

NetEngine AR

Hardware Description

Issue 12

Date 2020-10-15



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About This Document

Intended Audience

This document describes hardware components of the routers, including the chassis, power modules, fan modules, cards, cables, and optical modules. You can find useful information about hardware components from this document.

This document is intended for:

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

Symbol Conventions

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

Symbol	Description
▲ DANGER	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTICE Indicates a potentially hazardous situation which, is avoided, could result in equipment damage, data to performance deterioration, or unanticipated results	
	NOTICE is used to address practices not related to personal injury.

Symbol	Description
₩ NOTE	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Reference Standards and Protocols

To obtain reference standards and protocols, log in to **Huawei official website**, search for "protocol compliance list", and download the *Huawei AR Series Standard and Protocol Comply Table*.

Declaration

- This manual is only a reference for you to configure your devices. The contents in the manual, such as web pages, command line syntax, and command outputs, are based on the device conditions in the lab. The manual provides instructions for general scenarios, but do not cover all usage scenarios of all product models. The contents in the manual may be different from your actual device situations due to the differences in software versions, models, and configuration files. The manual will not list every possible difference. You should configure your devices according to actual situations.
- The specifications provided in this manual are tested in lab environment (for example, the tested device has been installed with a certain type of boards or only one protocol is run on the device). Results may differ from the listed specifications when you attempt to obtain the maximum values with multiple functions enabled on the device.
- In this document, public IP addresses may be used in feature introduction and configuration examples and are for reference only unless otherwise specified.
- In this document, NetEngine access routers include AR600&AR1600&AR6000&AR6000-S Series.

Device Dimension Conventions

The dimensions described in this document are theoretically typical dimensions and do not include dimension tolerances.

Change History

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

Issue 12 (2020-10-15)

This issue has the following updates:

The following content is added:

• 1-pin 36 W Power Adapter

The following content is modified:

- AR617VW
- AR617VW-LTE4EA

Issue 11 (2020-09-18)

This issue has the following updates:

The following content is added:

- 4FXS
- 5G-100

Issue 10 (2020-07-15)

This issue has the following updates:

The following content is added:

- AR651K
- AR6121K
- AR6140K-9G-2AC
- AR6280K
- AR6300K
- SRU-400HK
- SRU-600HK
- 1V35B-AM

The following content is modified:

AR6300

Issue 09 (2020-05-30)

This issue has the following updates:

The following content is added:

- 4.2.5 AR617VW-LTE4
- 4.5.2 AR6121-S
- 4.5.3 AR6121C-S
- 4.5.5 AR6140H-S
- 4.5.6 AR6280-S
- 6.2 AR6280-S-FAN

- 7.2.2 SRU-100HH
- 7.8.6 1LTE4 (FDD/WCDMA/HSPA+ Interface Card MIC)

The following content is modified:

- 7.3 Ethernet LAN Card
- 7.4 Ethernet WAN Card

Issue 08 (2020-03-20)

This issue has the following updates:

The following content is added:

- 4.2.1 AR611W
- 4.2.2 AR611W-LTE4CN
- 4.2.3 AR617VW
- 4.2.4 AR617VW-LTE4EA
- 4.2.6 AR651
- 4.2.11 AR651U-A4
- 4.2.13 AR651W
- 4.2.14 AR657W
- 4.4.3 AR6121
- 7.8.8 1ELTE-L-S (TDD/FDD/HSPA+ Interface Card)

The following content is modified:

7.8 3G/LTE Card

Issue 07 (2019-10-31)

This issue has the following updates:

The following content is added:

4.4.5 AR6140-16G4XG

The following content is modified:

7.8 3G/LTE Card

Issue 06 (2019-08-20)

This issue has the following updates:

The following content is added:

- 4.2.9 AR651C
- 4.4.6 AR6140-9G-2AC

Issue 05 (2019-05-31)

This issue has the following updates:

The following content is added:

- 7.2.4 SRU-400H
- 7.2.6 SRU-600H

Issue 04 (2019-03-30)

This issue has the following updates:

The following content is added:

- 4.4.8 AR6280
- 4.4.10 AR6300
- 7.2.1 SRU-100H
- 7.2.3 SRU-200H

Issue 03 (2019-03-05)

This issue has the following updates:

The following content is added:

- 4.2.10 AR651F-Lite
- 4.4.1 AR6120
- 7.16.1 DGP (Dying Gasp Capacitor Card)
- 7.14.4 1GBIS4W (1-Port 4 Pair G.SHDSL WAN Interface Card WSIC)
- 7.14.3 4G.SHDSL (1-Port 4 Pair G.SHDSL WAN Interface Card)
- 7.12.1 1BST (1-Port-ISDN S/T WAN Interface Card)
- 7.7.4 8AS (8-Port-Asynchronous WAN Interface Card)
- 7.6.1 1E3/CE3/T3/CT3 (1-Port Channelized/Unchannelized E3/T3 WAN Interface Card)
- 7.4.6 4GEW-S (4-Port 1000BASE-SFP-L3 Ethernet WAN Interface Card)
- 8.16.1 2VDSL2 Cable

The following content is modified:

 7.14.6 2VDSL2 (2-Port VDSL2 over POTS with Bonding WAN Interface Card)

Issue 02 (2018-07-31)

This issue has the following updates:

The following content is modified:

- 7.8.5 1LTE4-EA (FDD/WCDMA/HSPA+ Interface Card MIC)
- 7.8.7 1LTE6-EA (WCDMA LTE CAT6 Interface Card-MIC)

Issue 01 (2018-05-25)

This issue is the first official release.

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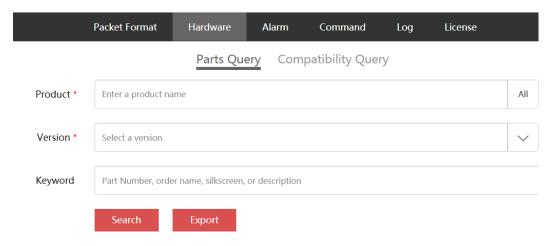
Using the Hardware Query Tool to Query Hardware Description Information

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

Figure 1-1 Web page of the Hardware Query Tool



A collection of documentation tools for network products(enterprise network), a good assistant for bidding, network planning, project delivery, upgrade, and maintenance.



Using the Hardware Configuration Tool to Calculate Power Consumption of Equipment

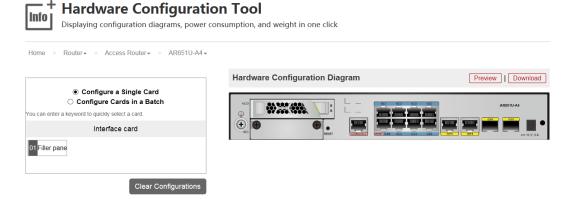
Figure 2-1 shows the web page of the **Hardware Configuration Tool**. You can use this tool to calculate the power consumption of a router.

◯ NOTE

The heat consumption of a device can be calculated as follows based on its power consumption:

Heat consumption (BTUs per hour) = Power consumption (W) \times 3.412

Figure 2-1 Web page of the Hardware Configuration Tool



3 Version Requirements for Components

This document describes all the AR router and modules supported in a version. To obtain accurate subscription information, visit https://e.huawei.com or contact Huawei local sales offices. You can also pay attention to the product change notices (PCNs) and lifecycle management bulletins on this website.

For details about the router models supported by the version, see "1.1 Product Version" in the *Release Notes* of the corresponding version.

The figures in this document are for reference only.

◯ NOTE

The actual available space of the memory, flash, SD card or hard disk is less than the nominal value because the router system software occupies some space.

4 Chassis

- **4.1 Naming Conventions**
- 4.2 AR600 Series
- 4.3 AR1600 Series
- 4.4 AR6000 Series
- 4.5 AR6000-S Series

4.1 Naming Conventions

AR600 Series

Figure 4-1 shows naming conventions of the AR600 series routers. **Table 4-1** describes the meaning of each letter or digit.

Figure 4-1 AR600 series naming conventions

AR 6 5 1 U - A4 L U U U U L L L A B C D E F AR 6 5 1 W - X4 L U U U U L L L A B C D E F

Table 4-1 AR600 series naming conventions

Field	Meaning	Description
А	Product name	AR: application and access routers
В	Platform generation	6: next-generation box-shaped SD-WAN application routers

Field	Meaning	Description
С	Host platform type	1: entry-level fixed-type platform5: high-end fixed-type platform
D	Fixed WAN interface type	1: GE7: VDSL 35B
E	(Optional) Product configuration type	 Default: basic configuration U: uCPE C: cost-effective model F: multiple uplink optical interfaces K: autonomous configuration V: Voice interface W: Wi-Fi interface
F	(Optional) Extended information about the router NOTE This field starts with "-" and specifies supplementary interface description or other possible configurations.	 An: n-core ARM processor. For example, A4 indicates a quadcore ARM processor. Xn: n-core x86 processor. For example, X8 indicates an octacore x86 processor. Lite: cost-effective model. LTEnX: LTE CAT mode and frequency bands in corresponding area. For example, LTE4EA indicates LTE CAT4 mode and frequency bands in Europe, Middle East, and Africa.

