitude is between 1800 m and 5000 m, the highest operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 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

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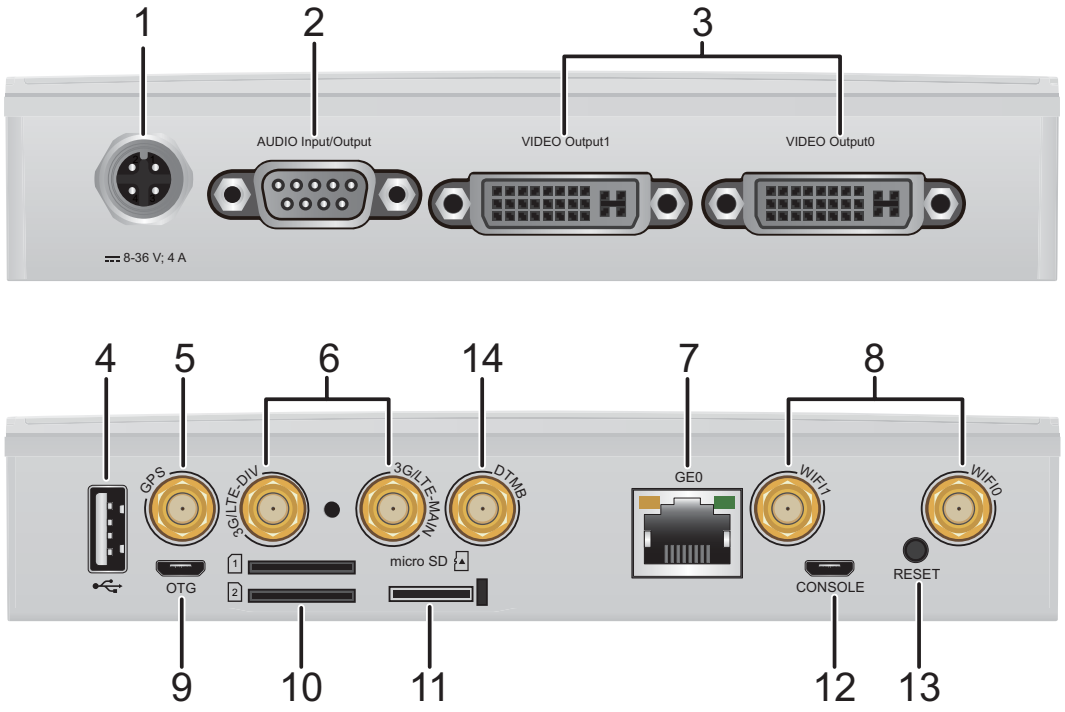
Appearance and Structure

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** ● 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

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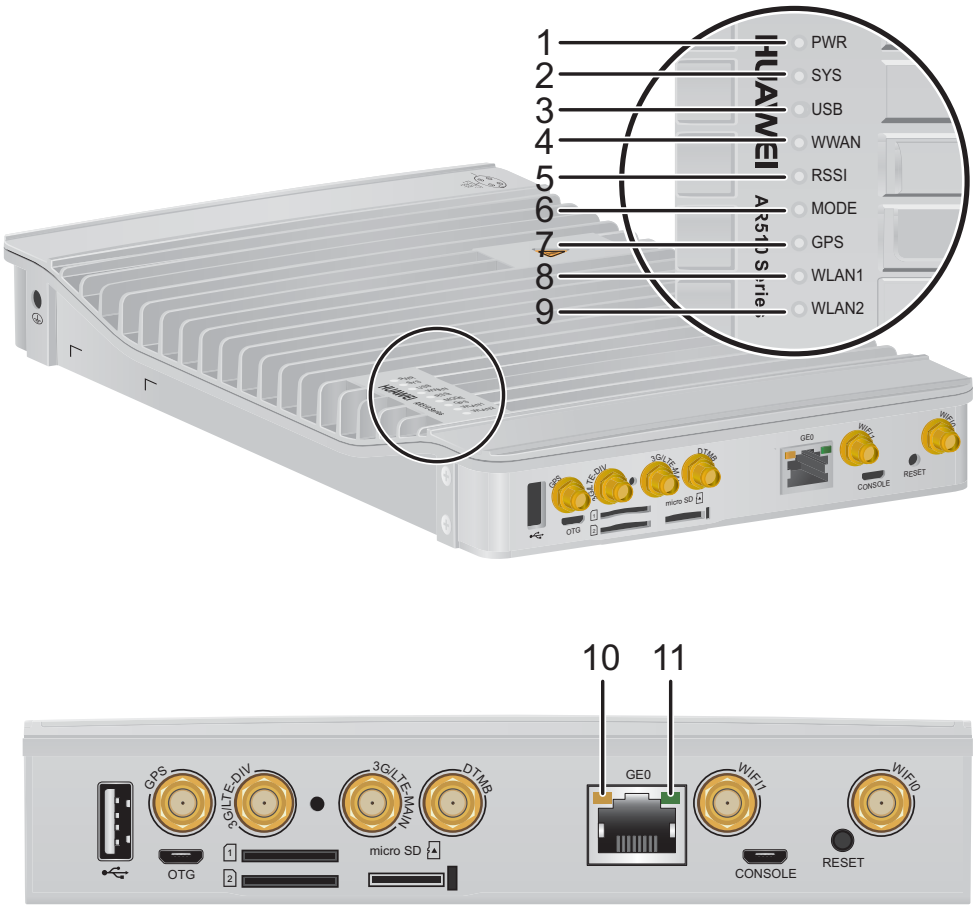
13	RESET button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	14	DTMB interface

Indicator Description

Figure 3-67 shows the indicators on the AR511GW-L-B3 router.

Figure 3-67 Indicators on the AR511GW-L-B3



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

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Number	Indicator	Color	Description
7	GPS	Green	Steady on: The GPS function is enabled.
			Off: The GPS function is disabled.
8	WLAN1 (working at the 2.4 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
9	WLAN2 (working at the 5.0 GHz frequency band)	Green	Blinking: Data is being transmitted on the WLAN link.
			Off: The WLAN link is shut down.
10 and 11	GE electrical interface indicators: ● 10: ACT indicator ● 11: LINK indicator	Yellow	ACT indicator blinking: Data is being transmitted or received. ACT indicator off: No data is being transmitted or received.
		Green	LINK indicator steady on: A link has been established. LINK indicator off: No link is established.

Interface Description

Audio Interface

An audio interface provides two stereo audio outputs (one of which is the internal amplifier) and one stereo audio input. **Table 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.

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Table 3-261 Video interface attributes

Attribute	Description
Connector type	DVI-I socket
Signal types supported	● HDMI signal ● CVBS (composite video) signal ● YPbPr (analog component) signal
Cable type	**Video cable**

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 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	● 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)

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Attribute	Description
Rate	● 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	● 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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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	● All channels in the very high frequency (VHF) band ● All channels in the ultra high frequency (UHF) band
Standards compliance	GB20600-2006
Cable type	**DTMB remote antenna**

Heat Dissipation

The AR511GW-L-B3 router has no fans and uses natural heat dissipation.

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Technical Specifications

Table 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

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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

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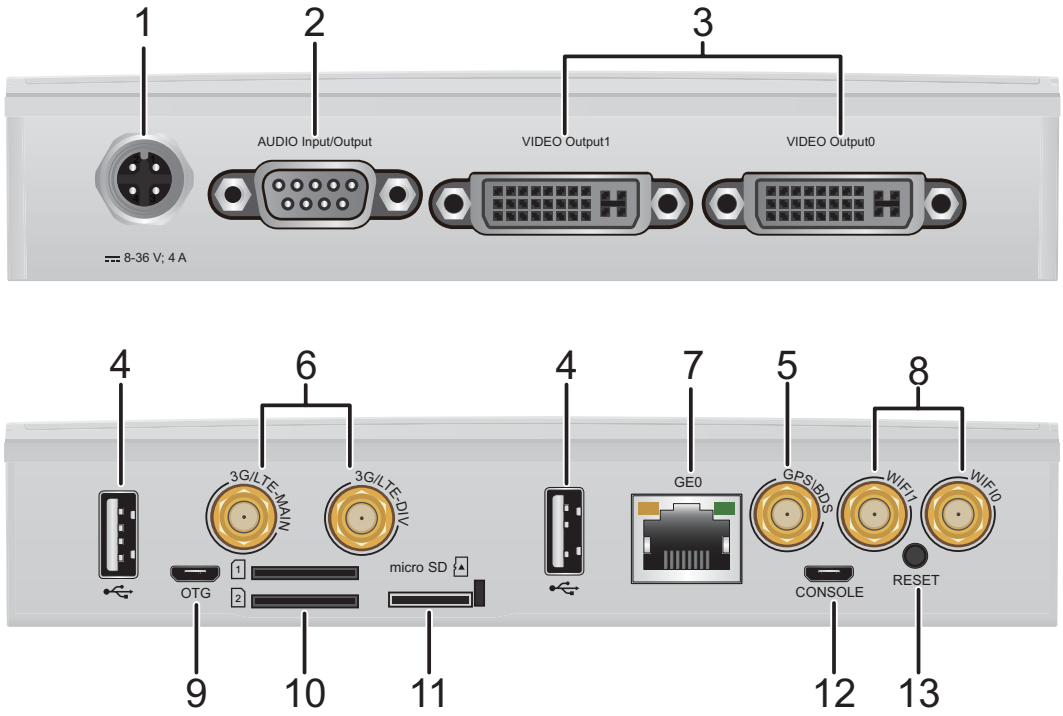
Appearance and Structure

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** ● 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

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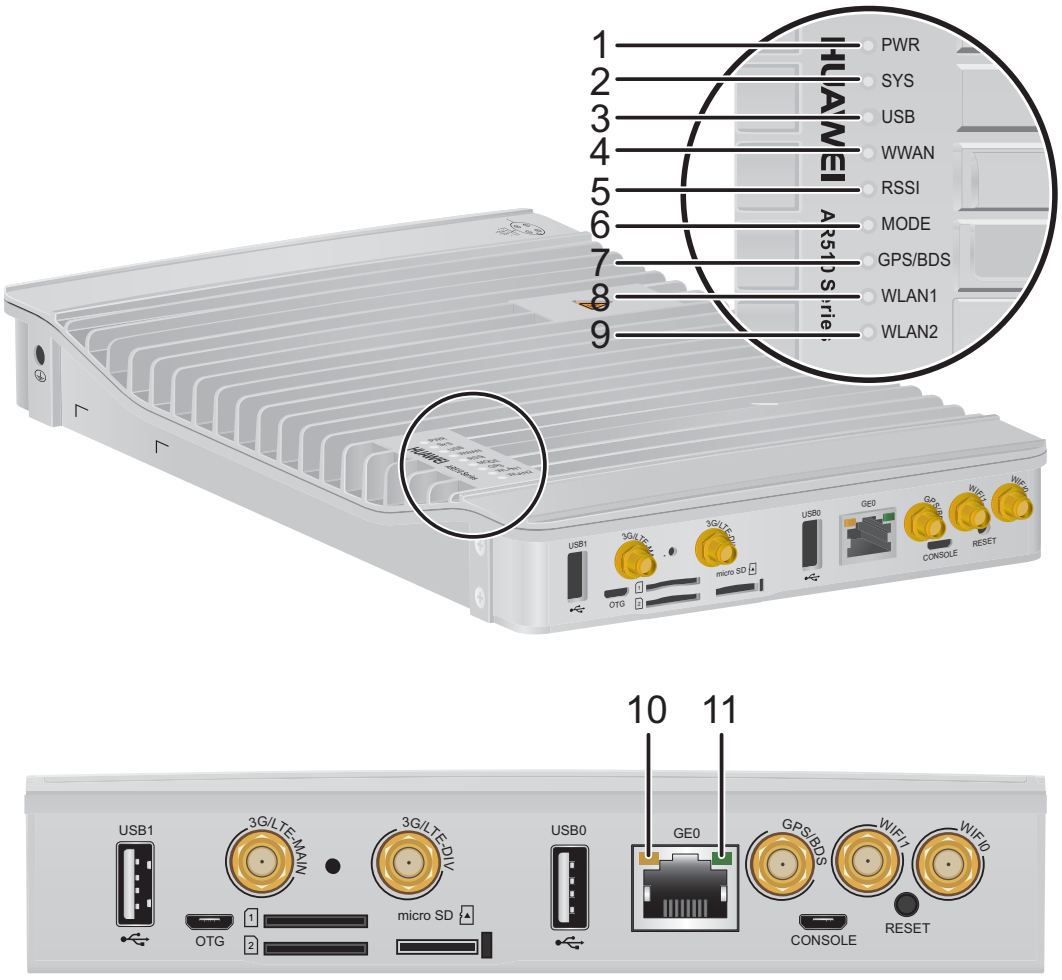
13	RESET button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	-	-

Indicator Description

Figure 3-69 shows indicators on the AR511EGW-LcAV2.

Figure 3-69 Indicators on the AR511EGW-LcAV2



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	MODE	Green	Steady on: An LTE connection has been established.
			Slow blinking: A 3G/2G connection has been established.
			Off: No LTE/3G/2G connection is established.

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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: ● 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.

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Table 3-273 Video interface attributes

Attribute	Description
Connector type	DVI-I connector
Signal types supported	● 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	● 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)

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Attribute	Description
Rate	● 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	● 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	● GPS: 1575.42 MHz ● BDS: 1561.098 MHz
Cable type	**6.3.15 GPS/BDS Remote Antenna**

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GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 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** ● 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.

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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	● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	● 2.4GHz: 3.8dBi ● 5.0GHz: 3.2dBi
Services provided	● 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.

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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	

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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.

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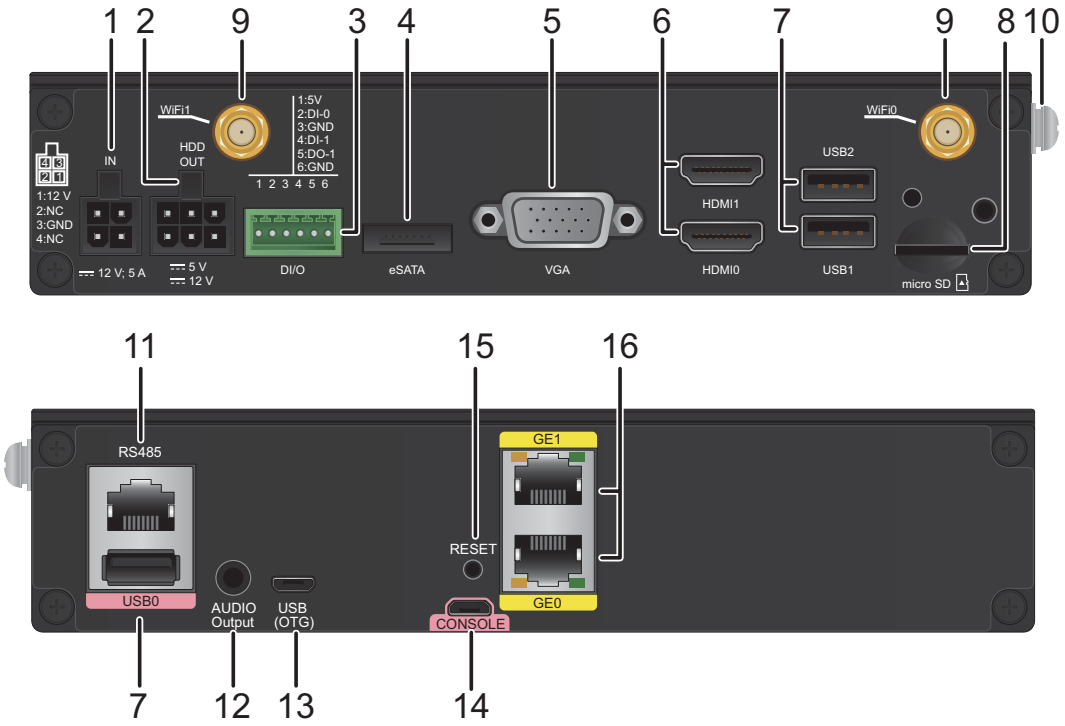
Figure 3-70 AR513W-V3M8 appearance



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)

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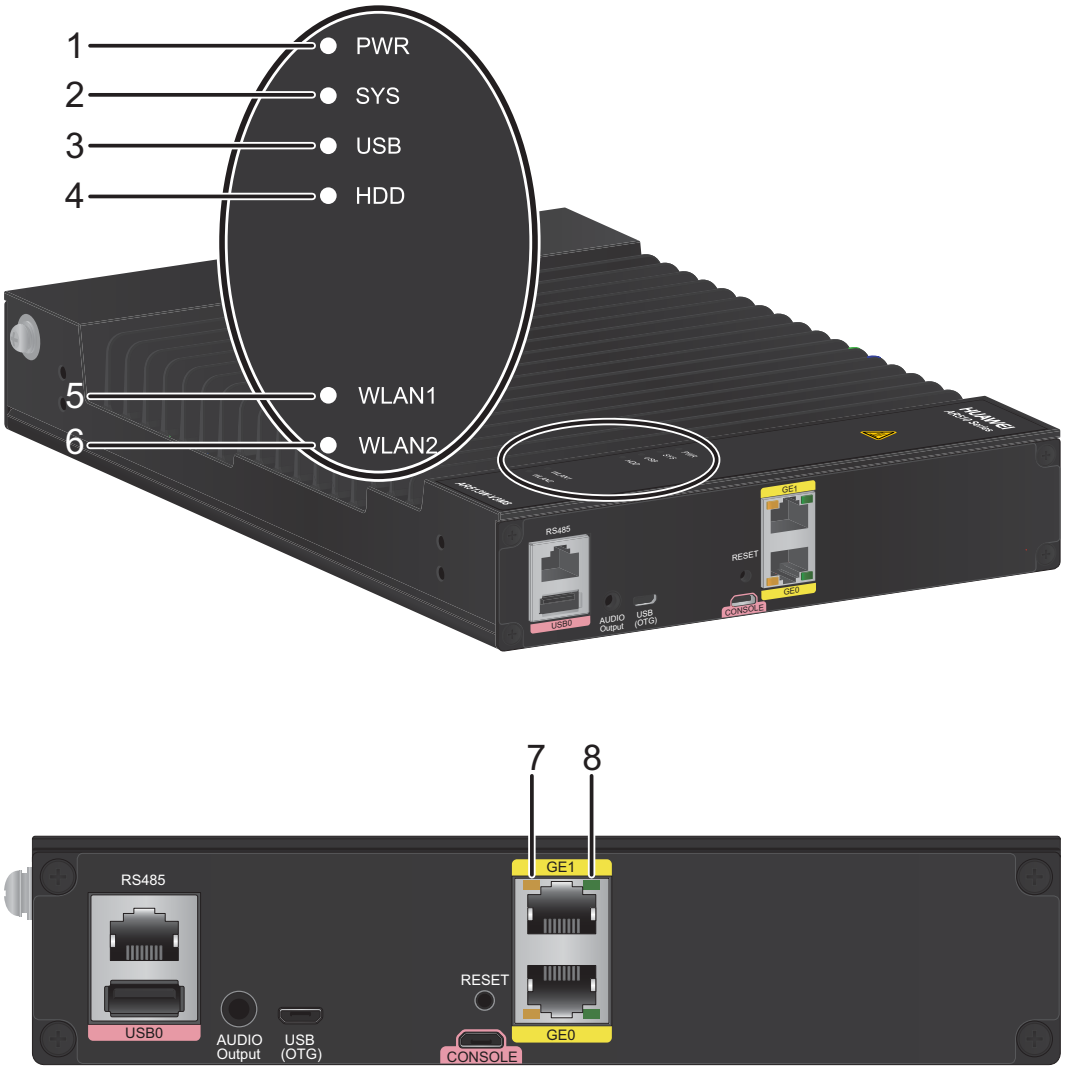
13	USB interface (OTG)	14	CONSOLE interface
15	RESET button **NOTE** This button is used to reset the router. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	16	WAN interfaces: two GE electrical interfaces

Indicator Description

Figure 3-71 shows the indicators on the AR513W-V3M8 router.