AR1600 Series

Figure 4-2 shows naming conventions of the AR1600 series routers. **Table 4-2** describes the meaning of each letter or digit.

Figure 4-2 AR1600 series naming conventions

AR 1 6 1 0 - X6 L L L L L L L A B C D E F

Table 4-2 AR1600 series naming conventions

Field	Meaning	Description
А	Product name	AR: application and access routers
В	Chassis height	1: 1 U
С	Hardware platform type	6: fourth-generation hardware platform
D	Maximum number of SIC and WSIC slots supported by the router NOTE The low-density slots indicates SIC and WSIC slots.	1: one low-density slot2: two low-density slots
Е	Maximum number of XSIC slots supported by the router NOTE The high-density slots indicates XSIC slots.	0: XSIC slots are not supported.
F	(Optional) Extended information about the router NOTE This field starts with "-" and specifies supplementary interface description or other possible configurations.	X6: six-core x86 processor

AR6000 Series

Figure 4-3 shows naming conventions of the AR6000 series routers. **Table 4-3** describes the meaning of each letter or digit.

Figure 4-3 AR6000 series naming conventions

AR 6 1 2 0 - VW A B C DE F

AR 6 1 4 0 K -9G-2AC

Table 4-3 AR6000 series naming conventions

Field	Meaning	Description
А	Product name	AR: application and access routers
В	Product platform	6: AR 6000

Field	Meaning	Description
С	Chassis height	1: 1 U2: 2 U3: 3 U
D	Maximum number of slots supported by the router	 2: two slots 4: four slots 6: six slots 8: eight slots 0: ten slots
Е	Product generation NOTE This label is applicable only to 1 U models. The default value is 0 for 2 U/3 U models.	Different hardware platforms
F	(Optional) Extended information about the router NOTE This field starts with "-" and specifies supplementary interface description or other possible configurations.	 V: Voice interface W: Wi-Fi interface nG: n GE interfaces nXG: n 10GE interfaces nAC: n AC power jacks
G	(Optional) Other interface types supported by the router	 Default: basic configuration E: enhanced configuration K: autonomous configuration L: lite configuration

AR6000-S Series

Figure 4-4 shows naming conventions of the AR6000-S series routers. **Table 4-4** describes the meaning of each letter or digit.

Figure 4-4 AR6000-S series naming conventions

AR 6 1 2 0 -S L L L L L L L A B C D E F AR 6 1 4 0 H -S L L L L L L L L A B C D E G

Table 4-4 AR6000-S series naming conventions

Field	Meaning	Description
А	Product name	AR: application and access routers
В	Product platform	6: AR 6000

Field	Meaning	Description
С	Chassis height	1: 1 U2: 2 U3: 3 U
D	Maximum number of slots supported by the router	 2: two slots 4: four slots 6: six slots 8: eight slots 0: ten slots
Е	Product generation	0: first generation1: second generation
F	(Optional) Extended information about the router NOTE This field starts with "-" and specifies supplementary interface description or other possible configurations.	S: resale model
G	(Optional) Other interface types supported by the router	Empty: basic configurationH: advanced configuration

4.2 AR600 Series

4.2.1 AR611W

Version Mapping

Table 4-5 lists the mapping between the AR611W router and software versions.

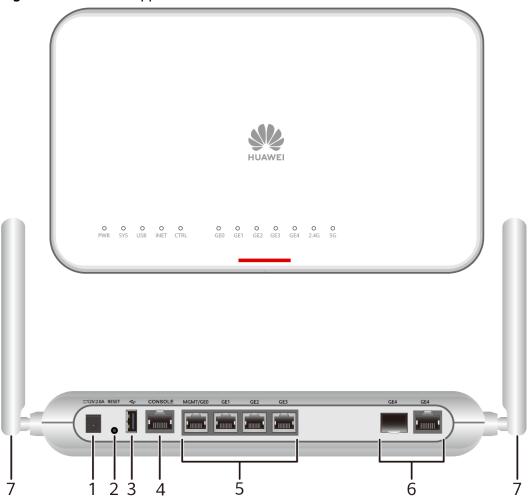
Table 4-5 Mapping between the AR611W router and software versions

Router Model	Software Version
AR611W	V300R019C10 and later versions

Appearance and Structure

Figure 4-5 shows the appearance of the AR611W router.

Figure 4-5 AR611W appearance

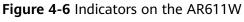


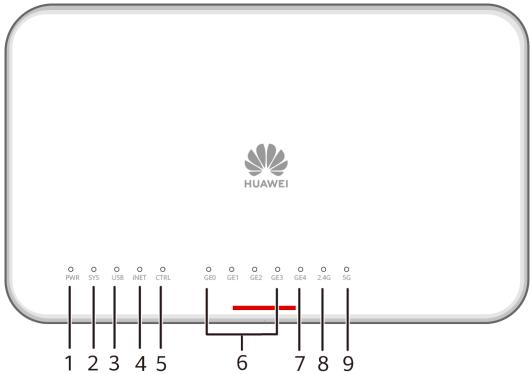
1	Power jack	2	RESET button
	NOTE		NOTE
	The router uses a 24 W separate		This button is used to reset the router.
	power adapter.		 To restore the factory settings, hold down the button for at least 5 seconds.
			 To reset the router, hold down the button for less than 5 seconds.
			Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	USB interface 2.0 (host)	4	Console interface

5	LAN interfaces: four GE electrical interfaces		WAN interface: GE combo interface
	NOTE		
	 GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. 		
	 All GE LAN interfaces can be configured as WAN interfaces. 		
7	Two Wi-Fi antennas	-	-

Indicator Description

Figure 4-6 shows the indicators on the AR611W router.





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

Numbe r	Indicator	Color	Description
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	iNET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Off: The Agile Controller-Campus does not manage the router.
6	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Numbe r	Indicator	Color	Description
7	GE combo interface	Green	Steady on: A link has been established on the corresponding GE combo interface.
	indicator (GE4)		Blinking: Data is being transmitted or received on the corresponding GE combo interface.
			Off: No link is established on the corresponding GE combo interface.
8	WLAN 2.4G (effective when	Green	Steady on: A WLAN link has been established on the corresponding interface.
	working on the 2.4 GHz band)		Blinking: The WLAN link is transmitting data.
			Off: The WLAN link is shut down.
9	WLAN 5G (effective when	Green	Steady on: A WLAN link has been established on the corresponding interface.
	working on the 5 GHz		Blinking: The WLAN link is transmitting data.
	band)		Off: The WLAN link is shut down.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-6** lists attributes of a console interface.

Table 4-6 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	Console Cable

USB 2.0 interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-7** lists attributes of a USB interface.

Table 4-7 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 4-8** lists attributes of a GE electrical interface.

Table 4-8 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.

- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

∩ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi antenna interface

■ NOTE

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-9** lists attributes of a Wi-Fi antenna interface.

Table 4-9 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	2.4 GHz5.0 GHz
Rate	866 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.5 dBi/3.0 dBi
Services provided	Layer 2/3 wireless accessWireless data encryptionWireless security

Technical Specifications

Table 4-10 lists the technical specifications of the AR611W router.

Table 4-10 AR611W technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1.1 GHz
Memory	1 GB
Flash memory	1 GB

Item	Specification	
Micro SD card	Not supported	
Built-in hard disk	Not supported	
External hard disk	Not supported	
Dimensions and weight		
Dimensions (H x W x D)	Basic dimensions: 38.0 mm x 240.0 mm x 161.5 mm (1.50 in. x 9.45 in. x 6.36 in.)	
	• Maximum dimensions: 41.4 mm x 278.6 mm x 161.5 mm (1.63 in. x 10.97 in. x 6.36 in.)	
Weight	0.60 kg (1.32 lb)	
Power specifications		
Rated input voltage range (AC)	110 V AC to 220 V AC, 50/60 Hz	
Maximum input voltage range (AC)	90 V AC to 270 V AC, 45 Hz to 65 Hz	
Maximum output current	2 A	
Maximum output power	24 W	
RPS power supply	Not supported	
PoE power supply	Not supported	
Power consumption		
Minimum power consumption	7 W	
Maximum power consumption	12 W	
Heat dissipation		
Fans	Not supported	
Airflow (facing the front panel)	Natural heat dissipation	
Interface density		
Management interfaces	1 (RJ45)	
Console interface	1 (RJ45)	
USB 2.0 interface	1	
Service interfaces	WAN interfaces: one GE combo interface	
	LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces	

Item	Specification
Extended slots (standard configuration)	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010481

4.2.2 AR611W-LTE4CN

Version Mapping

Table 4-11 lists the mapping between the AR611W-LTE4CN router and software versions.

Table 4-11 Mapping between the AR611W-LTE4CN router and software versions

Router Model	Software Version
AR611W-LTE4CN	V300R019C10 and later versions

Appearance and Structure

Figure 4-7 shows the appearance of the AR611W-LTE4CN router.

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ GEO GE1 GE2 GE3 GE4 2.4G 5G 8 8-5 1 2 3 4 6 9

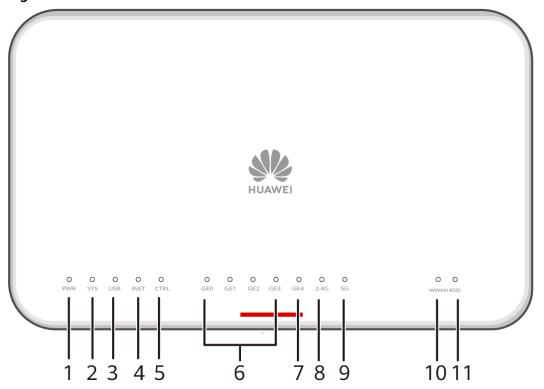
Figure 4-7 AR611W-LTE4CN appearance

1	Power jack	2	RESET button
'	NOTE	_	NOTE
	The router uses a 24 W separate		This button is used to reset the router.
	power adapter.		 To restore the factory settings, hold down the button for at least 5 seconds.
			 To reset the router, hold down the button for less than 5 seconds.
			Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	USB interface 2.0 (host)	4	Console interface
5	LAN interfaces: four GE electrical interfaces	6	WAN interface: GE combo interface
	NOTE		
	 GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. 		
	 All GE LAN interfaces can be configured as WAN interfaces. 		
7	Two Wi-Fi antenna interfaces	8	Two LTE antennas
9	Two SIM card slots	-	-
	NOTE		
	 The SIM card cover is used to protect the SIM card. Remove the SIM card cover before installing the SIM card. 		
	 The double-card single-standby is supported, and SIM1 is the default master card. If only one SIM card needs to be installed, install it in slot SIM1. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot. 		
	 The Micro SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact. 		
	 Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device. 		

Indicator Description

Figure 4-8 shows the indicators on the AR611W-LTE4CN router.

Figure 4-8 Indicators on the AR611W-LTE4CN



Numbe r	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.

Numbe r	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	INET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Off: The Agile Controller-Campus does not manage the router.
6	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
7	GE combo interface	Green	Steady on: A link has been established on the corresponding GE combo interface.
	indicator (GE4)		Blinking: Data is being transmitted or received on the corresponding GE combo interface.
			Off: No link is established on the corresponding GE combo interface.
8	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.

Numbe r	Indicator	Color	Description
9	WLAN 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
10	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
11	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high. Fast blinking: The 4G/3G/2G signal strength is medium. Slow blinking: The 4G/3G/2G signal strength is low. Off: No 4G/3G/2G signal is available.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-12** lists attributes of a console interface.

Table 4-12 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	Console Cable

USB 2.0 interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-13** lists attributes of a USB interface.

Table 4-13 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 4-14** lists attributes of a GE electrical interface.

Table 4-14 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.

- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

◯ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi antenna interface

□ NOTE

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

If the router uses channels 12 and 13 of the 2.4 GHz band to provide Wi-Fi service, connect an LTE remote antenna to the router.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-15** lists attributes of a Wi-Fi antenna interface.

Table 4-15 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	• 2.4 GHz
	• 5.0 GHz
Rate	866 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.5 dBi/3.0 dBi
Services provided	Layer 2/3 wireless access
	Wireless data encryption
	Wireless security

LTE antenna interface

□ NOTE

The LTE whip antenna corresponding to the LTE antenna interface of the router is delivered with the installation accessory package.

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 only receives LTE signals to help improve the downlink rate. Table 4-16 lists attributes of an LTE antenna interface.

Table 4-16 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, and 8 LTE TDD: bands 38, 39, 40, and 41 WCDMA: bands 1, 5, 8, and 9 GSM: 900/1800 (MHz) 		
Rate	 LTE FDD: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s LTE TDD: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s 		

Technical Specifications

Table 4-17 lists the technical specifications of the AR611W-LTE4CN router.

Table 4-17 AR611W-LTE4CN technical specifications

Item	Specification
System parameters	
Processor	Dual-core, 1.1 GHz
Memory	1 GB
Flash memory	1 GB
Micro SD card	Not supported
Built-in hard disk	Not supported

Item	Specification			
External hard disk	Not supported			
Dimensions and weight				
Dimensions (H x W x D)	 Basic dimensions: 38.0 mm x 240.0 mm x 161.5 mm (1.50 in. x 9.45 in. x 6.36 in.) Maximum dimensions: 41.4 mm x 278.6 mm x 161.5 mm (1.63 in. x 10.97 in. x 6.36 in.) 			
Weight	0.66 kg (1.45 lb)			
Power specifications	clooking (11 lo to)			
Rated input voltage range (AC)	110 V AC to 220 V AC, 50/60 Hz			
Maximum input voltage range (AC)	90 V AC to 270 V AC, 45 Hz to 65 Hz			
Maximum output current	2 A			
Maximum output power	24 W			
RPS power supply	Not supported			
PoE power supply	Not supported			
Power consumption				
Minimum power consumption	8 W			
Maximum power consumption	15 W			
Heat dissipation				
Fans	Not supported			
Airflow (facing the front panel)	Natural heat dissipation			
Interface density				
Management interfaces	1 (RJ45)			
Console interface	1 (RJ45)			
USB 2.0 interface	1			
Service interfaces	WAN interfaces: one GE combo interface and two LTE antenna interfaces			
	LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces			
Extended slots (standard configuration)	Not supported			

Item	Specification	
Environment parameters		
Operating temperature	0°C to 40°C (32°F to 104°F) 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	50010482	

4.2.3 AR617VW

Version Mapping

Table 4-18 lists the mapping between the AR617VW router and software versions.

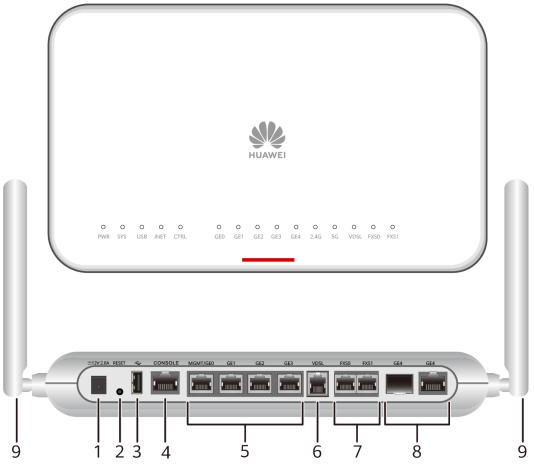
Table 4-18 Mapping between the AR617VW router and software versions

Router Model	Software Version
AR617VW	V300R019C10 and later versions

Appearance and Structure

Figure 4-9 shows the appearance of the AR617VW router.

Figure 4-9 AR617VW appearance



1	Power jack	2	RESET button
	NOTE		NOTE
	The device uses a 24 W separate		This button is used to reset the router.
	power adapter.		 To restore the factory settings, hold down the button for at least 5 seconds.
			To reset the router, hold down the button for less than 5 seconds.
			Resetting the router will interrupt services. Exercise caution when deciding to press this button.
3	USB interface 2.0 (host)	4	Console interface

5	LAN interfaces: four GE electrical interfaces		WAN interface: VDSL interface
	GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.		
7	Two FXS interfaces	8	WAN interface: GE combo interface
9	Two Wi-Fi antenna interfaces	-	-

Indicator Description

Figure 4-10 shows the indicators on the AR617VW router.