Figure 3-71 Indicators on the AR513W-V3M8



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

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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

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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

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Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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.

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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

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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.

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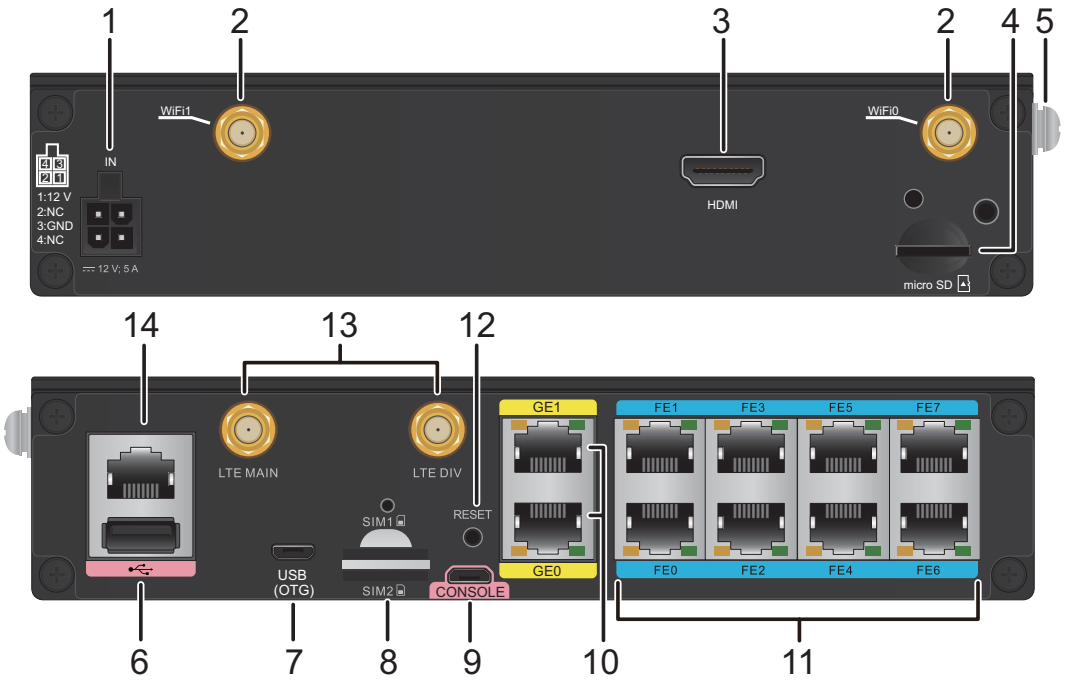
Figure 3-72 AR513GW-LcV1 appearance



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. ● To restore the factory settings, hold down the button for at least 5 seconds. ● To reset the system, press the button. Resetting the router will interrupt services. Exercise caution when deciding to press this button.

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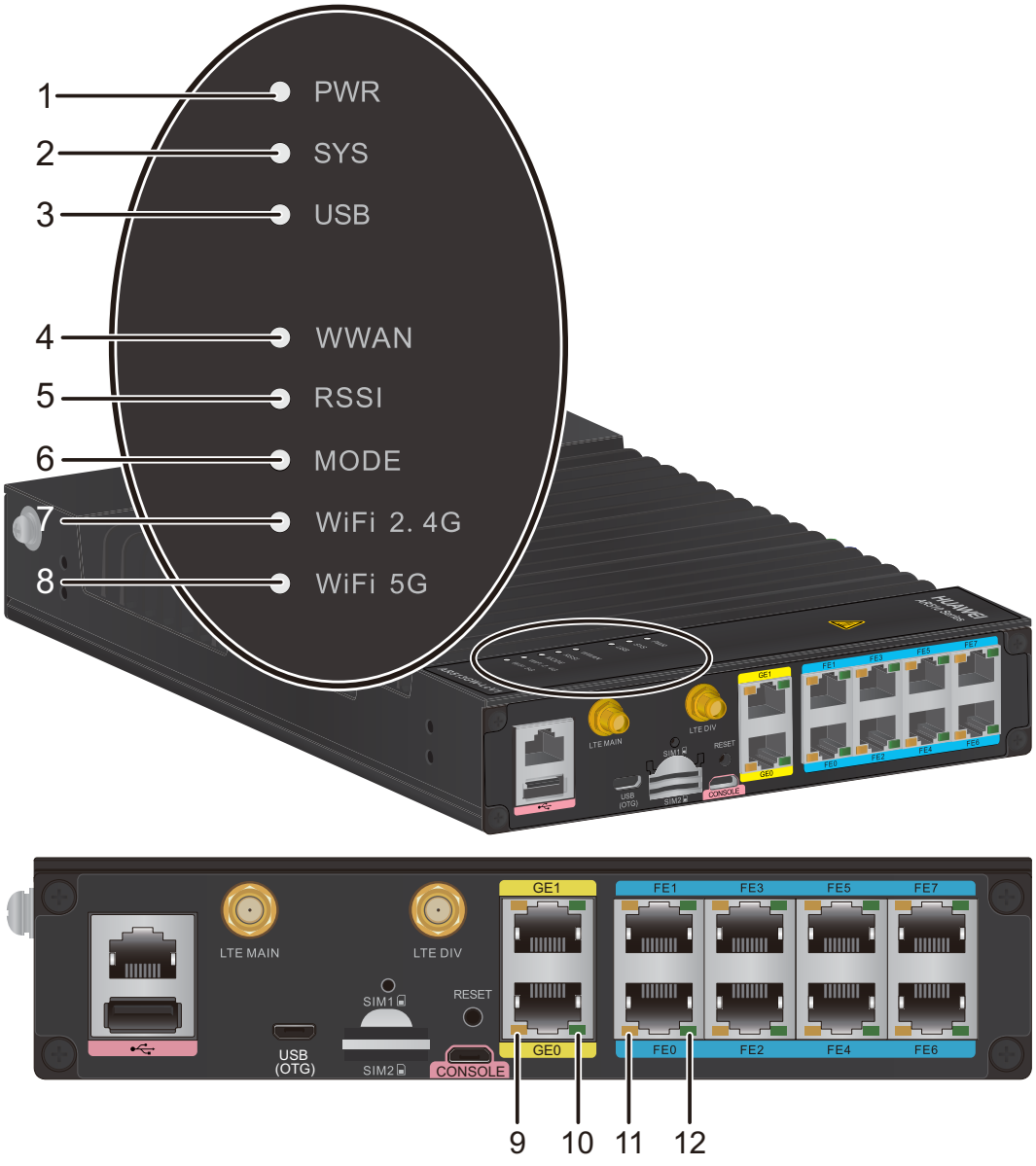
13	LTE antenna interface	14	This interface is reserved for future use.

Indicator Description

Figure 3-73 shows indicators on the AR513GW-LcV1.

Figure 3-73 Indicators on the AR513GW-LcV1



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Number	Indicator	Color	Description
1	PWR	Green	Steady on: The system power supply is normal. Off: The system power is off.
2	SYS	Red and green	Slow blinking green: The system is running properly. Fast blinking green: The system is powering on or restarting.
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	WWAN	Green	Steady on: An LTE/3G/2G connection has been established and is active.
			Blinking: Data is being transmitted or received over the LTE/3G/2G connection.
			Off: The LTE/3G/2G connection has not been established or is inactive.
5	RSSI	Green	Steady on: The LTE/3G/2G signal strength is high.
			Fast blinking: The LTE/3G/2G signal strength is medium.
			Slow blinking: The LTE/3G/2G signal strength is low.
			Off: No LTE/3G/2G signal is available.
6	MODE	Green	Steady on: An LTE connection has been established.
			Slow blinking: A 3G/2G connection has been established.
			Off: No LTE/3G/2G connection is established.

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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: ● 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: ● 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

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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** ● 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.

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Table 3-298 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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)

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Attribute	Description
Standards compliance and frequency bands supported	● 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	● 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	

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Item	Specification
Processor	Quad-core, 1.2 GHz
Memory	2 GB
Nand flash memory	1 GB
EMMC flash memory	4 GB
Micro SD card (default sd1)	None
Hard disk	Not supported
Dimensions and weight	
Dimensions (W x D x H)	275.0 mm x 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

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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.

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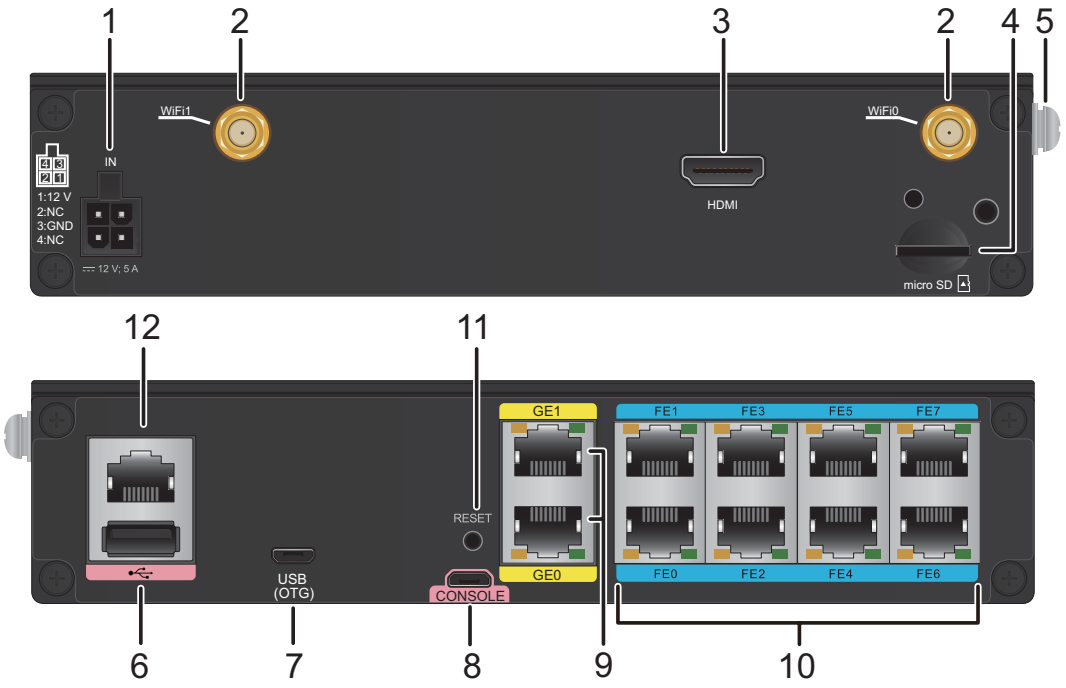
Figure 3-74 AR513W-V1 appearance



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. ● 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.

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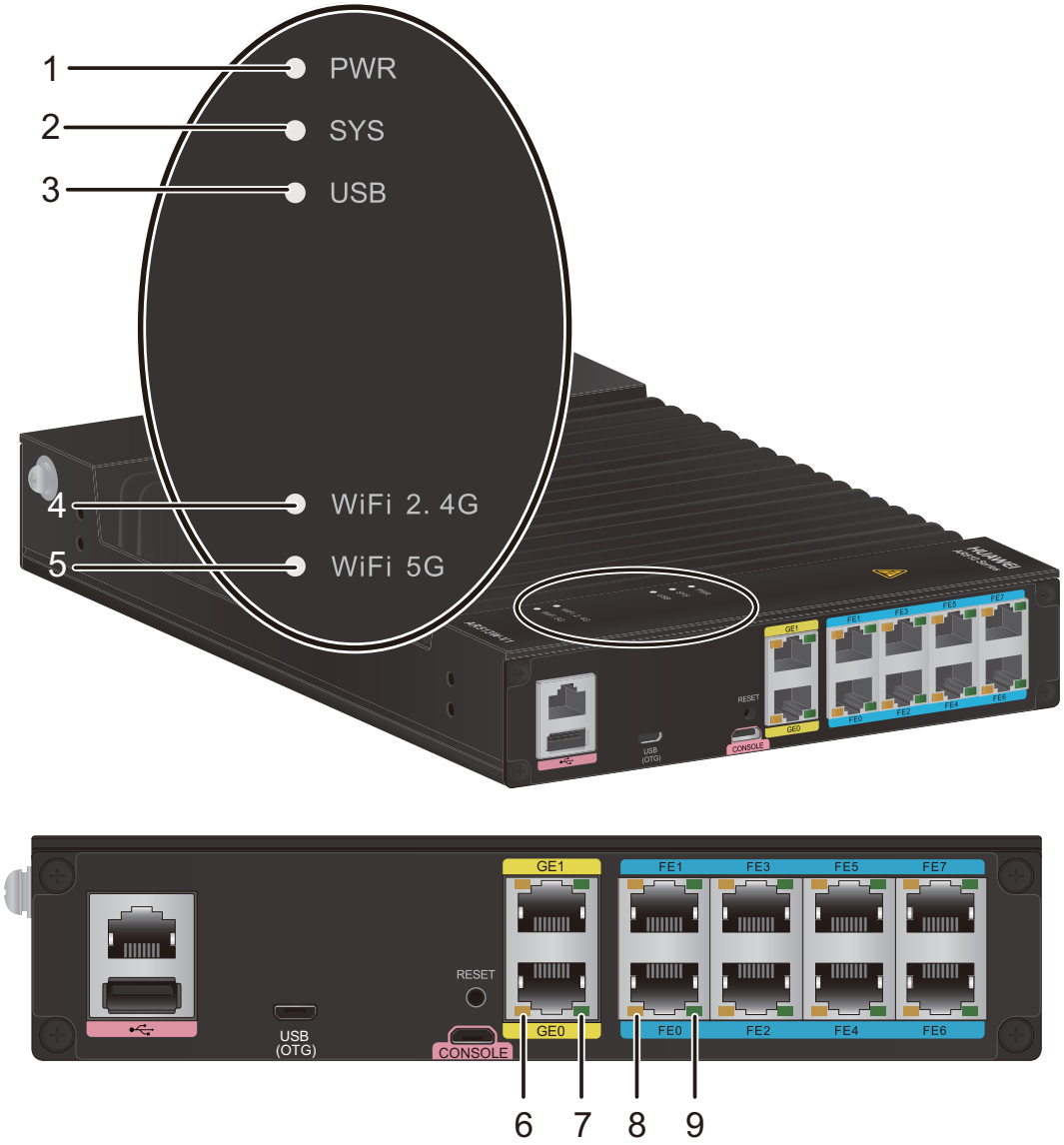
Indicator Description

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.

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Number	Indicator	Color	Description
			Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
			Off: The system software is not running or is resetting.
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	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.

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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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**6.6 Ethernet Cable**

USB interface (host)

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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	● 2.4 GHz ● 5.0 GHz
Rate	600 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi

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Attribute	Description
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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

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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

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3.3.9 AR515GW-LM9-D

Version Mapping

Table 3-313 lists the mapping between the AR515GW-LM9-D series routers and software versions.