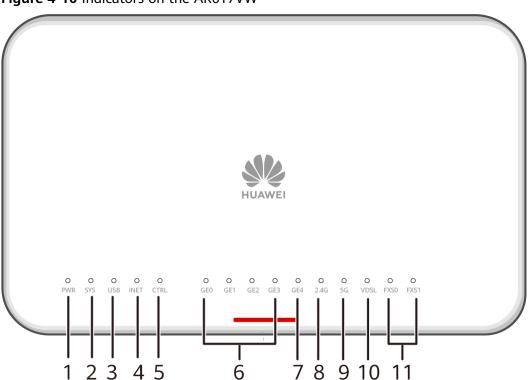


Figure 4-10 Indicators on the AR617VW

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

Numbe r	Indicator	Color	Description
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	iNET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Off: The Agile Controller-Campus does not manage the router.
6	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Numbe r	Indicator	Color	Description
7	GE combo interface indicator (GE4)	Green	Steady on: A link has been established on the corresponding GE combo interface. Blinking: Data is being transmitted or received on the corresponding GE combo interface. Off: No link is established on the corresponding GE combo interface.
8	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
9	WLAN 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
10	VDSL interface indicator	Green	Steady on: A link has been established on the corresponding VDSL interface. Blinking: A link is activating on the corresponding VDSL interface. Off: No link is established on the corresponding VDSL interface.
11	FXS interface indicators (FXS0 to FXS1)	Green	Steady on: The corresponding FXS channel is being occupied by a call. Off: The corresponding FXS channel is idle.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-19** lists attributes of a console interface.

Table 4-19 Console interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	Console Cable

USB 2.0 interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-20** lists attributes of a USB interface.

Table 4-20 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 4-21** lists attributes of a GE electrical interface.

Table 4-21 GE electrical interface attributes

Attribute	Description	
Connector type	RJ45	
Interface attribute	MDI/MDIX NOTE • MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	

Attribute	Description
Network protocol	IP
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an Ethernet Cable.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

VDSL Interface

□ NOTE

Only the VDSL over POTS is supported.

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 4-22** lists attributes of a VDSL interface.

Table 4-22 VDSL interface attributes

Attribute	Description
Connector type	RJ11
Standards	• ITU-T G.993.2
compliance	• ITU-T G.992.5
	• ITU-T G.992.3
	• ITU-T G.992.1 G.DMT
	• ANSI T1.413 Issue 2

Attribute	Description
Rate	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
	VDSL2 35B mode (ITU-T G.993.2): downlink rate of 350 Mbit/s and uplink rate of 40 Mbit/s
Cable type	Universal Telephone Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 4-23** lists attributes of an FXS interface.

Table 4-23 FXS interface attributes

Attribute	Description	
Connector type	RJ11	
Standards compliance	ITU Q.512 for the FXS interface	
Dialing mode	DTMF in accordance with GB3378	
Bandwidth	300 Hz to 3400 Hz	
Cable type	Universal Telephone Cable	

Wi-Fi antenna interface

□ NOTE

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-24** lists attributes of a Wi-Fi antenna interface.

Table 4-24 Wi-Fi antenna interface attributes

Attribute	Description	
Standards compliance	802.11a/b/g/n/ac	

Attribute	Description	
Frequency bands supported	• 2.4 GHz	
	• 5.0 GHz	
Rate	866 Mbit/s	
MIMO mode (Tx x Rx)	2x2	
Gain	2.5 dBi/3.0 dBi	
Services provided	Layer 2/3 wireless access	
	Wireless data encryption	
	Wireless security	

Technical Specifications

Table 4-25 lists the technical specifications of the AR617VW router.

Table 4-25 AR617VW technical specifications

Item	Specification	
System parameters		
Processor	Dual-core, 1.1 GHz	
Memory	1 GB	
Flash memory	1 GB	
Micro SD card	Not supported	
Built-in hard disk	Not supported	
External hard disk	Not supported	
Dimensions and weight		
Dimensions (H x W x D)	Basic dimensions: 38.0 mm x 240.0 mm x 161.5 mm (1.50 in. x 9.45 in. x 6.36 in.)	
	• Maximum dimensions: 41.4 mm x 278.6 mm x 161.5 mm (1.63 in. x 10.97 in. x 6.36 in.)	
Weight	0.63 kg (1.39 lb)	
Power specifications		
Rated input voltage range (AC)	110 V AC to 220 V AC, 50/60 Hz	
Maximum input voltage range (AC)	90 V AC to 270 V AC, 45 Hz to 65 Hz	
Maximum output current	2 A	

Item	Specification
Maximum output power	24 W
RPS power supply	Not supported
PoE power supply	Not supported
Power consumption	,
Minimum power consumption	7 W
Maximum power consumption	14 W
Heat dissipation	
Fans	Not supported
Airflow (facing the front panel)	Natural heat dissipation
Interface density	
Management interfaces	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interface	1
Service interfaces	WAN interfaces: one GE combo interface and one VDSL interface
	LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces
	Voice interfaces: two FXS interfaces
Extended slots (standard configuration)	Not supported
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	AR617VW (uses a 24 W separate power adapter): 50010480
	AR617VW (uses a 1-pin 36 W Power Adapter): 50010513

4.2.4 AR617VW-LTE4EA

Version Mapping

Table 4-26 lists the mapping between the AR617VW-LTE4EA router and software versions.

Table 4-26 Mapping between the AR617VW-LTE4EA router and software versions

Router Model	Software Version
AR617VW-LTE4EA	V300R019C10 and later versions

Appearance and Structure

Figure 4-11 shows the appearance of the AR617VW-LTE4EA router.

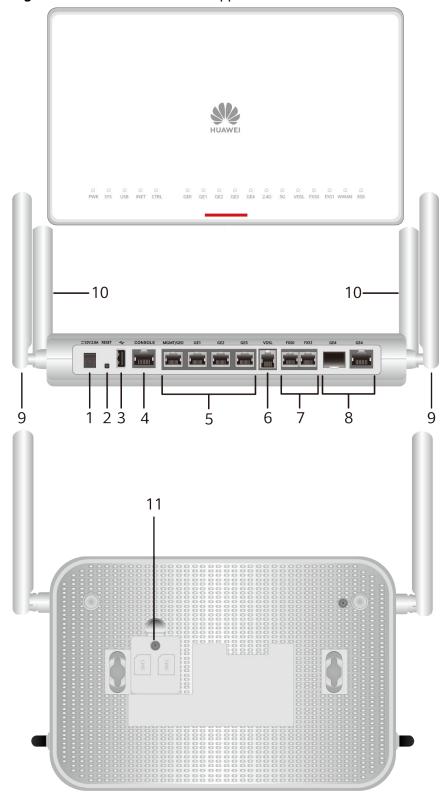
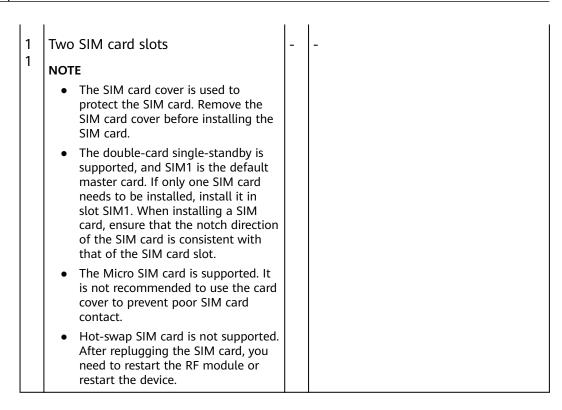


Figure 4-11 AR617VW-LTE4EA appearance

1	Power jack NOTE The device uses a 24 W separate power adapter.	2	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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding
3	USB interface 2.0 (host) NOTE The USB interface can be used only for USB-based deployment.	4	to press this button. Console interface
5	LAN interfaces: four GE electrical interfaces NOTE GEO is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.	6	WAN interface: VDSL interface
7	Two FXS interfaces	8	WAN interface: GE combo interface
9	Two Wi-Fi antenna interfaces	1 0	Two LTE antennas



Indicator Description

Figure 4-12 shows the indicators on the AR617VW-LTE4EA router.

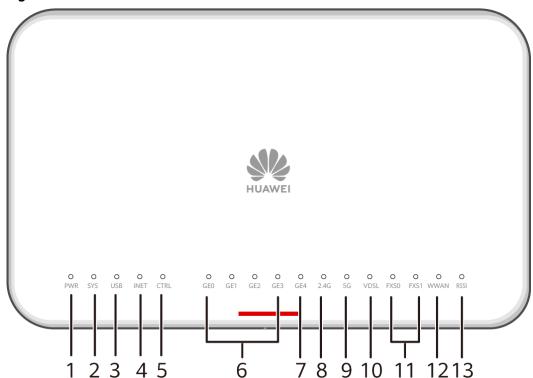


Figure 4-12 Indicators on the AR617VW-LTE4EA

Numbe r	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	iNET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Off: The Agile Controller-Campus does not manage the router.
6	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Numbe r	Indicator	Color	Description
7	GE combo interface indicator (GE4)	Green	Steady on: A link has been established on the corresponding GE combo interface. Blinking: Data is being transmitted or received on the corresponding GE combo interface. Off: No link is established on the corresponding GE combo interface.
8	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
9	WLAN 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
10	VDSL interface indicator	Green	Steady on: A link has been established on the corresponding VDSL interface. Blinking: A link is activating on the corresponding VDSL interface. Off: No link is established on the corresponding VDSL interface.
11	FXS interface indicators (FXS0 to FXS1)	Green	Steady on: The corresponding FXS channel is being occupied by a call. Off: The corresponding FXS channel is idle.
12	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.

Numbe r	Indicator	Color	Description
13	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
			Fast blinking: The 4G/3G/2G signal strength is medium.
			Slow blinking: The 4G/3G/2G signal strength is low.
			Off: No 4G/3G/2G signal is available.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-27** lists attributes of a console interface.

Table 4-27 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	Console Cable

USB 2.0 interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-28** lists attributes of a USB interface.

Table 4-28 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 4-29** lists attributes of a GE electrical interface.

Table 4-29 GE electrical interface attributes

Attribute	Description	
Connector type	RJ45	
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable	

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

◯ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

VDSL Interface

Only the VDSL over POTS is supported.

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 4-30** lists attributes of a VDSL interface.

Table 4-30 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 VDSL2 35B mode (ITU-T G.993.2): downlink rate of 350 Mbit/s and uplink rate of 40 Mbit/s
Cable type	Universal Telephone Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 4-31** lists attributes of an FXS interface.

Table 4-31 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface
Dialing mode	DTMF in accordance with GB3378
Bandwidth	300 Hz to 3400 Hz
Cable type	Universal Telephone Cable

Wi-Fi antenna interface

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

If the router uses channels 12 and 13 of the 2.4 GHz band to provide Wi-Fi service, connect an LTE remote antenna to the router.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-32** lists attributes of a Wi-Fi antenna interface.

Table 4-32 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	2.4 GHz5.0 GHz
Rate	866 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.5 dBi/3.0 dBi
Services provided	Layer 2/3 wireless accessWireless data encryptionWireless security

LTE antenna interface

□ NOTE

The LTE whip antenna corresponding to the LTE antenna interface of the router is delivered with the installation accessory package.

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 only receives LTE signals to help improve the downlink rate. Table 4-33 lists attributes of an LTE antenna interface.

Table 4-33 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 1/2/3/5/7/8/20 WCDMA: Band 1/2/5/8 GSM: 850/900/1800/1900 (MHz) 	

Attribute	Description
Rate	 LTE FDD: 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
	 HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
	 WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
	 WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s
	 EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s

Technical Specifications

Table 4-34 lists the technical specifications of the AR617VW-LTE4EA router.

Table 4-34 AR617VW-LTE4EA technical specifications

Item	Specification		
System parameters			
Processor	Dual-core, 1.1 GHz		
Memory	1 GB		
Flash memory	1 GB		
Micro SD card	Not supported		
Built-in hard disk	Not supported		
External hard disk	Not supported		
Dimensions and weight			
Dimensions (H x W x D)	 Basic dimensions: 38.0 mm x 240.0 mm x 161.5 mm (1.50 in. x 9.45 in. x 6.36 in.) Maximum dimensions: 41.4 mm x 		
	278.6 mm x 161.5 mm (1.63 in. x 10.97 in. x 6.36 in.)		
Weight	0.69 kg (1.52 lb)		

Item	Specification	
Power specifications		
Rated input voltage range (AC)	110 V AC to 220 V AC, 50/60 Hz	
Maximum input voltage range (AC)	90 V AC to 270 V AC, 45 Hz to 65 Hz	
Maximum output current	2 A	
Maximum output power	24 W	
RPS power supply	Not supported	
PoE power supply	Not supported	
Power consumption		
Minimum power consumption	8 W	
Maximum power consumption	17 W	
Heat dissipation		
Fans	Not supported	
Airflow (facing the front panel)	Natural heat dissipation	
Interface density		
Management interfaces	1 (RJ45)	
Console interface	1 (RJ45)	
USB 2.0 interface	1	
Service interfaces	WAN interfaces: one GE combo interface, one VDSL interface and two LTE antenna interfaces	
	LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces	
	Voice interfaces: two FXS interfaces	
Extended slots (standard configuration)	Not supported	
Environment parameters		
Operating temperature	0°C to 40°C (32°F to 104°F) 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 +70°C (-40°F to +158°F)	

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	AR617VW (uses a 24 W separate power adapter): 50010479 AR617VW (uses a 1-pin 36 W Power Adapter): 50010512

4.2.5 AR617VW-LTE4

Version Mapping

Table 4-35 lists the mapping between the AR617VW-LTE4 router and software versions.

Table 4-35 Mapping between the AR617VW-LTE4 router and software versions

Router Model	Software Version
AR617VW-LTE4	V300R019C10 and later versions

Appearance and Structure

Figure 4-13 shows the appearance of the AR617VW-LTE4 router.

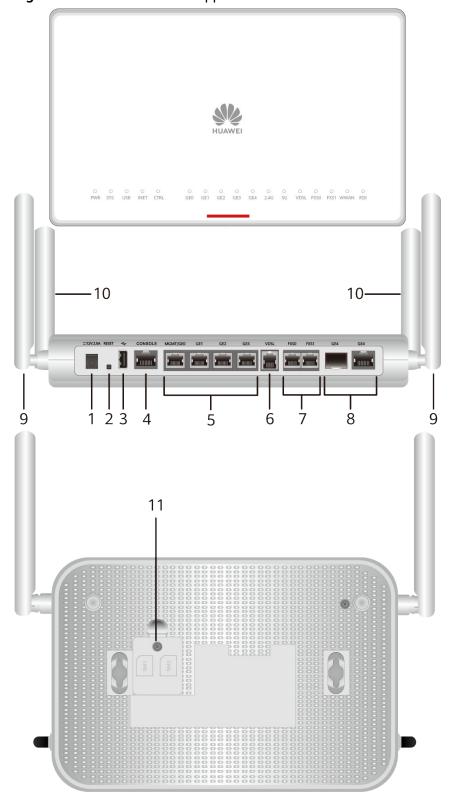
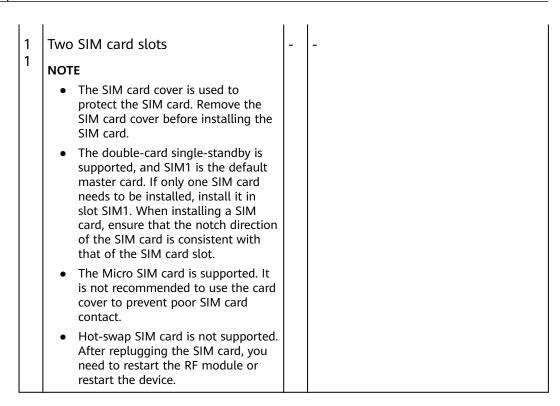


Figure 4-13 AR617VW-LTE4 appearance

used to reset the router.
he factory settings, hold utton for at least 5
e router, hold down the ess than 5 seconds.
outer will interrupt se caution when deciding utton.
ace
: VDSL interface
: GE combo interface
nas



Indicator Description

Figure 4-14 shows the indicators on the AR617VW-LTE4 router.

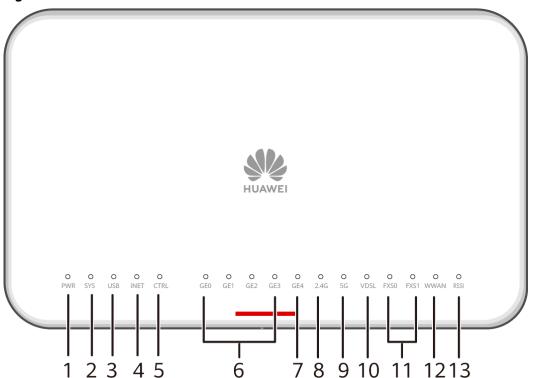


Figure 4-14 Indicators on the AR617VW-LTE4

Numbe r	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	iNET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Off: The Agile Controller-Campus does not manage the router.
6	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Numbe r	Indicator	Color	Description
7	GE combo interface indicator (GE4)	Green	Steady on: A link has been established on the corresponding GE combo interface. Blinking: Data is being transmitted or received on the corresponding GE combo interface. Off: No link is established on the corresponding GE combo interface.
8	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
9	WLAN 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
10	VDSL interface indicator	Green	Steady on: A link has been established on the corresponding VDSL interface. Blinking: A link is activating on the corresponding VDSL interface. Off: No link is established on the corresponding VDSL interface.
11	FXS interface indicators (FXS0 to FXS1)	Green	Steady on: The corresponding FXS channel is being occupied by a call. Off: The corresponding FXS channel is idle.
12	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.