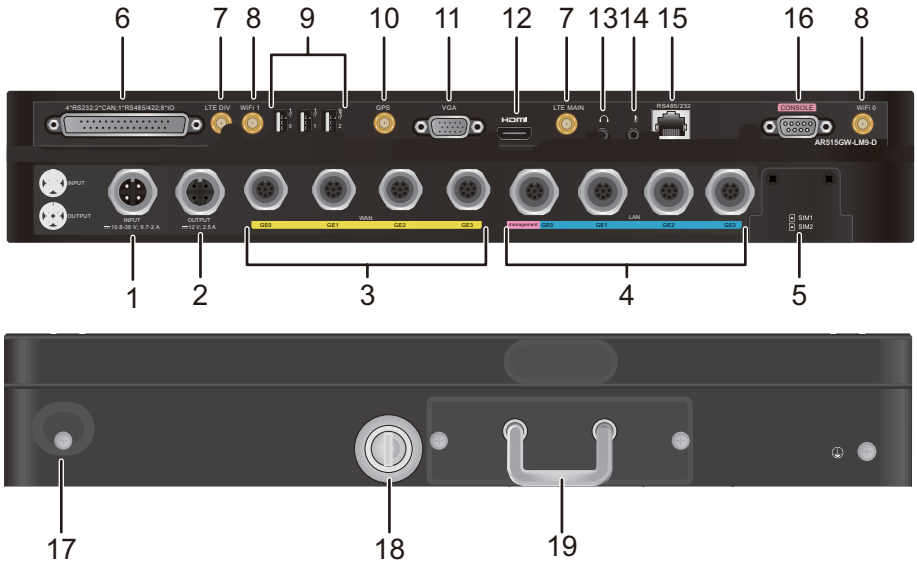
Table 3-313 Matching between AR515GW-LM9-D series routers and software versions

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

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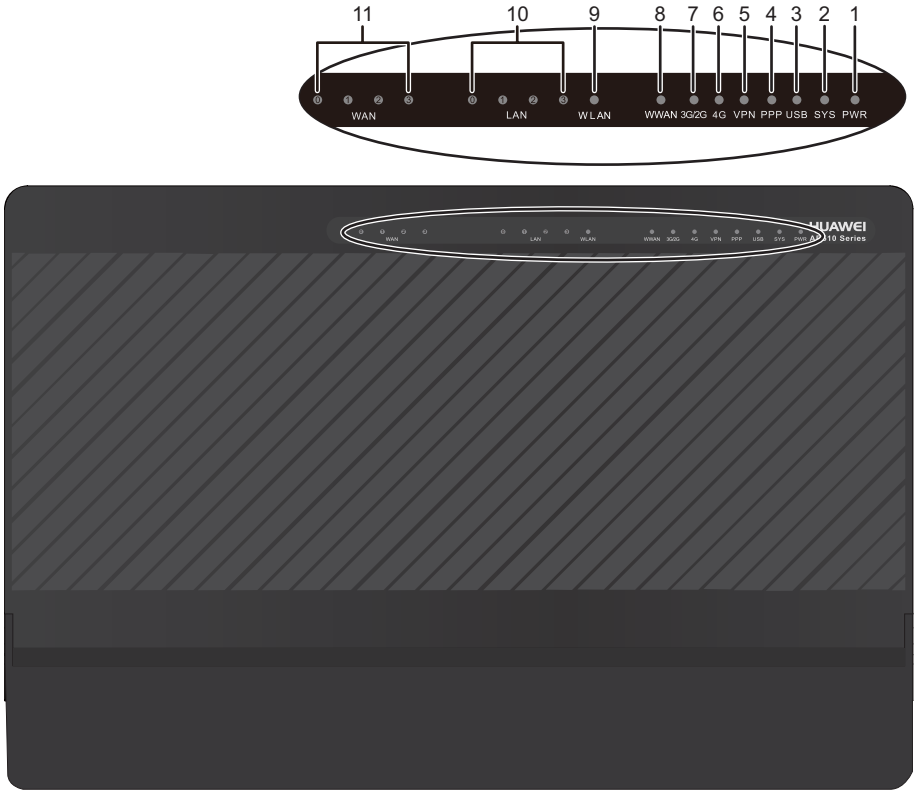
5	Two SIM card slots **NOTE** ● The SIM card slots support double-card single-standby. ● The router must use industrial SIM cards. ● The mounting hole above the SIM card slots is used to fix the SIM card cover with a screw.	6	DB37 interface **NOTE** It can have a DB37 adapter cable connected to provide any of the following interfaces: ● 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



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

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Number	Indicator	Color	Description
8	WWAN	Green	Steady on: A 4G/3G/2G connection has been established and is active. Blinking: Data is being transmitted or received over the 4G/3G/2G connection. Off: The 4G/3G/2G connection has not been established or is inactive.
9	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

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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	● 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	● 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	● 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.

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Table 3-317 GE electrical interface attributes

Attribute	Description
Connector type	M12
Interface attribute	MDI/MDIX **NOTE** ● 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**

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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	● 2.4 GHz ● 5.0 GHz
Rate	1167 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi
Services provided	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Cable type	**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.

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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

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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	● 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.

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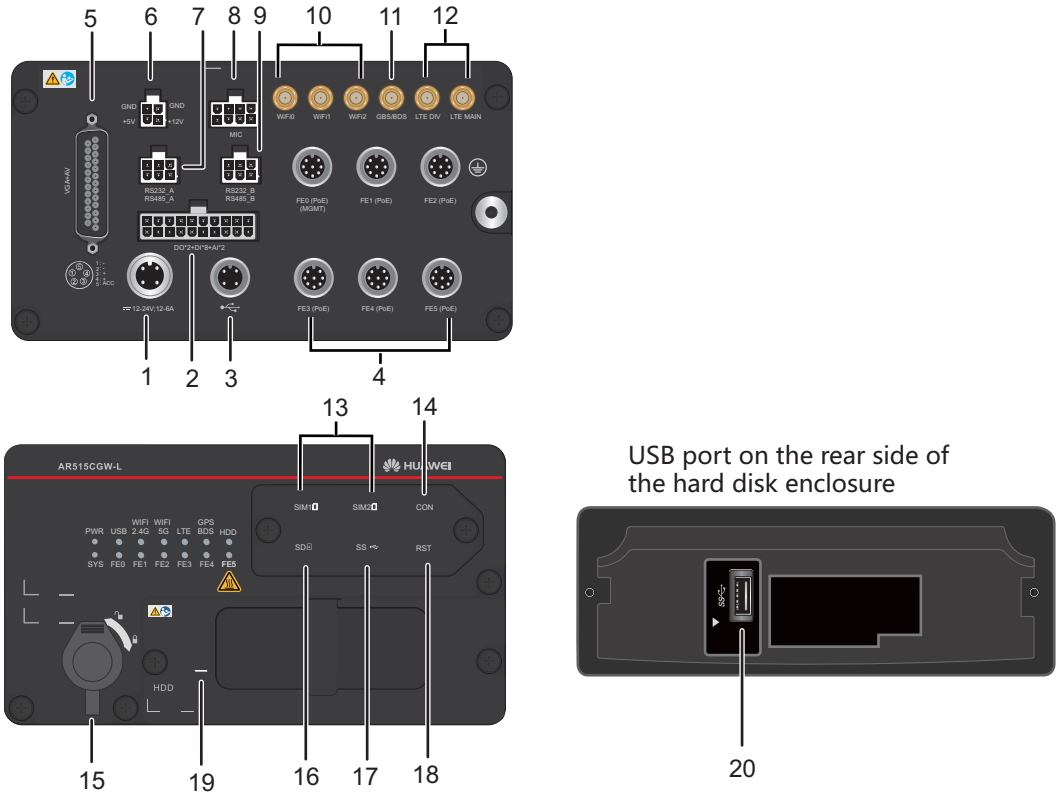
Figure 3-78 AR515CGW-L appearance



1	Power input jack **NOTE** Use a DC power cable to connect the router to an external power source. Select a proper power cable based on the current.	2	20-pin Mini fit interface **NOTE** ● 2*DO ● 8*DI ● 2*AI
3	USB interface: using M12 A Code connector **NOTE** ● 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.	4	LAN interfaces: six FE electrical interfaces **NOTE** Ports FE0 to FE5 support PoE and provide a maximum output power of 60 W in total.
5	DB25 interface **NOTE** It can have a DB25 adapter cable connected to provide any of the following interfaces: ● VAG ● AV audio/video interface	6	4-pin Mini fit interface **NOTE** ● 12 V output ● 5 V output

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7	6-pin Mini fit interface **NOTE** ● RS232 ● RS485 ● 12 V output	8	8-pin Mini fit interface: Mic **NOTE** ● Speaker ● 12 V output
9	6-pin Mini fit interface **NOTE** ● RS232 ● RS485 ● 12 V output	10	Wi-Fi interface
11	GPS/BDS interface	12	LTE antenna interface
13	Two SIM card slots **NOTE** ● 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.

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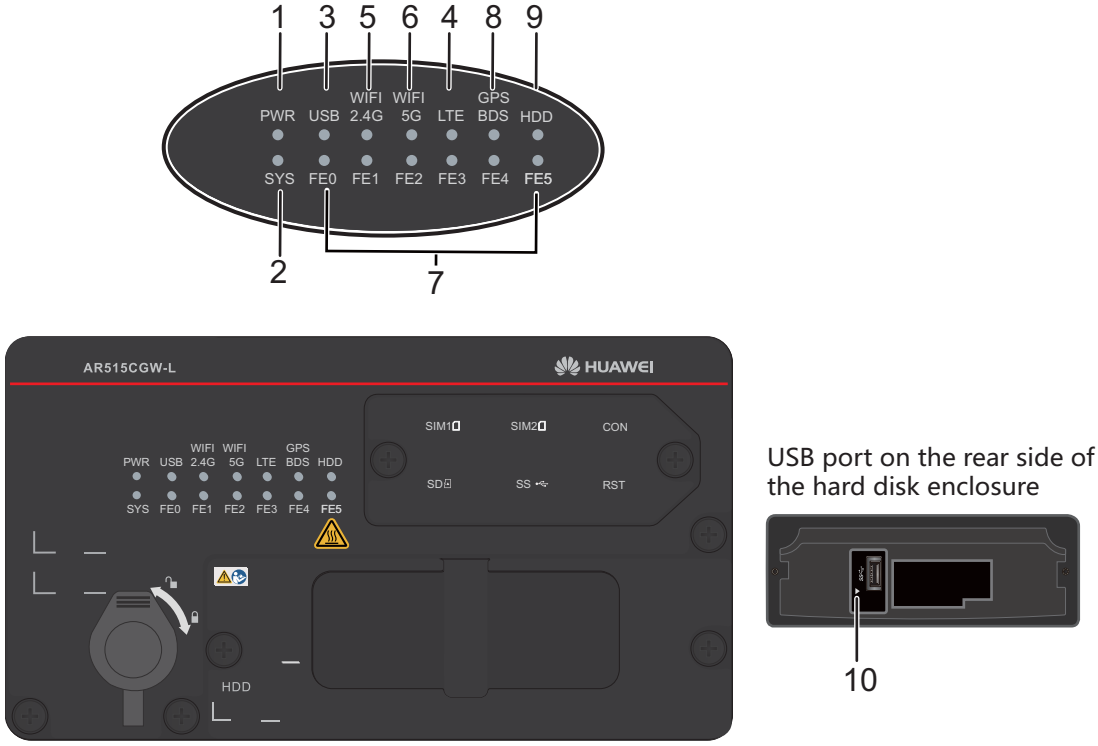
Figure 3-79 Indicators on the AR515CGW-L



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.

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Number	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	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.

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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	● 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	● 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

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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	● 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** ● 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.

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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

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Attribute	Description
Frequency bands supported	● 2.4 GHz ● 5.0 GHz
Rate	1750 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi
Services provided	● 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: ● 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.)

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Item	Specification
Weight	4.5 kg (10.14 lb)
Power specifications	
Rated input voltage (DC)	12 V DCto 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	

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Item	Specification
Operating temperature	Without hard disks: –25°C to +55°C (–13°F to +131°F) With hard disks: ● 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.

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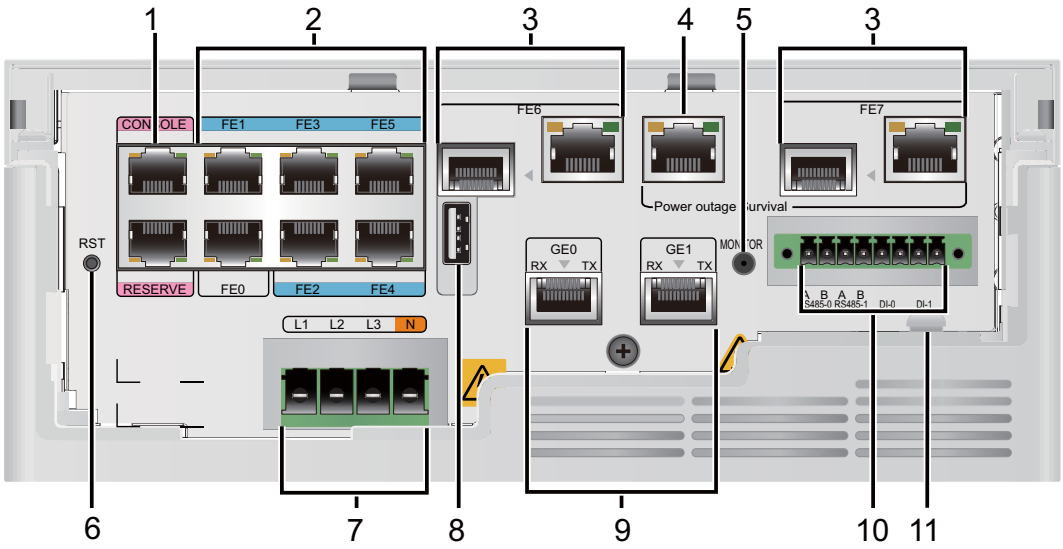
Figure 3-80 AR531-2C-H appearance



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. ● 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** ● 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

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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** ● 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.

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Figure 3-81 Indicators on the AR531-2C-H

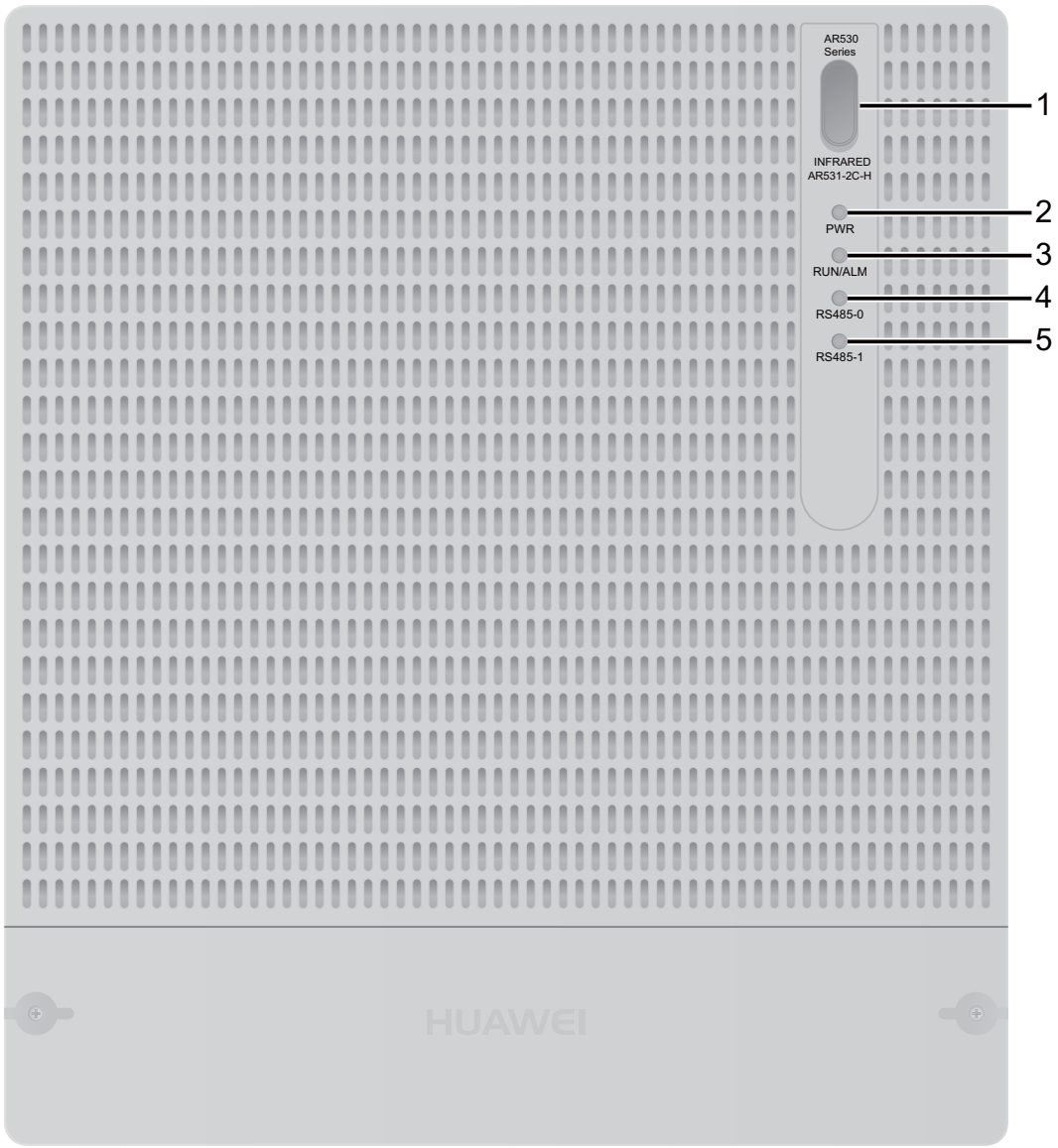

Table 3-334 Description of indicators on the AR531-2C-H

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.

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Number	Indicator/Button	Color	Description
3	RUN/ALM	Red and green	● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: – 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: – 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: – 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	● 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	● 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.

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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	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	**6.6 Ethernet Cable**

FE combo interface

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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	● 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

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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.

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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	● 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	● 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.)

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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.

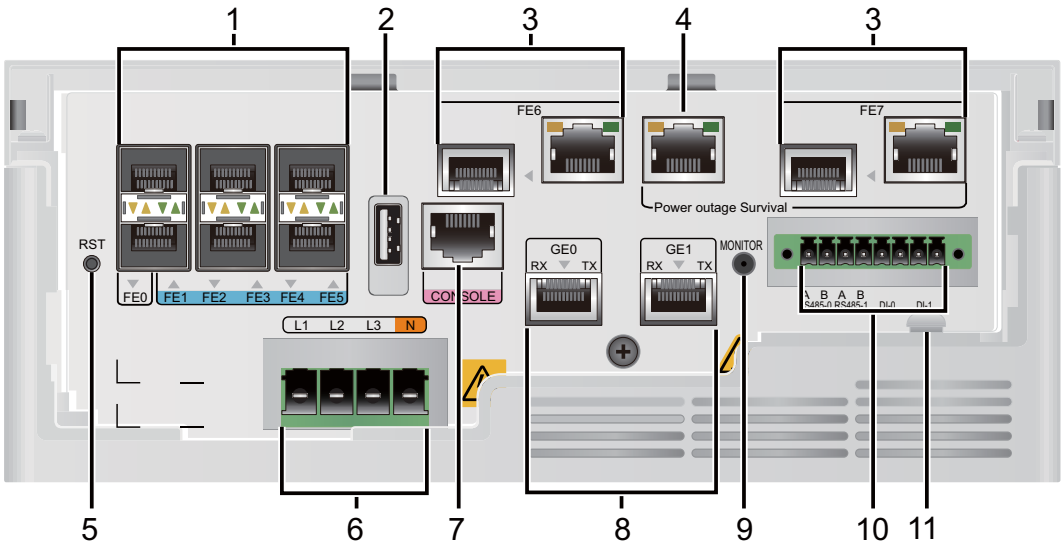
Table 3-342 Mapping between the AR531-F2C-H router and software versions

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

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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. ● 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** ● 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** ● 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.

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Figure 3-83 Indicators on the AR531-F2C-H

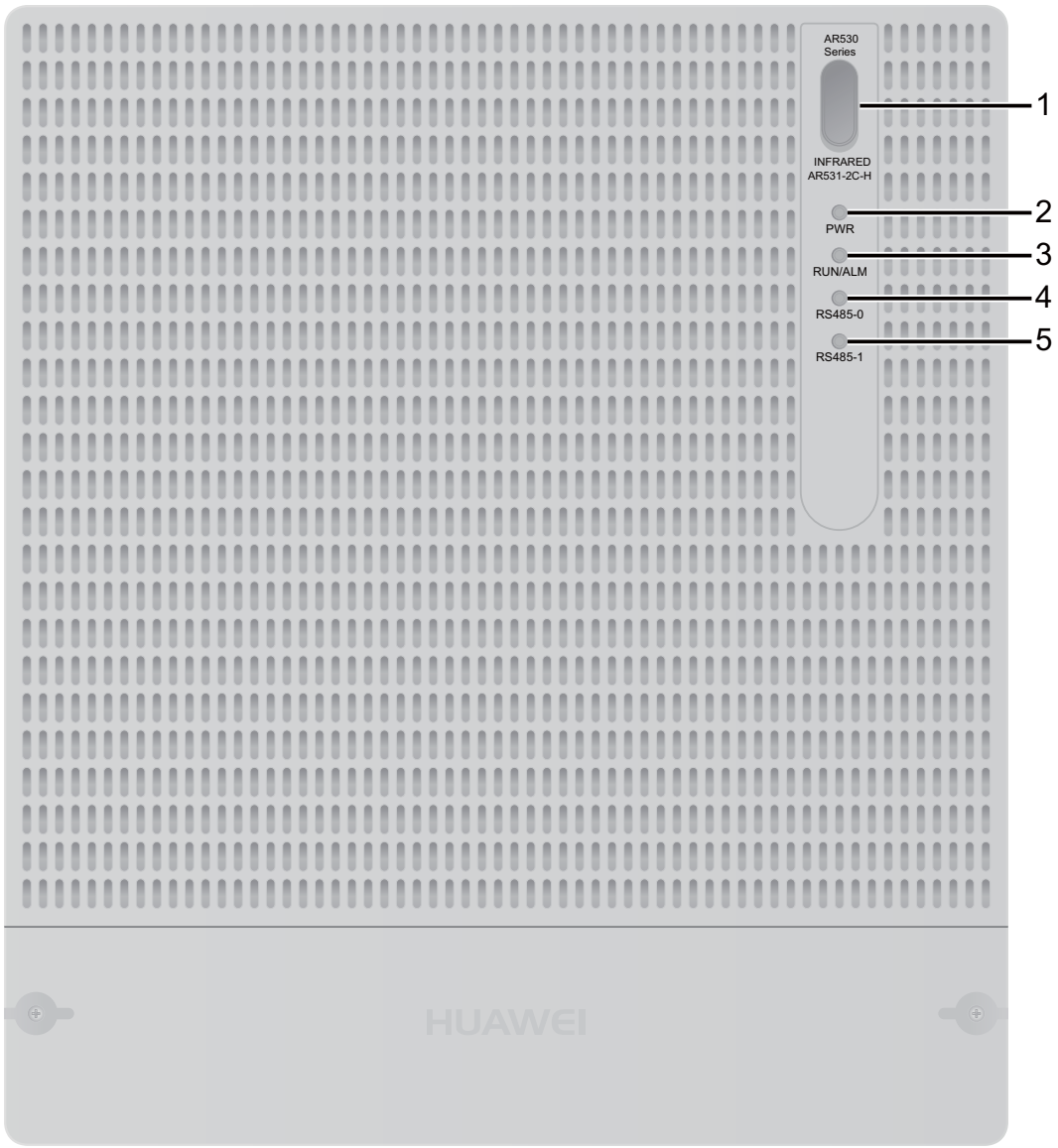

Table 3-343 Description of the indicators on the AR531-F2C-H

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.

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Number	Indicator/Button	Color	Description
3	RUN/ALM	Red and green	● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: – 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: – 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: – 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	● 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	● 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.

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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

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Attribute	Description
Cable type	● 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

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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	

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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	● 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)	● 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

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3.4.3 AR531GPe-U-H

Version Mapping

Table 3-351 lists the mapping between the AR531GPe-U-H router and software versions.

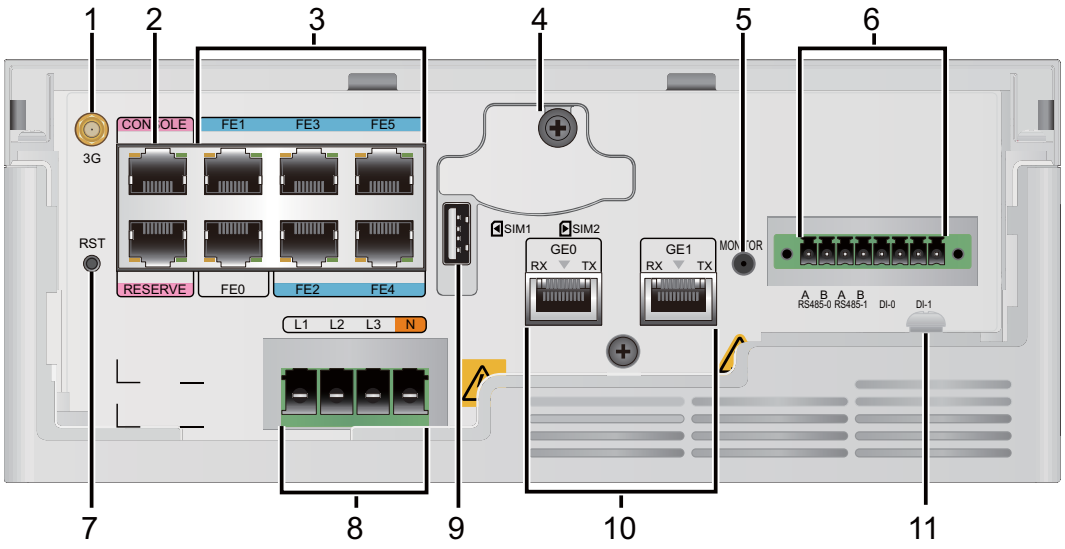
Table 3-351 Mapping between the AR531GPe-U-H router and software versions

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** ● 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** ● 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. ● 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** ● 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.

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Figure 3-85 Indicators on the AR531GPe-U-H

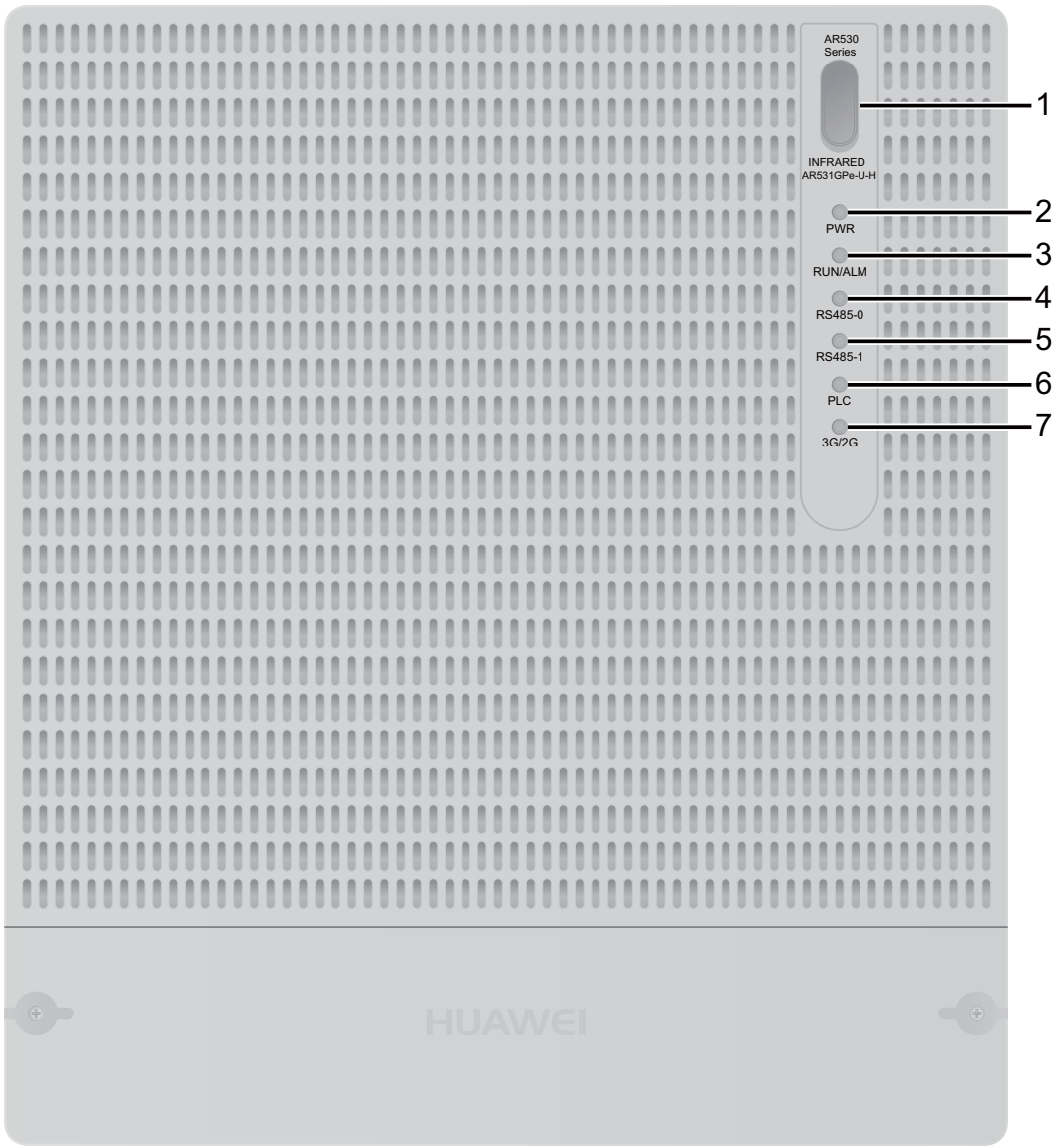

Table 3-352 Description of the indicators on the AR531GPe-U-H

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.

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Number	Indicator/Button	Color	Description
3	RUN/ALM	Red and green	● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: – 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: – 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: – 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	● 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	● 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.

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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

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Attribute	Description
Standards compliance	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● 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.

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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)**

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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	● UMTS ● EDGE/GPRS/GSM
Frequency bands supported	UMTS: 2100/900 (MHz) EDGE/GPRS/GSM: 1900/1800/900/850 (MHz)
Rate	GSM CS: ● Uplink: 9.6 kbit/s ● Downlink: 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: ● Uplink: 64 kbit/s ● Downlink: 64 kbit/s WCDMA PS: ● 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	

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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	● 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)	● 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.)

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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.

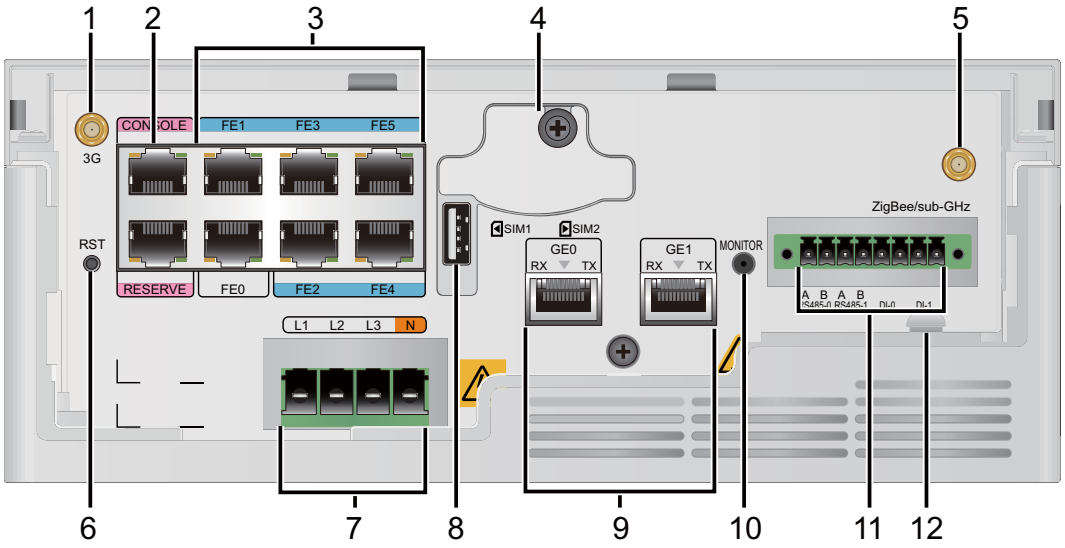
Table 3-361 Mapping between the AR531GR-U-H router and software versions

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	LAN interfaces: six FE electrical interfaces **NOTE** FE0 can be used as a WAN interface.	4	Double SIM card slots **NOTE** ● 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	ZigBee antenna interface/sub-GHz antenna interface	6	RST **NOTICE** This button is used to reset the router. ● 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** ● 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	USB interface
9	Two GE optical interfaces **NOTE** The two interfaces GE0 and GE1 can be used as WAN interfaces.	10	Cover open sensor
11	Two GE optical interfaces **NOTE** The two interfaces GE0 and GE1 can be used as WAN interfaces.	12	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 3-87 shows the indicators on the AR531GR-U-H router.

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Figure 3-87 Indicators on the AR531GR-U-H

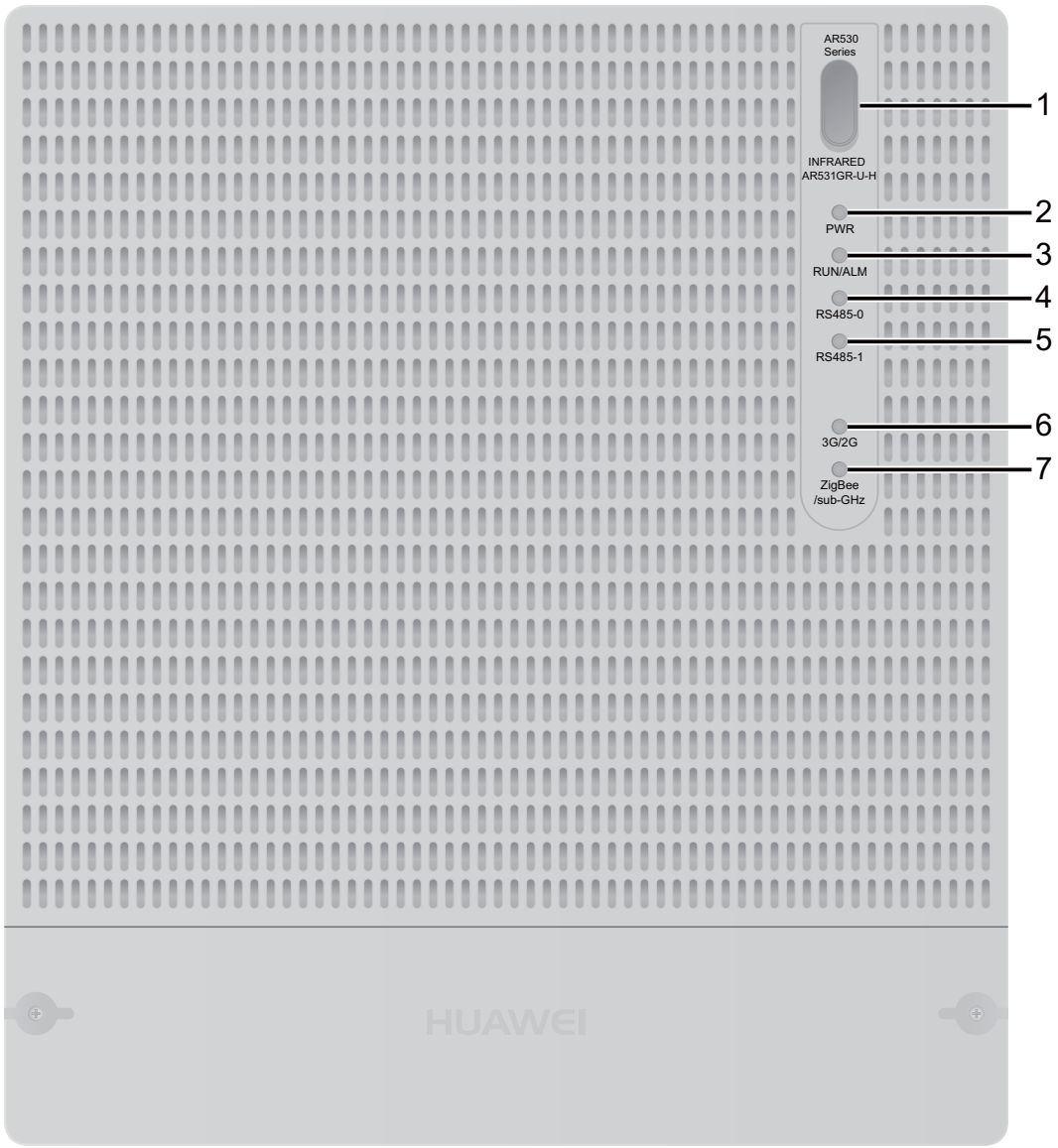

Table 3-362 Description of the indicators on the AR531GR-U-H

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.