Numbe r	Indicator	Color	Description
13	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
			Fast blinking: The 4G/3G/2G signal strength is medium.
			Slow blinking: The 4G/3G/2G signal strength is low.
			Off: No 4G/3G/2G signal is available.

Interface Description

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-36** lists attributes of a console interface.

Table 4-36 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	Console Cable

USB 2.0 interface (host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-37** lists attributes of a USB interface.

Table 4-37 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 4-38** lists attributes of a GE electrical interface.

Table 4-38 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

◯ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

VDSL Interface

Only the VDSL over POTS is supported.

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 4-39** lists attributes of a VDSL interface.

Table 4-39 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 VDSL2 35B mode (ITU-T G.993.2): downlink rate of 350 Mbit/s and uplink rate of 40 Mbit/s
Cable type	Universal Telephone Cable

FXS interface

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 4-40** lists attributes of an FXS interface.

Table 4-40 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface
Dialing mode	DTMF in accordance with GB3378
Bandwidth	300 Hz to 3400 Hz
Cable type	Universal Telephone Cable

Wi-Fi antenna interface

■ NOTE

Wi-Fi antennas have been installed on Wi-Fi interfaces of a router before delivery.

If the router uses channels 12 and 13 of the 2.4 GHz band to provide Wi-Fi service, connect an LTE remote antenna to the router.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-41** lists attributes of a Wi-Fi antenna interface.

Table 4-41 Wi-Fi antenna interface attributes

Attribute	Description
Standards compliance	802.11a/b/g/n/ac
Frequency bands supported	2.4 GHz5.0 GHz
Rate	866 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.5 dBi/3.0 dBi
Services provided	Layer 2/3 wireless accessWireless data encryptionWireless security

LTE antenna interface

□ NOTE

The LTE whip antenna corresponding to the LTE antenna interface of the router is delivered with the installation accessory package.

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 only receives LTE signals to help improve the downlink rate. Table 4-42 lists attributes of an LTE antenna interface.

Table 4-42 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 1/2/3/4/5/7/8/20 WCDMA: Band 1/2/5/8 GSM: 850/900/1800/1900 (MHz) 	

Attribute	Description
Rate	 LTE FDD: 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
	 HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
	 WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
	 WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s
	 EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s

Technical Specifications

Table 4-43 lists the technical specifications of the AR617VW-LTE4 router.

Table 4-43 AR617VW-LTE4 technical specifications

Item	Specification		
System parameters			
Processor	Dual-core, 1.1 GHz		
Memory	1 GB		
Flash memory	1 GB		
Micro SD card	Not supported		
Built-in hard disk	Not supported		
External hard disk	Not supported		
Dimensions and weight			
Dimensions (H x W x D)	 Basic dimensions: 38.0 mm x 240.0 mm x 161.5 mm (1.50 in. x 9.45 in. x 6.36 in.) Maximum dimensions: 41.4 mm x 		
	278.6 mm x 161.5 mm (1.63 in. x 10.97 in. x 6.36 in.)		
Weight	0.69 kg (1.52 lb)		

Item	Specification			
Power specifications				
Rated input voltage range (AC)	110 V AC to 220 V AC, 50/60 Hz			
Maximum input voltage range (AC)	90 V AC to 270 V AC, 45 Hz to 65 Hz			
Maximum output current	2 A			
Maximum output power	24 W			
RPS power supply	Not supported			
PoE power supply	Not supported			
Power consumption				
Minimum power consumption	8 W			
Maximum power consumption	17 W			
Heat dissipation				
Fans	Not supported			
Airflow (facing the front panel)	Natural heat dissipation			
Interface density				
Management interfaces	1 (RJ45)			
Console interface	1 (RJ45)			
USB 2.0 interface	1			
Service interfaces	WAN interfaces: one GE combo interface, one VDSL interface and two LTE antenna interfaces			
	LAN interfaces: four GE electrical interfaces and two Wi-Fi antenna interfaces			
	Voice interfaces: two FXS interfaces			
Extended slots (standard configuration)	Not supported			
Environment parameters				
Operating temperature	0°C to 40°C (32°F to 104°F) 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 +70°C (-40°F to +158°F)			

Item	Specification
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	50010498

4.2.6 AR651

Version Mapping

Table 4-44 lists the mapping between the AR651 router and software versions.

Table 4-44 Version mapping

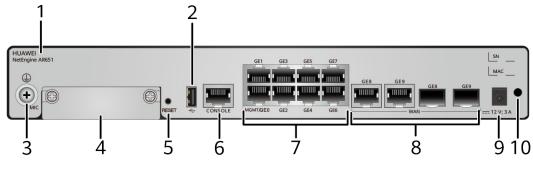
Router Model	Software Version
AR651	V300R019C10 and later versions

Appearance and Structure

Figure 4-15 shows the appearance of the AR651 router.

Figure 4-15 AR651 appearance



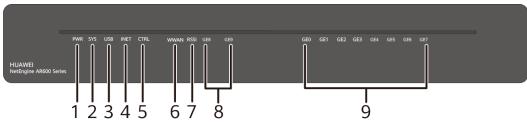


1	Product model silkscreen	2	One USB 2.0 interface
---	--------------------------	---	-----------------------

3	Ground point		One MIC slot
	NOTE		
	It is used together with a Ground Cable .		
5	RESET button	6	One console interface
	 NOTE This button is used to reset the router. In an empty configuration scenario, ensure that the router has no console port input, and has no user login routers. If the Reset button is pressed and held for at least 5 seconds, you will access the registration query center of Huawei devices and obtain the cloud management platform address of routers for plug-and-play deployment. In the configured scenario, hold down the button for at least 5 seconds to restore the factory settings. To reset the router, hold down the 		
	button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.		
7	LAN interfaces: eight GE electrical interfaces	8	WAN interfaces: two GE combo interfaces
	GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.		NOTE GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.
9	Power socket NOTE It is used together with a 36 W Power Adapter.	1 0	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

Figure 4-16 shows the indicators on the AR651 router.

Figure 4-16 Indicators on the AR651



Numbe r	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	iNET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Blinking: The plug-and-play deployment is ongoing by the registration query center.
			Off: The Agile Controller-Campus does not manage the router.

Numbe r	Indicator	Color	Description
6	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
7	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
			Fast blinking: The 4G/3G/2G signal strength is medium.
			Slow blinking: The 4G/3G/2G signal strength is low.
			Off: No 4G/3G/2G signal is available.
8	GE combo interface indicator (GE8 and GE9)	Green	Steady on: A link has been established on the corresponding GE combo interface. Blinking: Data is being transmitted or received on the corresponding GE combo
	525,		interface. Off: No link is established on the
			corresponding GE combo interface.
9	LAN (GE0 to GE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-45 lists attributes of the console interface.

Table 4-45 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-46** lists attributes of a GE electrical interface.

Table 4-46 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB 2.0 Interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-47** lists attributes of a USB interface.

Table 4-47 USB interface attributes

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

Technical Specifications

Table 4-48 lists technical specifications of the AR651 router.

Table 4-48 AR651 technical specifications

Item	Specification	
System parameters		
Processor	Quad-core, 1.4 GHz	
Memory	2 GB	
Flash	1 GB	
	To view the available memory size, run the dir command.	
Micro SD card	Not supported	
Built-in hard disk	Not supported	
External hard disk	Not supported	
Dimensions and weight		

Item	Specification	
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.0 mm x 300.0 mm x 220.3 mm (1.73 in. x 11.8 in. x 8.67 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.0 mm x 300.0 mm x 224.7 mm (1.73 in. x 11.8 in. x 8.85 	
Weight	in.) 1.8 kg (3.96 lb)	
Power specifications	The rig (clear to)	
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz	
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz	
Maximum output current	3 A	
Maximum output power	36 W	
Power consumption		
Minimum power consumption	22 W	
Maximum power consumption	29 W	
Heat dissipation		
Fans	Built-in, unpluggable fans	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interface	1 (RJ45)	
Console interface	1 (RJ45)	
USB 2.0 interface	1	
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces	
Extended slots (standard configuration)	1 x MIC	
Environment parameters		

Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F)
	NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	AR651: 02352HYG (only supported in V300R019C00 version)
	AR651-LTE6EA equipped with the 1LTE6-EA card: 02352GDM (only supported in V300R019C00 version)
	AR651: 50010483 (supported in V300R019C10 and later versions)

4.2.7 AR651K

Version Mapping

Table 4-49 lists the mapping between the AR651K router and software versions.