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Number	Indicator/Button	Color	Description
3	RUN/ALM	Red and green	● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: – 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: – 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: – 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	● 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	● 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.

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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: ● 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.

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Table 3-364 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● Optical fiber (inserted in an optical module) and **GE Optical Module** ● **6.6 Ethernet Cable** and **GE Copper Module**

USB Interface

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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)

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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	● UMTS ● EDGE/GPRS/GSM
Frequency bands supported	UMTS: 2100/900 (MHz) EDGE/GPRS/GSM: 1900/1800/900/850 (MHz)
Rate	GSM CS: ● Uplink: 9.6 kbit/s ● Downlink: 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: ● Uplink: 64 kbit/s ● Downlink: 64 kbit/s WCDMA PS: ● 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.

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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	● Layer 2/3 wireless access ● Wireless data encryption ● WLAN security
Antenna type	● **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.

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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	● 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)	● LAN interfaces: six FE electrical interfaces ● Two GE optical interfaces
Environment parameters	
Storage temperature	-40°C to +85°C (-40°F to +185°F)

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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.

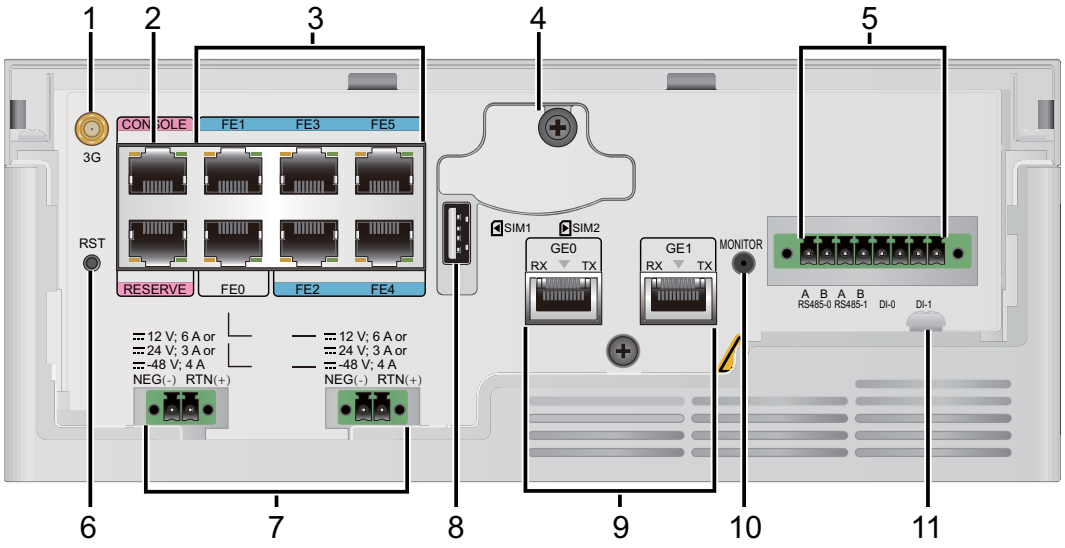
Table 3-373 Mapping between the AR531G-U-D-H router and software versions

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



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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** ● 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** ● 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** ● 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. ● 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.	-	-

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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

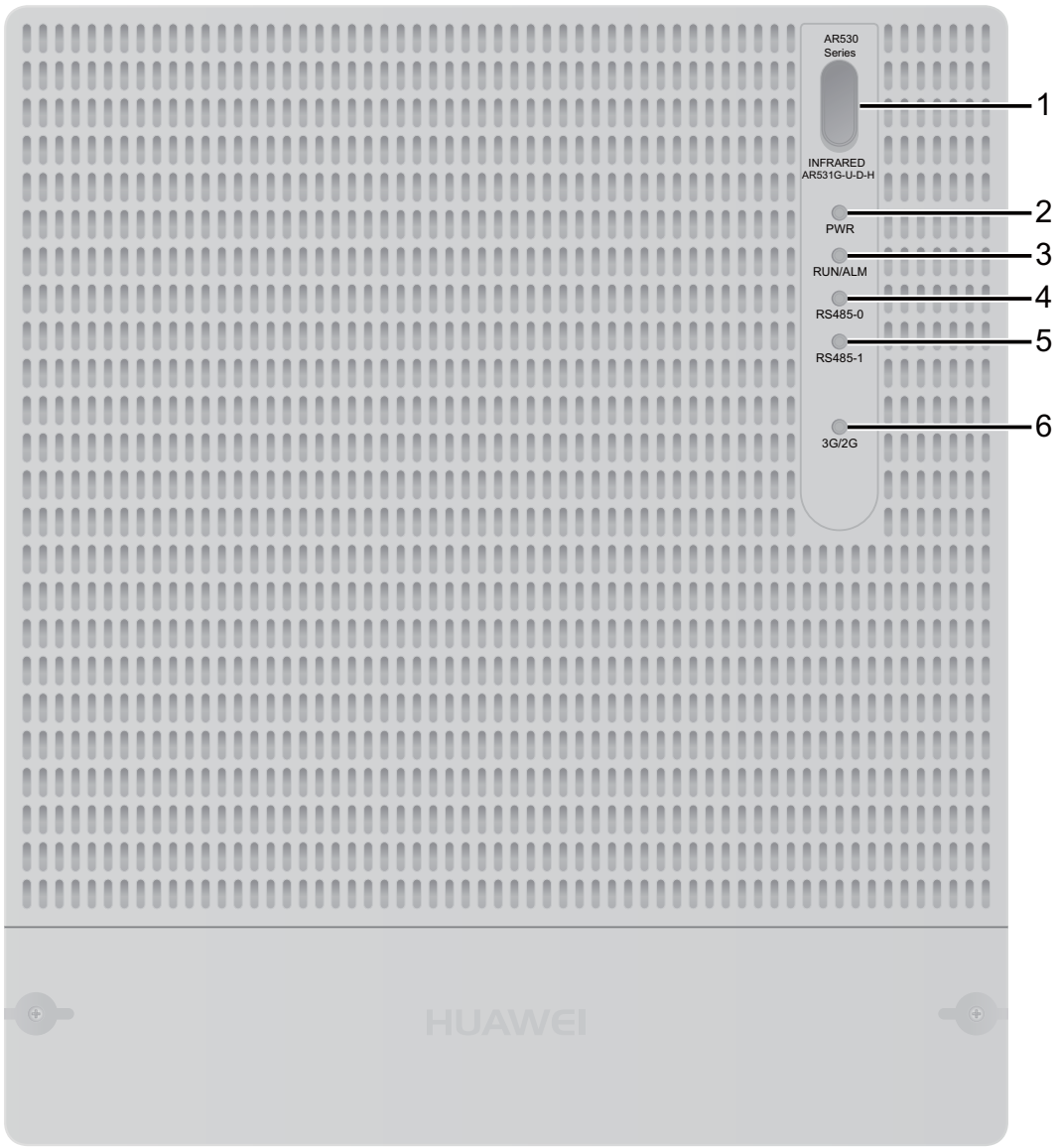

Table 3-374 Description of the indicators on the AR531G-U-D-H

Number	Indicator/Button	Color	Description
1	Infrared communication port	-	This port is used to transmit and receive infrared signals (invisible light).

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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	● When no USB flash drive is connected to the router, the RUN/ALM indicator works as the system indicator: – 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: – 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: – 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	● 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.

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Number	Indicator/Button	Color	Description
5	RS485-1	Green	● 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

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Attribute	Description
Standards compliance	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● 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.

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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)**

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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	● UMTS ● EDGE/GPRS/GSM
Frequency bands supported	UMTS: 2100/900 (MHz) EDGE/GPRS/GSM: 1900/1800/900/850 (MHz)
Rate	GSM CS: ● Uplink: 9.6 kbit/s ● Downlink: 9.6 kbit/s GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: ● Uplink: 64 kbit/s ● Downlink: 64 kbit/s WCDMA PS: ● 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	

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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	● 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)	● 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.)

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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.

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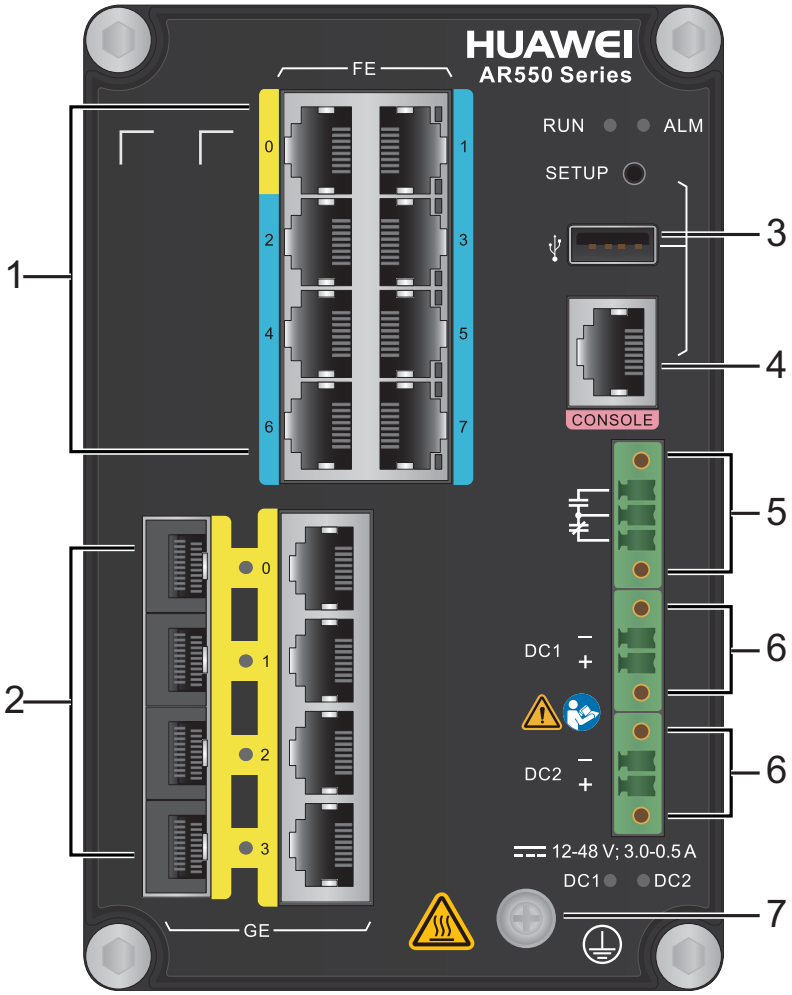
Figure 3-90 AR550-8FE-D-H panel



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**.

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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 3-91 shows the indicators on the AR550-8FE-D-H router.

Figure 3-91 Indicators on the AR550-8FE-D-H

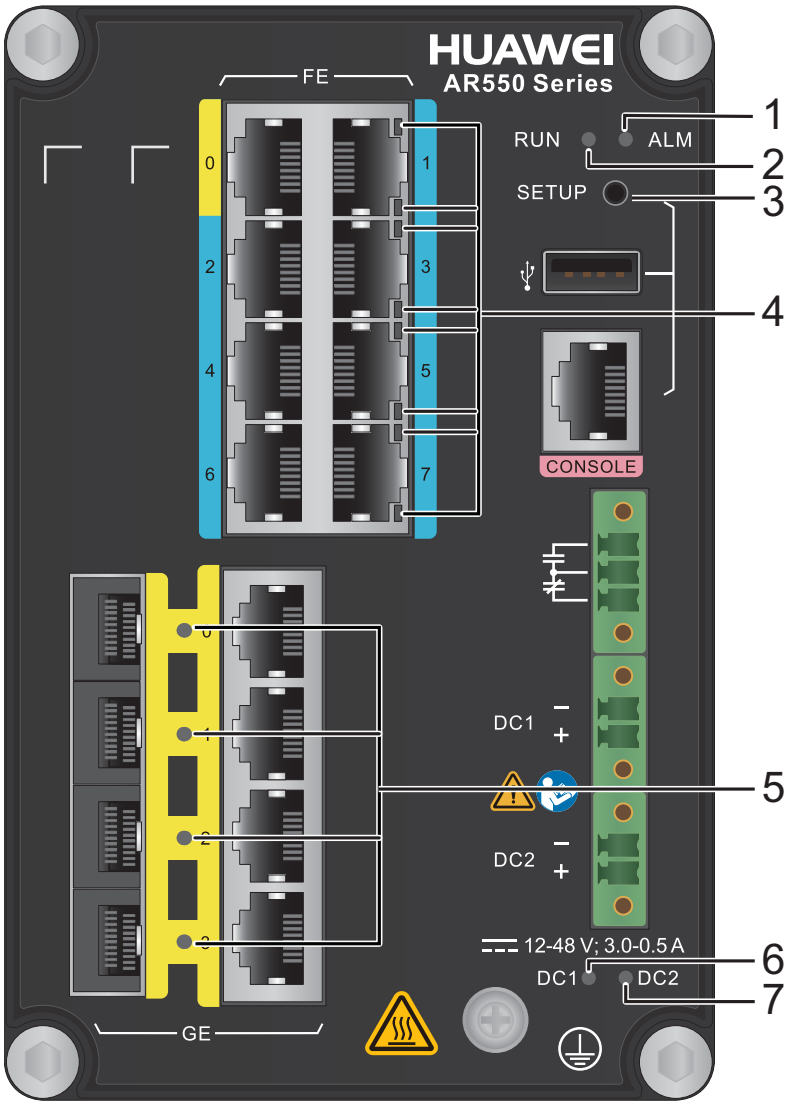

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Table 3-384 Description of the indicators on the AR550-8FE-D-H

Number	Indicator/Button	Color	Description
1	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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.
2	RUN	Green	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	● 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.

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Number	Indicator/Button	Color	Description
5	WAN GE combo interface indicators	Green	● 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	● 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. **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.
7	DC2	Green	● 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. **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.

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)

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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	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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.

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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.

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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	● Rated voltage: 12 V to 48 V ● Maximum voltage range: 9.6 V to 60 V
DO attributes	● 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)	● 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.)

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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.

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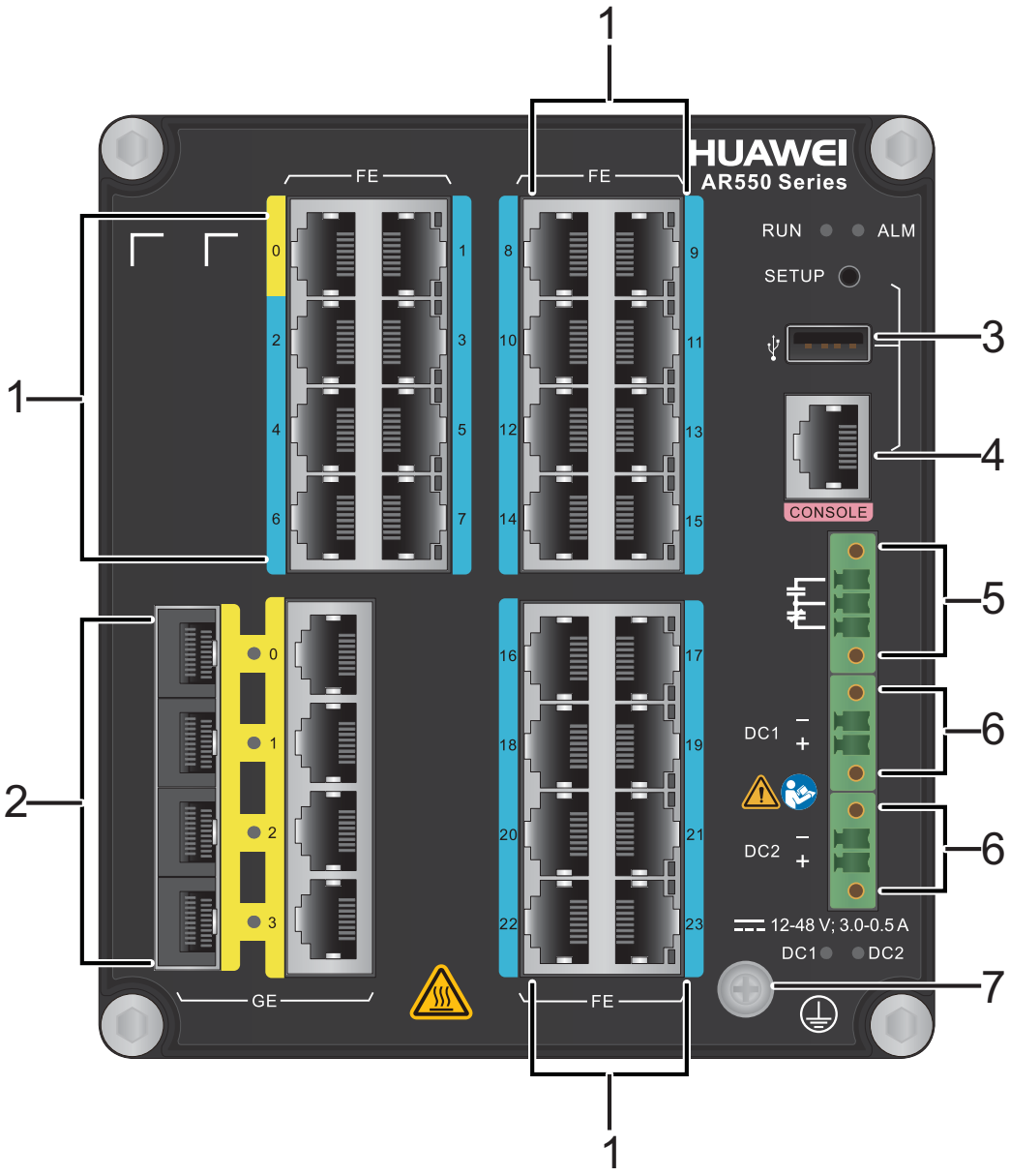
Figure 3-92 Panel of the AR550-24FE-D-H



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

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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

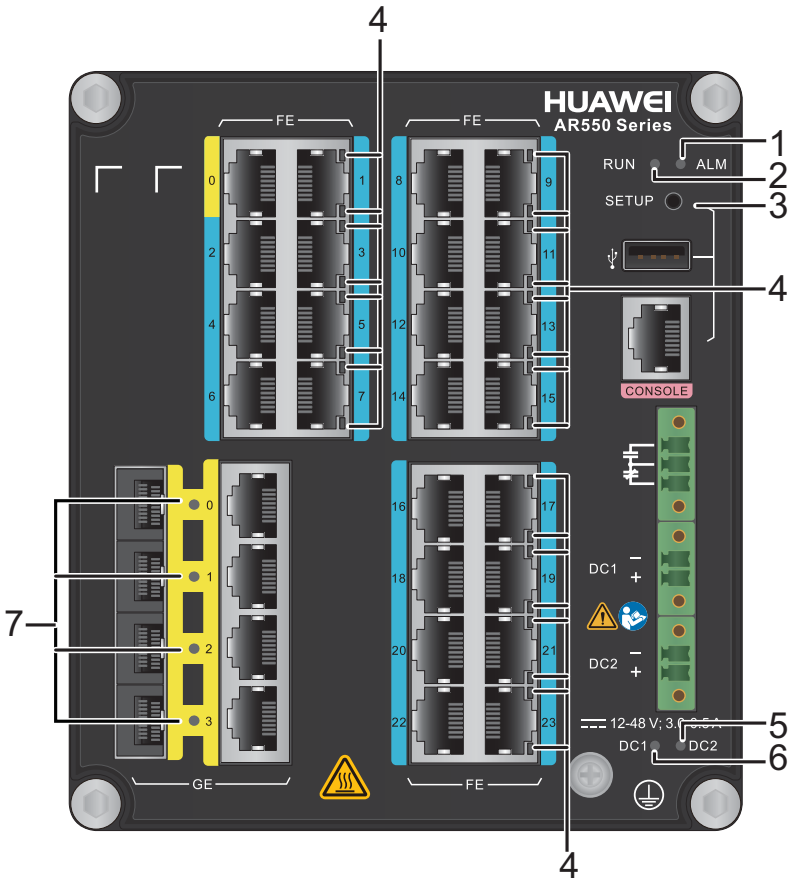

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Table 3-391 Description of the indicators on the AR550-24FE-D-H

Number	Indicator/Button	Color	Description
1	ALM	Red	● When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: – 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.
2	RUN	Green	● When no USB flash drive is connected to the router, the RUN indicator works as the system indicator: – 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: – 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	● 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.

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Number	Indicator/Button	Color	Description
5	DC1	Green	● 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. **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.
6	DC2	Green	● 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. **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.
7	WAN GE combo interface indicators	Green	● 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)

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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	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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.

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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.

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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	● Rated voltage: 12 V to 48 V ● Maximum voltage range: 9.6 V to 60 V
DO attributes	● 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)	● 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.)

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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.

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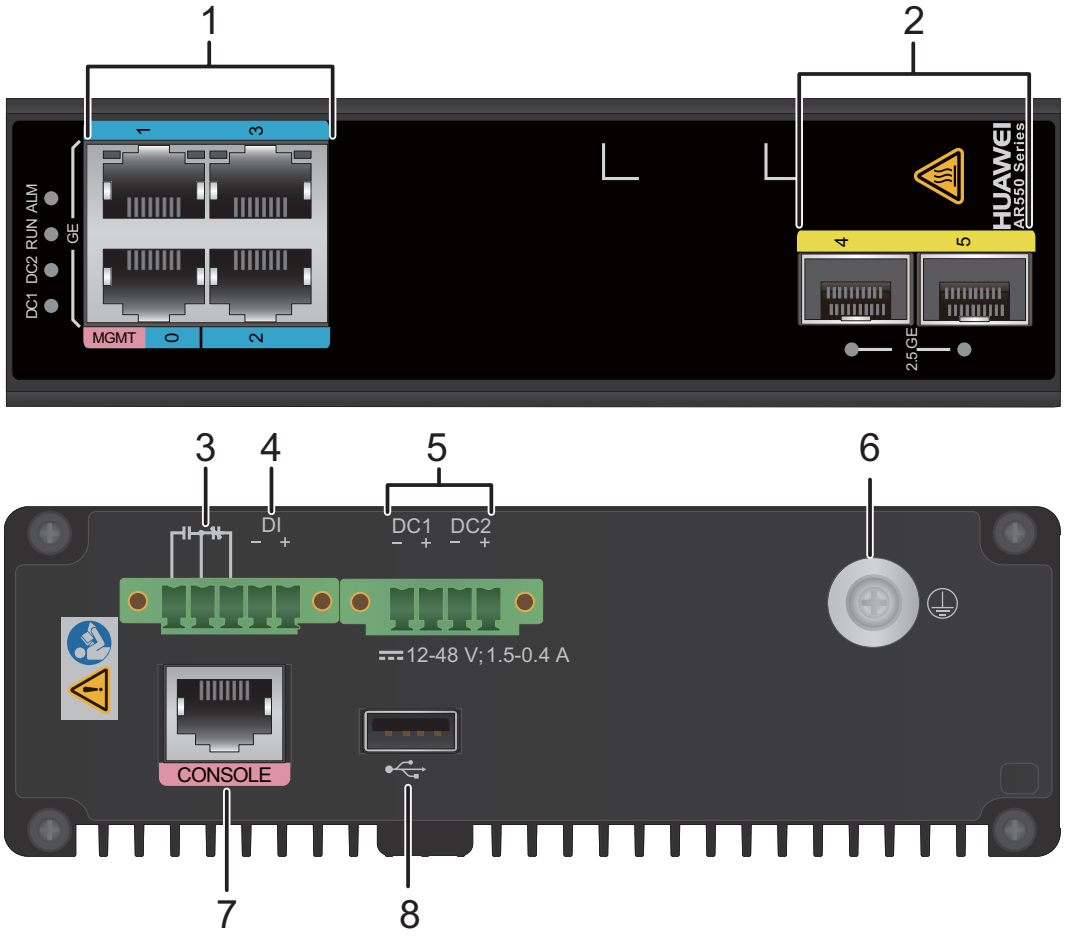
Figure 3-94 AR550C-4GE appearance



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.

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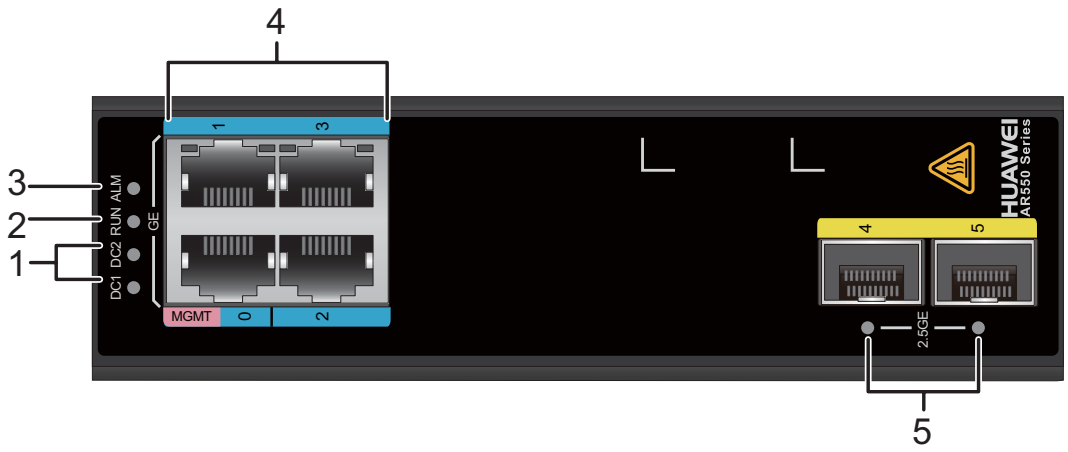
Figure 3-95 Indicators on the AR550C-4GE



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: ● 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: ● Steady on: USB-based deployment has been completed. ● Fast blinking: The system is being upgraded using the USB flash drive.

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Number	Indicator/ Button	Color	Description
3	ALM	Red	When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: ● 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	LAN GE electrical interface indicators (GE0 to GE3)	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 on the interface.
5	LAN 2.5GE optical interface indicators (GE4 to GE5)	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

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**

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GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-399** 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** ● 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

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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	● 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

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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	● Rated voltage: 12 V DC to 48 V DC ● Maximum voltage range: 9.6 V DC to 60 V DC
DO attributes	● 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

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Version Mapping

Table 3-404 describes the mapping between the AR550C-2C6GE router and software versions.

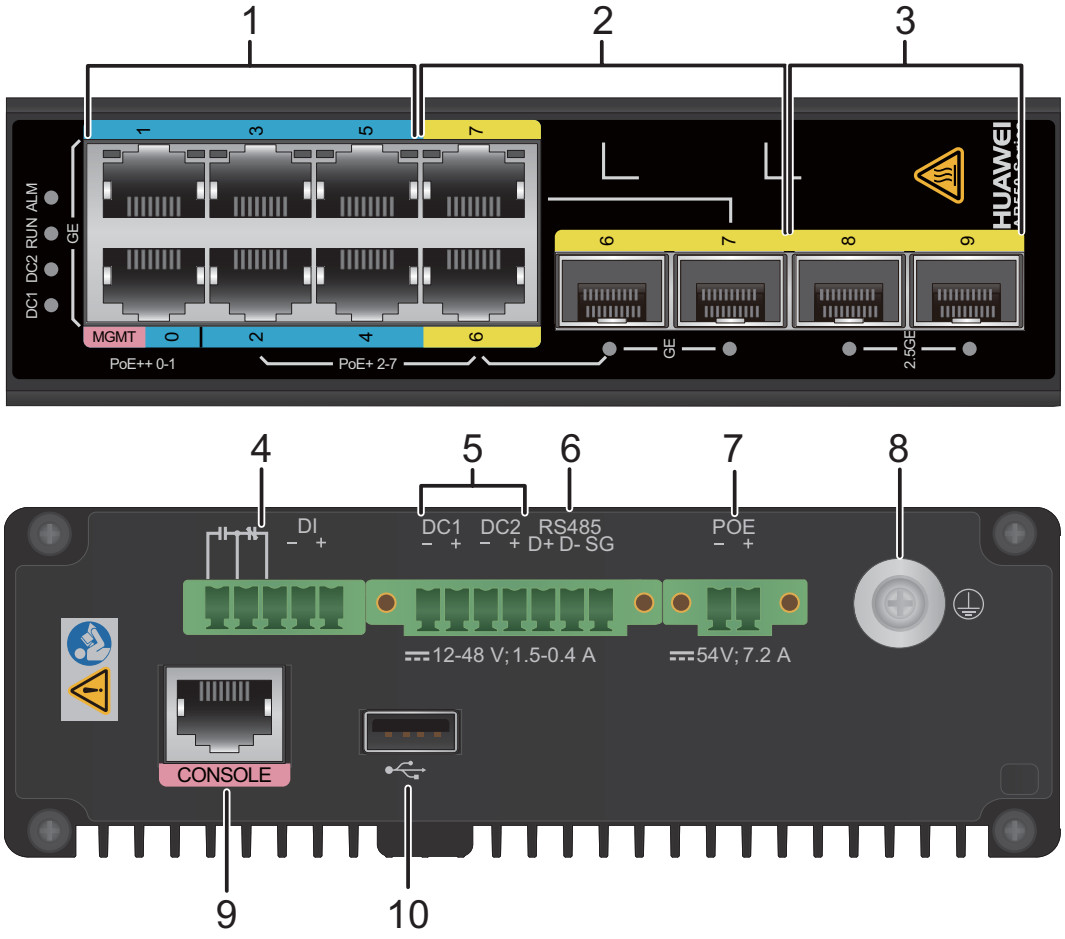
Table 3-404 Mapping between the AR550C-2C6GE router and software versions

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



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1	LAN interfaces: six GE electrical interfaces **NOTE** ● 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 +. **NOTE** The maximum output power of PoE++ ports is 60 W, and that of PoE+ ports is 30 W.	2	LAN interfaces: two GE combo interface **NOTE** ● 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 DC power sockets **NOTE** ● 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	PoE power socket **NOTE** ● 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	Ground point **NOTE** To protect the router from lightning and interference, reliably ground the router using a **6.8 Ground Cable**.
9	Console interface	10	USB interface

Indicator Description

Figure 3-97 shows indicators on the AR550C-2C6GE.

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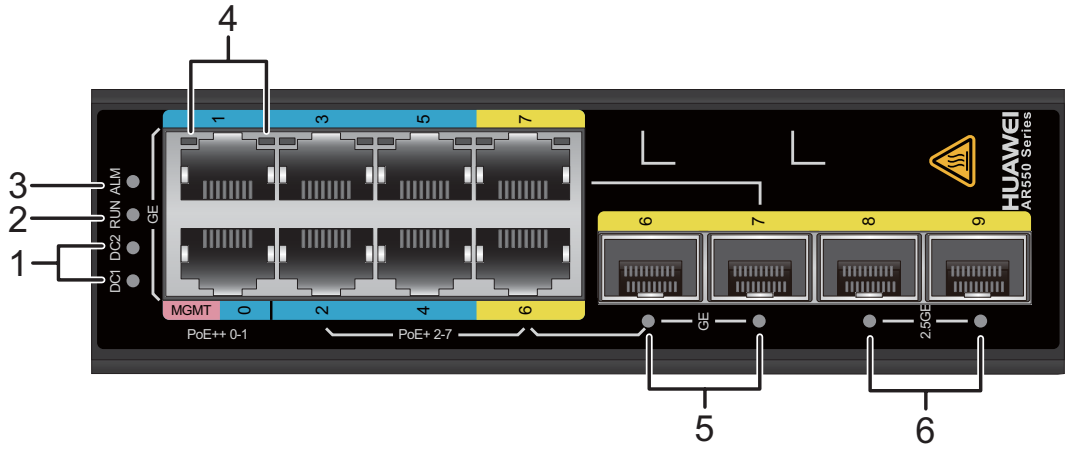
Figure 3-97 Indicators on the AR550C-2C6GE



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: ● 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: ● Steady on: USB-based deployment has been completed. ● Fast blinking: The system is being upgraded or configured using the USB flash drive.

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Number	Indicator/ Button	Color	Description
3	ALM	Red	When no USB flash drive is connected to the router, the ALM indicator works as the system indicator: ● 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 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.
5	GE optical interface indicators (GE6 to GE7)	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.
6	2.5GE optical interface indicators (GE8 to GE9)	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

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

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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** ● 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.

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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.

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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	● 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

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Item	Specification
Weight	1.1 kg (2.43 lb)
Power consumption	
Maximum power consumption	17.5 W
Power specifications	
DC power input	● 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	● 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: 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

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3.5.5 AR550C-2C6GE-2D

Version Mapping

Table 3-412 describes the mapping between the AR550C-2C6GE-2D router and software versions.