Table 4-49 Version mapping

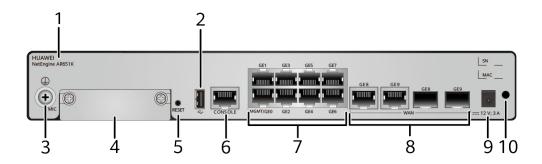
Router Model	Software Version
AR651K	V300R019C11 and later versions

Appearance and Structure

Figure 4-17 shows the appearance of the AR651K router.

Figure 4-17 AR651K appearance



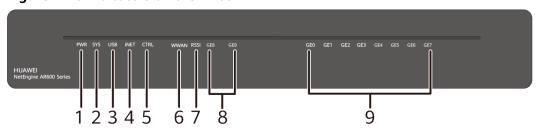


1	Product model silkscreen		One USB 2.0 interface
3	Ground point NOTE It is used together with a Ground Cable.	4	One MIC slot
5	RESET button NOTE This button is used to reset the router. In an empty configuration scenario, ensure that the router has no console port input, and has no user login routers. If the Reset button is pressed and held for at least 5 seconds, you will access the registration query center of Huawei devices and obtain the cloud management platform address of routers for plug-and-play deployment. In the configured scenario, hold down the button for at least 5 seconds to restore the factory settings. To reset the router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	6	One console interface

7	7 LAN interfaces: eight GE electrical interfaces		WAN interfaces: two GE combo interfaces
	NOTE		NOTE
	 GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces. 		GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.
9	Power socket	1	Jack for power cable locking strap
	NOTE	0	NOTE
	It is used together with a 36 W Power Adapter .		Insert a power cable locking strap in this jack to secure the power cable.

Figure 4-18 shows the indicators on the AR651K router.

Figure 4-18 Indicators on the AR651K



Numbe r	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.

Numbe r	Indicator	Color	Description
3	USB	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
4	iNET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Blinking: The plug-and-play deployment is
			ongoing by the registration query center. Off: The Agile Controller-Campus does not
			manage the router.
6	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
7	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
			Fast blinking: The 4G/3G/2G signal strength is medium.
			Slow blinking: The 4G/3G/2G signal strength is low.
			Off: No 4G/3G/2G signal is available.
8	GE combo interface	Green	Steady on: A link has been established on the corresponding GE combo interface.
	indicator (GE8 and GE9)		Blinking: Data is being transmitted or received on the corresponding GE combo interface.
			Off: No link is established on the corresponding GE combo interface.

Numbe r	Indicator	Color	Description
9	LAN (GE0 to GE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 4-50** lists attributes of the console interface.

Table 4-50 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-51** lists attributes of a GE electrical interface.

Table 4-51 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing

Attribute	Description
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB 2.0 Interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-52** lists attributes of a USB interface.

Table 4-52 USB interface attributes

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

Technical Specifications

Table 4-53 lists technical specifications of the AR651K router.

Table 4-53 AR651K technical specifications

Item	Specification	
System parameters		
Processor	Quad-core, 1.4 GHz	
Memory	2 GB	
Flash	1 GB	
	To view the available memory size, run the dir command.	
Micro SD card	Not supported	
Built-in hard disk	Not supported	
External hard disk	Not supported	
Dimensions and weight		
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.0 mm x 300.0 mm x 220.3 mm (1.73 in. x 11.8 in. x 8.67 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.0 mm x 300.0 mm x 224.7 mm (1.73 in. x 11.8 in. x 8.85 in.) 	
Weight	1.8 kg (3.96 lb)	
Power specifications		
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz	
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz	
Maximum output current	3 A	
Maximum output power	36 W	
Power consumption		
Minimum power consumption	22 W	
Maximum power consumption	29 W	
Heat dissipation		
Fans	Built-in, unpluggable fans	
Airflow (facing the front panel)	Left to right	
Interface density		

Item	Specification	
Management interface	1 (RJ45)	
Console interface	1 (RJ45)	
USB 2.0 interface	1	
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces	
Extended slots (standard configuration)	1 x MIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	50010495	

4.2.8 AR651-X8

Version Mapping

Table 4-54 lists the mapping between the AR651-X8 router and software versions.

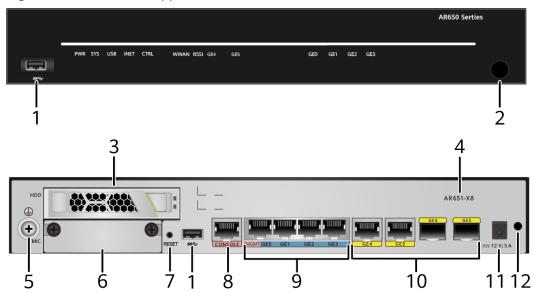
Table 4-54 Mapping between the AR651-X8 router and software versions

Router Model	Software Version
AR651-X8	V300R003C00 to V300R019C00 versions

Appearance and Structure

Figure 4-19 shows the appearance of the AR651-X8 router.

Figure 4-19 AR651-X8 appearance

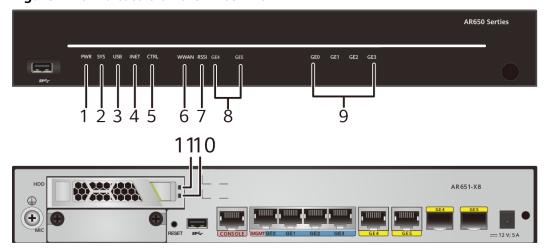


1	Two USB 3.0 interfaces	2	Power button
'	TWO OSD S.V IIILEITALES		NOTE
			 To power off the router, hold down the button for at least 5 seconds. To power on the router, hold down
			the button for less than 1 second.
3	One interface for mechanical hard disks	4	Product model silkscreen
	NOTE SATA 2.5-inch hard drive is supported.		
	The AR-HDD1TTS-D hard disk (BOM: 02311XKB) is recommended.		
5	Ground point	6	One MIC slot
	NOTE		NOTE
	It is used together with a Ground Cable .		The MIC card does not support hot swap.
7	RESET button	8	One console interface
	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 router, hold down the button for less than 5 seconds. 		
	Resetting the router will interrupt services. Exercise caution when deciding to press this button.		

9	LAN interfaces: four GE electrical interfaces		WAN interfaces: two GE combo interfaces
	NOTE		NOTE
	GE0 is the management network port on a device. It can implement web-based network management and email-based deployment.		GE4 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.
	 All GE LAN interfaces can be configured as WAN interfaces. 		
1	Power socket		Jack for power cable locking strap
	NOTE		NOTE
	It is used together with a 60 W Power Adapter .		Insert a power cable locking strap in this jack to secure the power cable.

Figure 4-20 shows the indicators on the AR651-X8 router.

Figure 4-20 Indicators on the AR651-X8



Numbe r	Indicator	Color	Description
1	PWR	Green	Steady on: The router power supply is normal. Off: The router power is off.

Numbe r	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The router is running properly.
			Fast blinking green: The router is being powered on or restarting.
			Steady red: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The router software is not running or is resetting.
3	USB	Red and green	Steady green: The router has been upgraded or configured using a USB flash drive.
			Blinking green: The router is being upgraded or configured using a USB flash drive.
			Steady red: The router fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, or the USB interface has failed, or the indicator has failed.
4	INET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Off: The Agile Controller-Campus does not manage the router.
6	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
7	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
			Fast blinking: The 4G/3G/2G signal strength is medium.
			Slow blinking: The 4G/3G/2G signal strength is low.
			Off: No 4G/3G/2G signal is available.

Numbe r	Indicator	Color	Description
8	GE combo interface	Green	Steady on: A link has been established on the corresponding GE combo interface.
	indicator (GE4 to GE5)		Blinking: Data is being transmitted or received on the corresponding GE combo interface.
			Off: No link is established on the corresponding GE combo interface.
9	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
10	Hard disk act indicator	Green	Stead on: A hard disk is present. Blinking: The system is performing the read-write operation on the hard disk. Off: No hard disk is present.
11	Hard disk error indicator	Red	Steady on: The hard disk does not work normally. Off: The hard disk is working normally.

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-55 lists attributes of the console interface.

Table 4-55 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-56** lists attributes of a GE electrical interface.

Table 4-56 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

◯ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB 3.0 Interface

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-57** lists attributes of a USB 3.0 interface.

Table 4-57 USB 3.0 interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

Technical Specifications

Table 4-58 lists technical specifications of the AR651-X8 router.