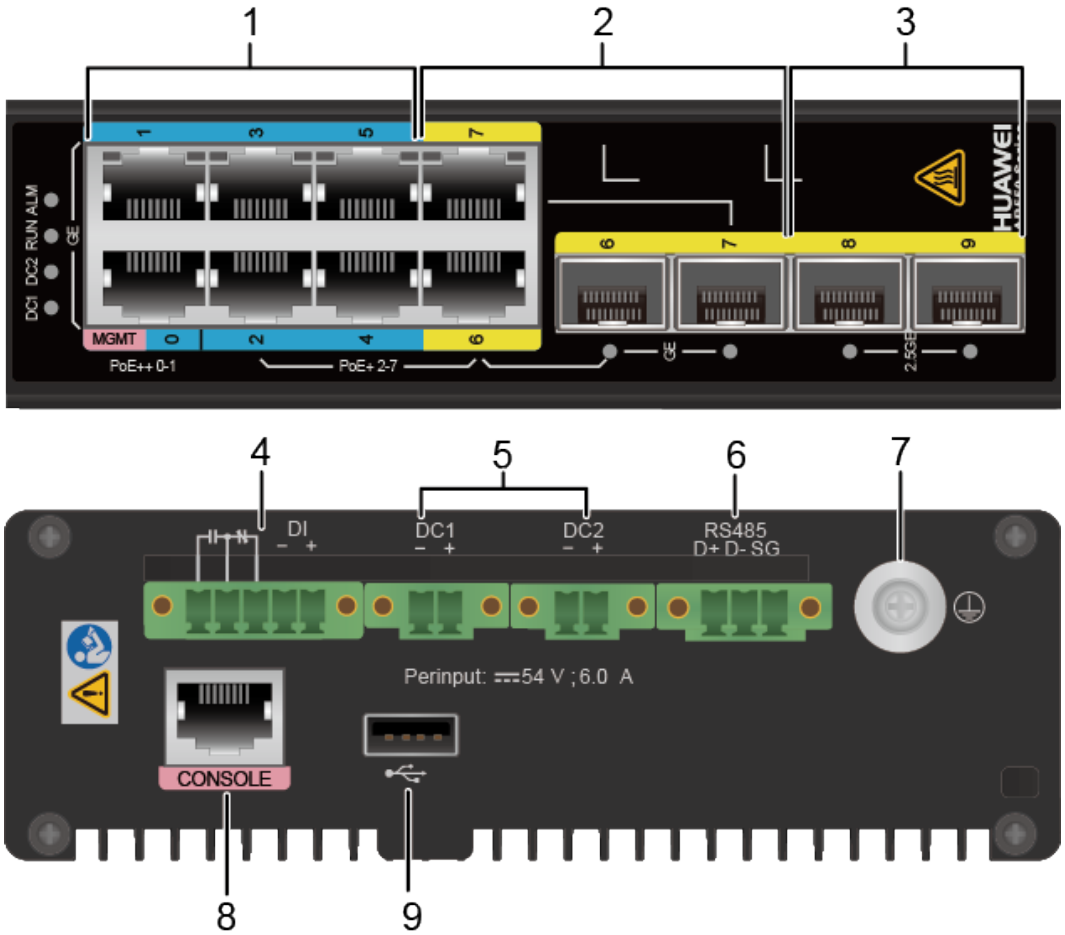
Table 3-412 Mapping between the AR550C-2C6GE-2D router and software versions

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



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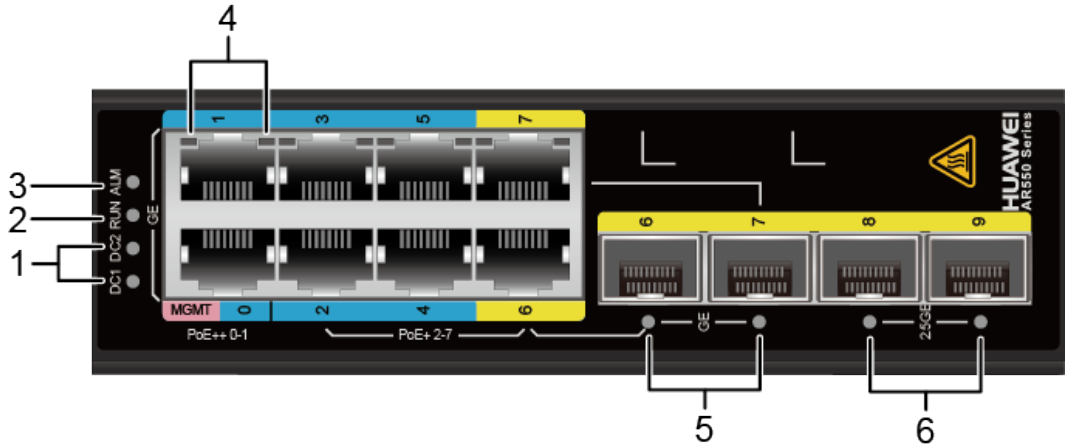
1	LAN interfaces: six GE electrical interfaces **NOTE** ● GE0 is a management interface and is used to upgrade the router. ● Interfaces GE0 and GE1 support PoE++, and interfaces GE2 to GE5 support PoE +.	2	LAN interfaces: two GE combo interface **NOTE** ● Electrical interfaces GE6 and GE7 support PoE+. ● 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



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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: ● 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: ● 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: ● 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.

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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

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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.

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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.

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Table 3-418 DI/DO interface attributes

Attribute	Description
Connector type	5-pin Phoenix terminal block
Signal type	● 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	● DC power input (PoE not enabled): – Rated voltage: 54 V DC – Maximum voltage range: 44 V DC to 57 V DC ● DC power input (PoE enabled): – Rated voltage: 56 V DC – Maximum voltage range: 54 V DC to 57 V DC
Alarm output	

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DO attributes	● 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	● 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.

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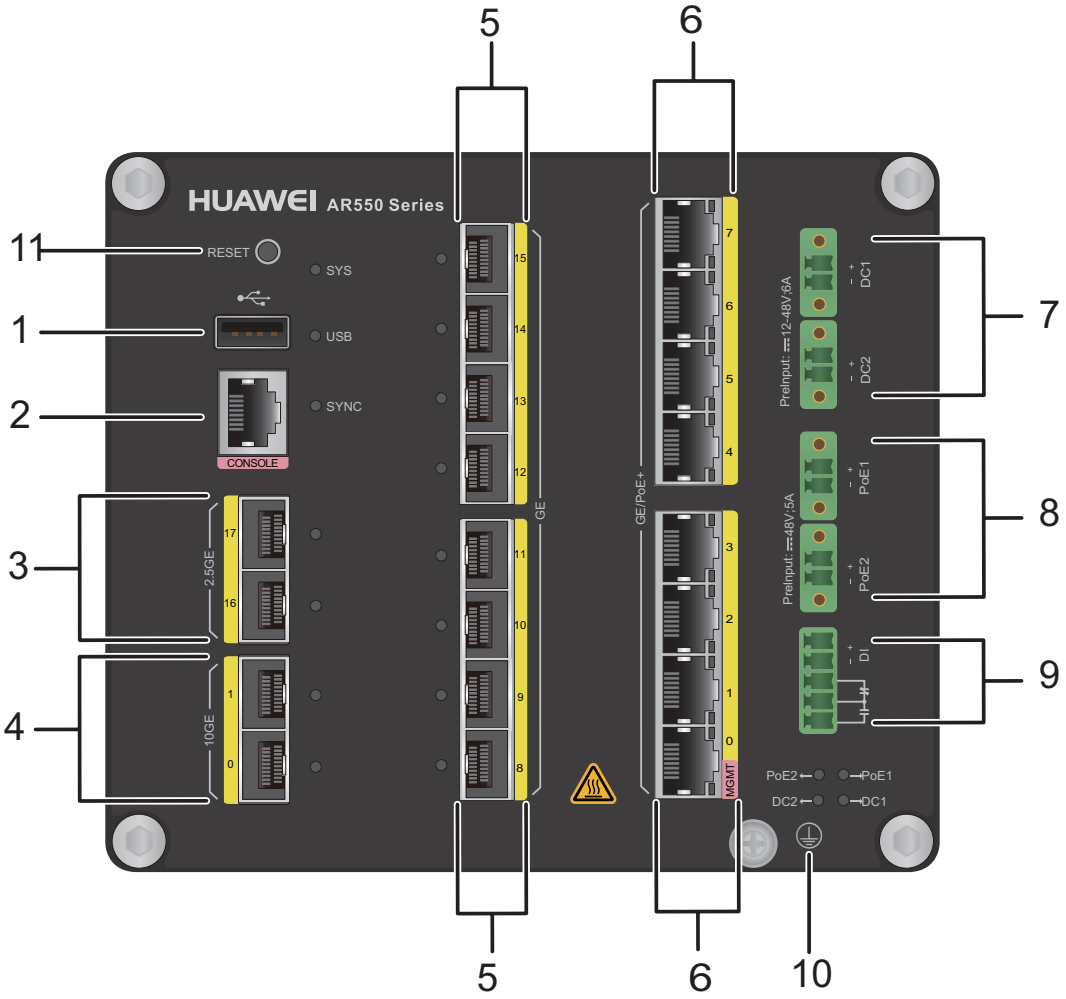
Figure 3-100 AR550E appearance



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**.

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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.
11	RESET button **NOTE** ● 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

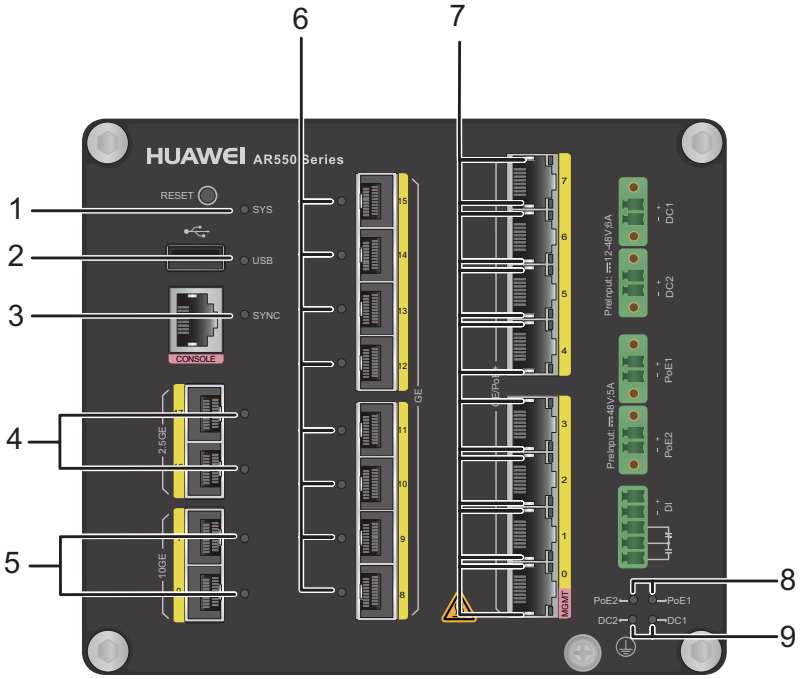

Table 3-421 Description of indicators on the AR550E

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.

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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	● Steady on: The synchronous clock is used. ● Off: The synchronous clock is not used.
4	2.5GE optical interface indicators (GE16 to GE17)	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 on the link.
5	10GE optical interface indicators (XGE0 to XGE1)	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 on the link.
6	GE optical interface indicators (GE8 to GE15)	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 on the link.
7	GE electrical interface indicators (GE0 to GE7)	Green/ Yellow	● Green indicator steady on: A link has been established on the interface. ● Green indicator off: No link is established on the interface.

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Number	Indicator/Button	Color	Description
			● 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	● 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. **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.

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.

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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** ● 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.

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Table 3-425 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Interface attribute	Optical modules supported: ● 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	● 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

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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	

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Item	Specification
DC power input	● Rated voltage: 12 V to 48 V ● Maximum voltage range: 9.6 V to 60 V
DO attributes	● 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	● 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 environmen 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

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3.6.1 AR1504-8S16T

Version Mapping

Table 3-430 describes the mapping between the AR1504-8S16T router and software versions.

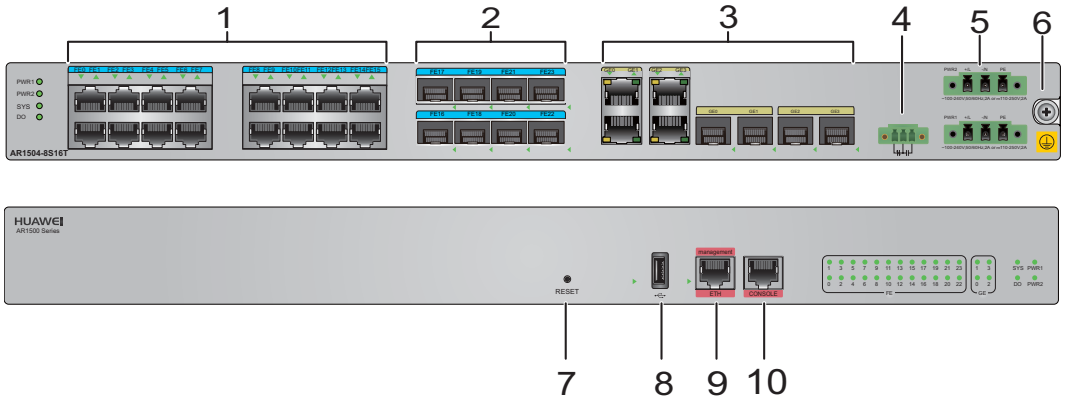
Table 3-430 Mapping between the AR1504-8S16T router and software versions

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** ● This button is used to reset the router. ● Resetting the system will interrupt services. Exercise caution when performing this operation.	8	USB interface

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9	ETH interface **NOTE** An ETH interface is a management interface used to upgrade the router.	10	Console interface

Indicator Description

Figure 3-103 shows indicators on the AR1504-8S16T.

Figure 3-103 Indicators on the AR1504-8S16T

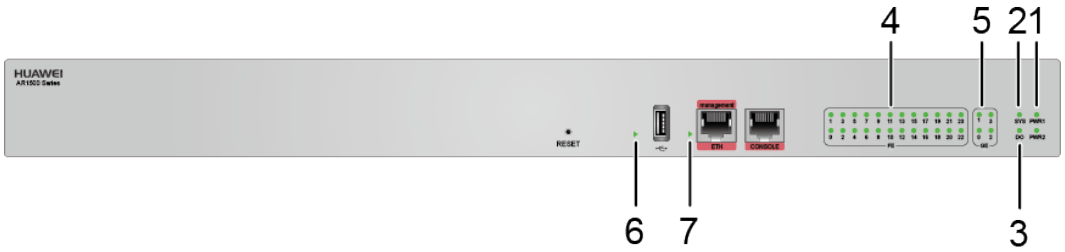

Table 3-431 Description of indicators on the AR1504-8S16T

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	● Off: The power supply is not working. ● Off: The power supply is working.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is powering on or 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	● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	FE interface indicator	Green	● 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.

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Number	Indicator/Button	Color	Description
5	GE interface indicator	Green	● 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	● 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	● 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

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Attribute	Description
Standards compliance	● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● 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.

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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

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Attribute	Description
Standards compliance	● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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

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Item	Specification
Power specifications	
AC power input	● 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	● 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	● 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

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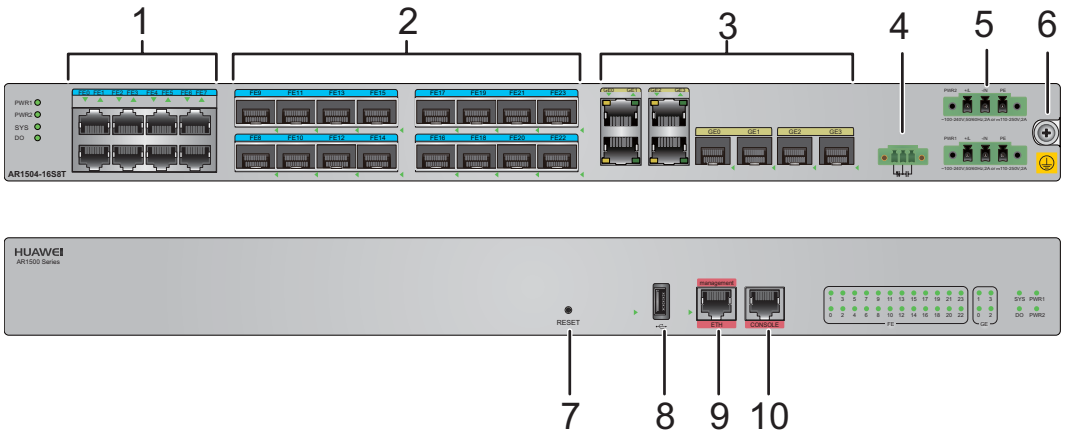
Appearance and Structure

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** ● 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.

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Figure 3-105 Indicators on the AR1504-16S8T

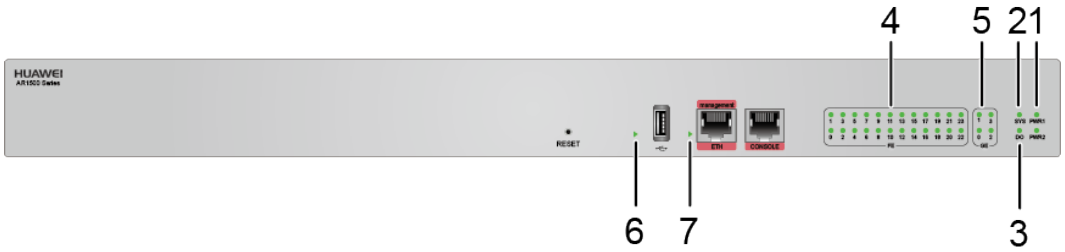

Table 3-440 Description of indicators on the AR1504-16S8T

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	● Off: The power supply is not working. ● Steady on: The power supply is working normally.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is powering on or 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	● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	FE interface indicator	Green	● 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	● 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.

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Number	Indicator/Button	Color	Description
6	USB indicator	Red and green	● 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	● 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	● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● 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.

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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	● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	

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Item	Specification
AC power input	● 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	● 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	● 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

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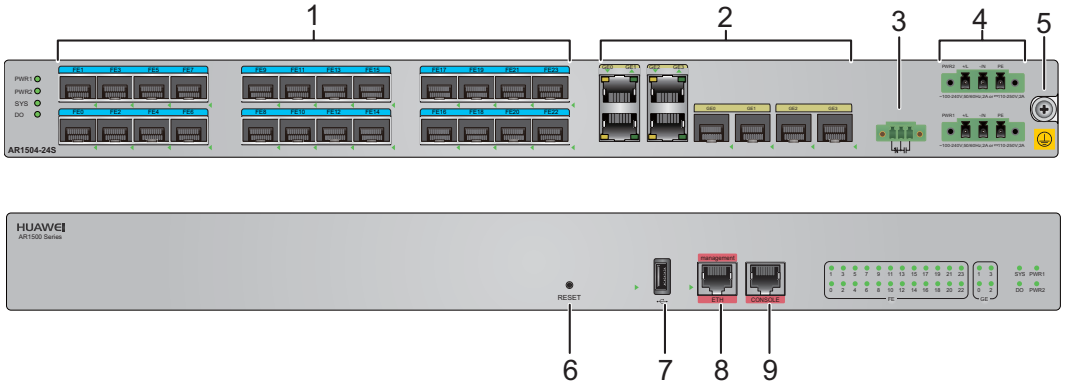
Appearance and Structure

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** ● 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.

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Figure 3-107 Indicators on the AR1504-24S

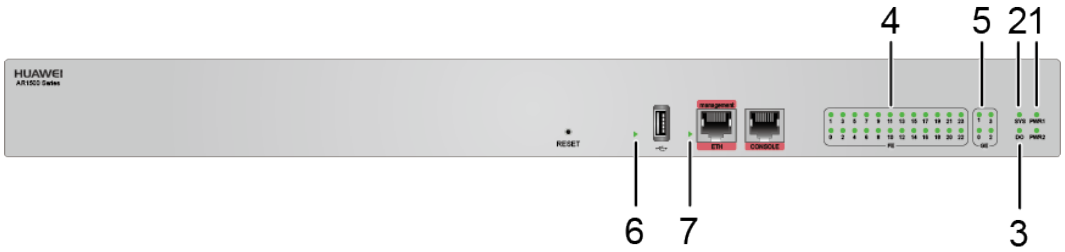

Table 3-449 Description of indicators on the AR1504-24S

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	● Off: The power supply is not working. ● Steady green: The power supply is working.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is powering on or 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	● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	FE interface indicator	Green	● 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	● 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.

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Number	Indicator/Button	Color	Description
6	USB indicator	Red and green	● 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	● 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	● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● 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.

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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	● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	

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Item	Specification
AC power input	● 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	● 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	● 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

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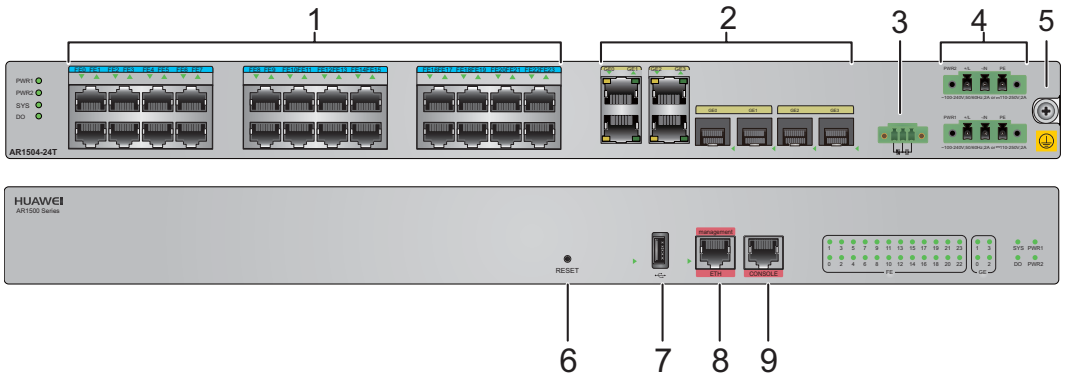
Appearance and Structure

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** ● 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.

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Figure 3-109 Indicators on the AR1504-24T

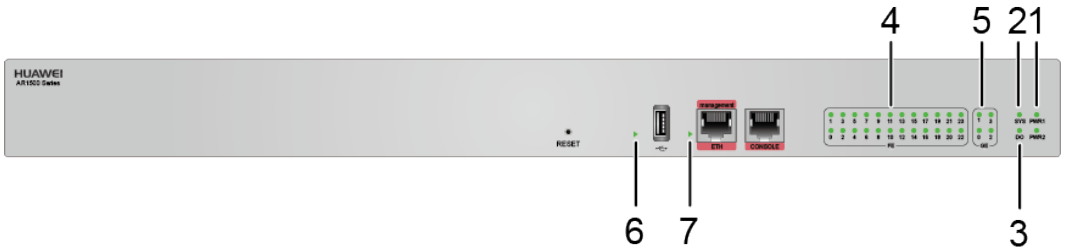

Table 3-458 Description of indicators on the AR1504-24T

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	● Off: The power supply is not working. ● Off: The power supply is working.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is powering on or 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	● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	FE interface indicator	Green	● 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	● 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.

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Number	Indicator/Button	Color	Description
6	USB indicator	Red and green	● 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	● 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	● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	● 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.

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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	● IEEE 802.3 ● IEEE 802.3u ● IEEE 802.3ab

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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	

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Item	Specification
AC power input	● 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	● 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	● 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.

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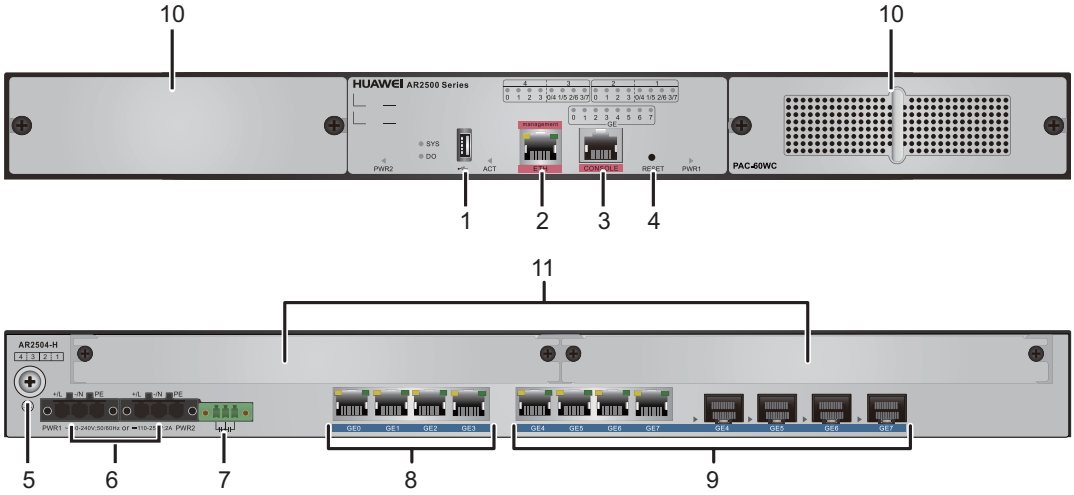
Table 3-466 Mapping between the AR2504-H routers and software versions

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** ● 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

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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

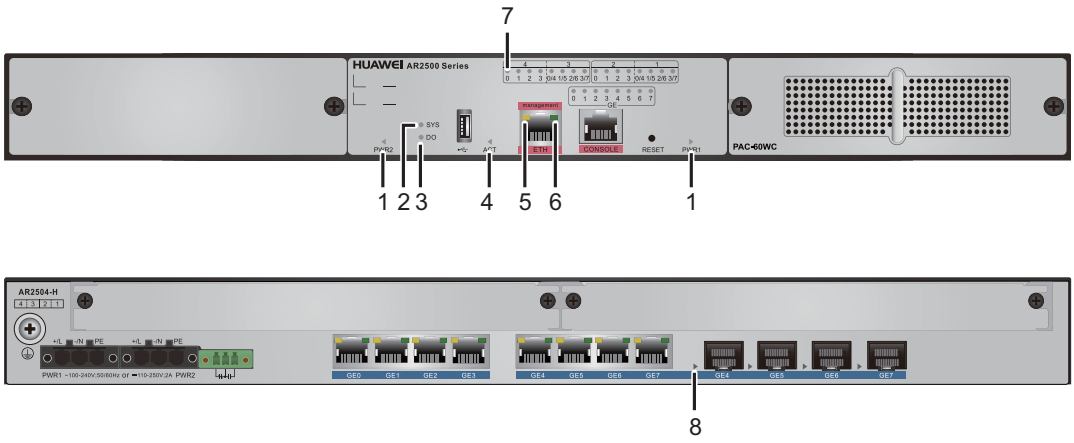

Table 3-467 Description of the indicators on the AR2504-H

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	● Off: The power supply is not working. ● Steady on: The power supply is working.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is powering on or restarting. ● Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	DO	Green	● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.

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Number	Indicator/Button	Color	Description
4	ACT	Red and green	● 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	● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
6	GE interface indicator	Green	● 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	● 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	● 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**

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GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-469** 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** ● 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

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GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- 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	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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)	● 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

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Item	Specification
Power specifications	
AC power input	● 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	● Rated voltage: 110 V DC to 250 V DC ● Maximum voltage range: 88 V DC to 300 V DC
Maximum output power	● 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)	● 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 +158F).
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.

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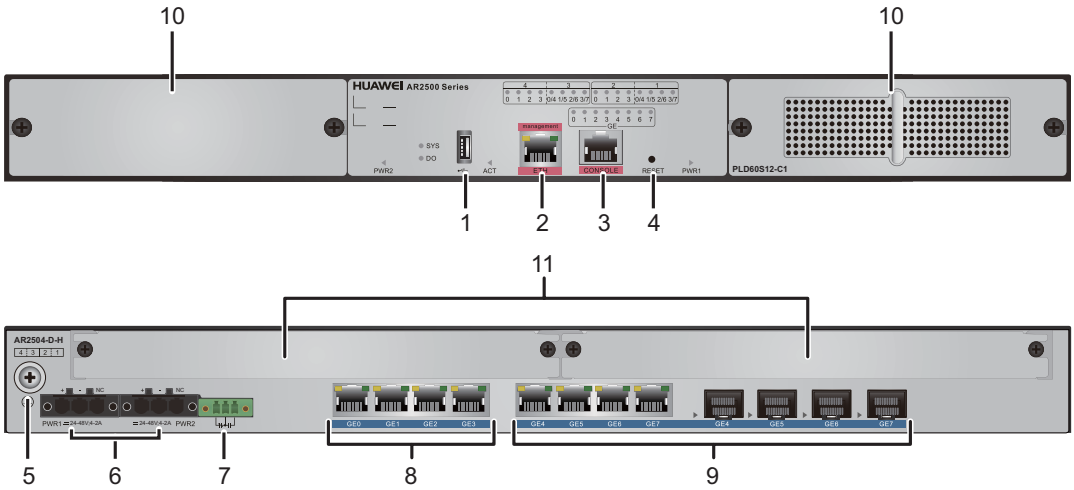
Table 3-474 Mapping between the AR2504-D-H router and software versions

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. ● 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

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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

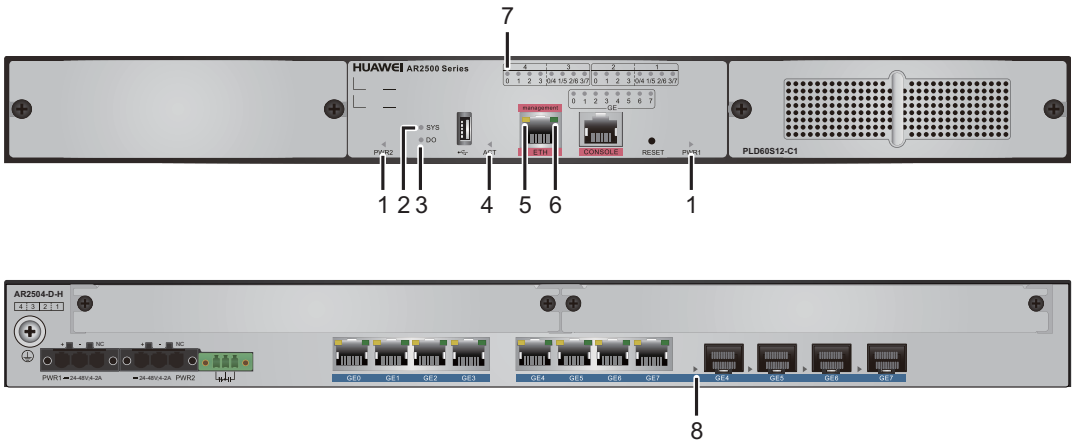

Table 3-475 Description of the indicators on the AR2504-D-H

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	● Off: The power supply is not working. ● Steady on: The power supply is working.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is powering on or is restarting. ● Steady red: A fault that affects services has occurred on the card. The fault cannot be rectified automatically and requires manual intervention.

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Number	Indicator/Button	Color	Description
3	DO	Green	● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.
4	ACT	Red and green	● 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	● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
		Green	● Steady on: The GE interface is in Link-Up state. ● Off: The GE interface is in Link-Down state.
7	Card interface indicator	Orange	● 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	● 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

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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** ● 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.

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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.

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Table 3-480 ETH interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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)	● 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)

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Item	Specification
Power consumption (empty chassis)	
Typical power consumption	15 W
Maximum power consumption	25 W
Power specifications	
DC power input	● Rated voltage range: 24 V DC to 48 V DC ● Maximum voltage range: 18 V DC to 60 V DC
Maximum output power	● 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.

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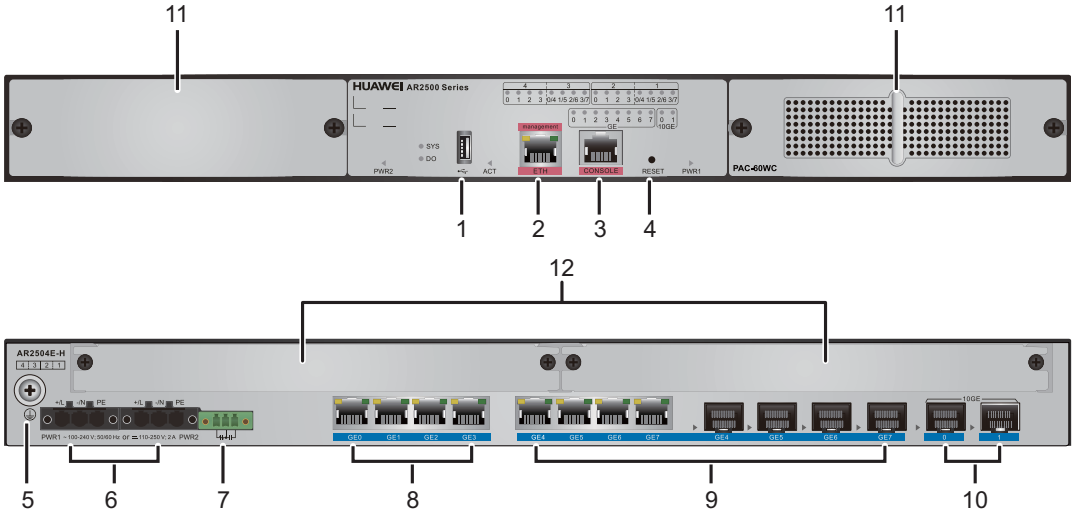
Table 3-482 Mapping between the AR2504E-H routers and software versions

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

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11	Two power module slots Applicable power module: **4.7 60 W AC power module**	12	Two WSIC slots

Indicator Description

Figure 3-115 shows the locations of AR2504E-H indicators.

Figure 3-115 Indicators on the AR2504E-H

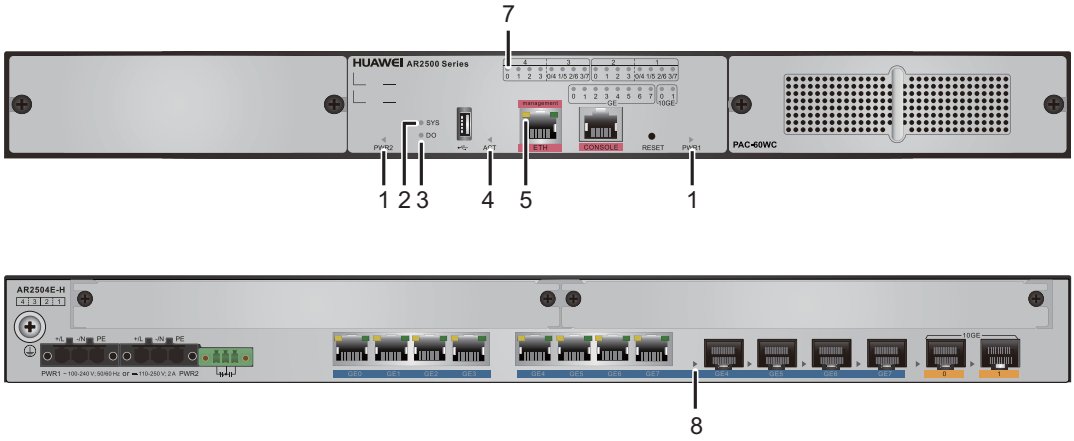

Table 3-483 Description of the indicators on the AR2504E-H

Number	Indicator/Button	Color	Description
1	PWR1/ PWR2	Green	● Off: The power supply is not working. ● Steady on: The power supply is working.
2	SYS	Red and green	● Off: The system software is not running or is resetting. ● Slow blinking green: The system is running properly. ● Fast blinking green: The system is powering on or restarting. ● Steady red: A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.
3	DO	Green	● Off: There are no alarm output signals. ● Steady on: There are alarm output signals.

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Number	Indicator/Button	Color	Description
4	ACT	Red and green	● 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	● Blinking: The GE interface is transmitting or receiving data. ● Off: The GE interface is not transmitting or receiving data.
6	GE interface indicator	Green	● 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	● 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	● 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**

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GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 3-485** 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** ● 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

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GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only one of them can work at a time. When one of the Ethernet interfaces is working, the other interface is shut down.

- 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	● IEEE802.3 ● IEEE802.3u ● IEEE802.3ab

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Attribute	Description
Interface attribute	MDI/MDIX **NOTE** ● MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network interface cards (NICs) are MDI interfaces. ● MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or LAN switches.
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: ● 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	

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Item	Specification
Processor	Dual-core, 533 MHz
Memory	2 GB
Flash	512 MB
Dimensions (W x D x H)	● 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	● 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	● Rated voltage: 110 V DC to 250 V DC ● Maximum voltage range: 88 V DC to 300 V DC
Maximum output power	● 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)	● Four GE electrical interfaces ● Four GE combo interfaces ● Two 10GE optical 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 +158F).

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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

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