Table 4-58 AR651-X8 technical specifications

Item	Specification	
System parameters		
Processor	8-core, 2.2 GHz	
Memory	16 GB	
Flash	16 MB To view the available memory size, run the dir command.	
Micro SD card	Not supported	
Built-in hard disk	64 GB To view the available memory size, run the dir command.	
External hard disk	Supported	
Dimensions and weight		
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.0 mm x 300.0 mm x 216.4 mm (1.73 in. x 11.81 in. x 8.52 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.0 mm x 300.0 mm x 225.6 mm (1.73 in. x 11.81 in. x 8.88 in.) 	
Weight	1.9 kg (4.19 lb)	
Power specifications		
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz/60 Hz	

Item	Specification
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W
Power consumption	
Maximum power consumption	39 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
Console interface	1 (RJ45)
USB 3.0 interface	2
Service interfaces	WAN interface: two GE combo interfaces
	LAN interfaces: four GE electrical interfaces
Extended slots (standard configuration)	1xMIC
Environment parameters	
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800 m-5000 m (5906ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02351RHF

4.2.9 AR651C

Version Mapping

Table 4-59 lists the mapping between the AR651C series routers and software versions.

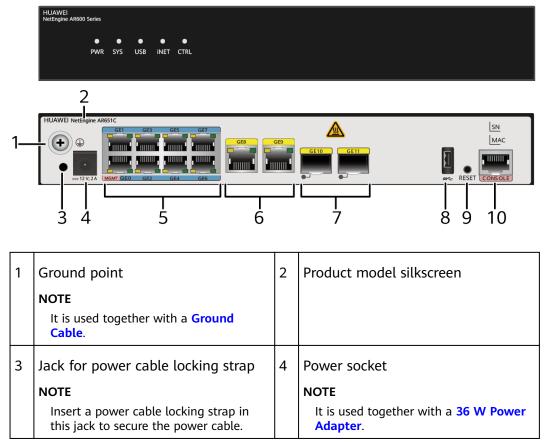
Table 4-59 Version mapping

Router Model	Software Version
AR651C	V300R019C00 and later versions

Appearance and Structure

Figure 4-21 shows the appearance of the AR651C router.

Figure 4-21 AR651C appearance

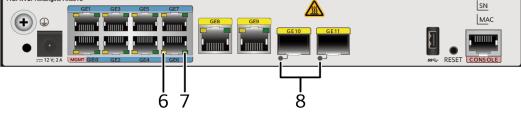


5	LAN interfaces: eight GE electrical interfaces NOTE GEO is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.	6	WAN interfaces: two GE electrical interfaces
7	WAN interfaces: two GE optical interfaces	8	One USB 3.0 interface
9	 NOTE This button is used to reset the router. In an empty configuration scenario, ensure that the router has no console port input, and has no user login routers. If the Reset button is pressed and held for at least 5 seconds, you will access the registration query center of Huawei devices and obtain the cloud management platform address of routers for plug-and-play deployment. In the configured scenario, hold down the button for at least 5 seconds to restore the factory settings. To reset the router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	1 0	One console interface

Figure 4-22 shows the indicators on the AR651C router.

Figure 4-22 Indicators on the AR651C router





Numbe r	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 and cannot be rectified automatically. The fault needs to be rectified manually. 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	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.

Numbe r	Indicator	Color	Description
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Blinking: The plug-and-play deployment is ongoing by the registration query center.
			Off: The Agile Controller-Campus does not manage the router.
6 and 7	GE electrical	Green	LINK indicator steady on: A link has been established on the interface.
	interface indicators (GE0 to GE9): • 6: ACT indicator , yellow • 7: LINK indicator	ndicators	LINK indicator off: No link is established on the interface.
		6: ACT indicator , yellow 7: LINK	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.
8	WAN optical	Green	Steady on: A link has been established on the corresponding WAN interface.
indica	interface indicators (GE10 to		Blinking: Data is being transmitted or received on the corresponding WAN interface.
	GEII)		Off: No link is established on the corresponding WAN interface.

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 4-60** lists attributes of the console interface.

Table 4-60 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)

Attribute	Description
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-61** lists attributes of a GE electrical interface.

Table 4-61 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Optical Interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 4-62** lists attributes of a GE optical interface.

Table 4-62 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see FE SFP/eSFP Optical Module and GE eSFP Optical Modules.
Standards compliance	IEEE 802.3z

USB 3.0 Interface

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-63** lists attributes of a USB 3.0 interface.

Table 4-63 USB 3.0 interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

Technical Specifications

Table 4-64 lists the technical specifications of the AR651C router.

Table 4-64 Technical specifications of the AR651C router

Item	Specification		
System parameters			
Processor	Quad-core, 1.2 GHz		
Memory	1 GB		
Flash	1 GB		
	To view the available memory size, run the dir command.		
Micro SD card	Not supported		
Built-in hard disk	Not supported		
External hard disk	Not supported		
Dimensions and weight			
Dimensions (H x W x D)	Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 250.0 mm x 210.2 mm (1.72 in. x 9.84 in. x 8.28 in.)		
	Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 250.0 mm x 215 mm (1.72 in. x 9.84 in. x 8.46 in.)		
Weight	1.75 kg (3.85 lb)		
Power specifications			
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz/60 Hz		
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz		
Maximum output current	3 A		

Item	Specification
Maximum output power	36 W
Power consumption	
Maximum power consumption	22 W
Heat dissipation	
Fans	Not supported
Airflow (facing the front panel)	Natural heat dissipation NOTE The router uses natural heat dissipation. Compared with the air-cooled model, the router surface temperature is high when the device is working properly. This is a normal phenomenon and meets the safety requirements. The router functions and reliability are not affected.
Interface density	
Management interfaces	1 (RJ45)
Console interfaces	1 (RJ45)
USB 3.0 interfaces	1
Service interfaces	LAN interfaces: eight GE electrical interfaces WAN interfaces: two GE electrical interfaces and two GE optical interfaces
Extended slots (standard configuration)	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352RLG

4.2.10 AR651F-Lite

Version Mapping

Table 4-65 lists the mapping between the AR651F-Lite series routers and software versions.

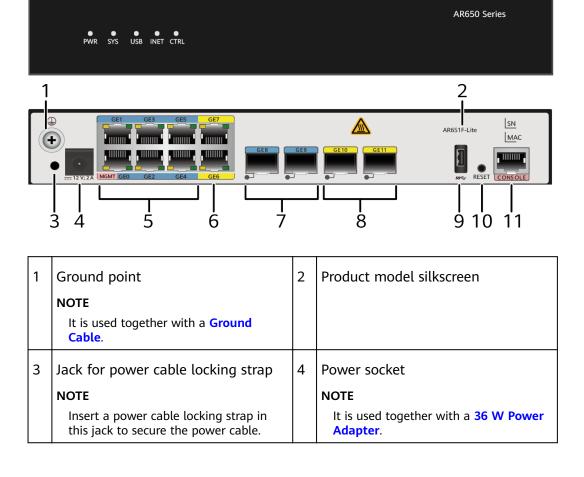
Table 4-65 Version mapping

Router Model	Software Version
AR651F-Lite	V300R003C10 and later versions

Appearance and Structure

Figure 4-23 shows the appearance of the AR651F-Lite router.

Figure 4-23 AR651F-Lite appearance

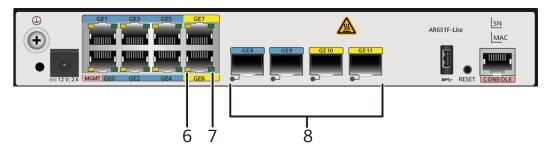


5	LAN interfaces: six GE electrical interfaces NOTE GEO is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.	6	WAN interfaces: two GE electrical interfaces
7	LAN interfaces: two GE optical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.	8	WAN interfaces: two GE optical interfaces
9	One USB 3.0 interface	1 0	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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
1	One console interface	-	-

Figure 4-24 shows the indicators on the AR651F-Lite router.

Figure 4-24 Indicators on the AR651F-Lite router





Numbe r	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 and cannot be rectified automatically. The fault needs to be rectified manually.
			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.

Numbe r	Indicator	Color	Description
4	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
6 and 7	GE electrical interface indicators (GE0 to GE7): 6: ACT indicator , yellow 7: LINK indicator , green	Green	LINK indicator steady on: A link has been established on the interface. LINK indicator off: No link is established on the interface.
		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.
8	LAN/WAN optical interface indicators (GE8 to GE11)	Green	Steady on: A link has been established on the corresponding LAN/WAN interface. Blinking: Data is being transmitted or received on the corresponding LAN/WAN interface. Off: No link is established on the corresponding LAN/WAN interface.

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-66 lists attributes of the console interface.

Table 4-66 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)

Attribute	Description
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-67** lists attributes of a GE electrical interface.

Table 4-67 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Optical Interface

A GE optical interface cannot work in FE mode and can transmit and receive service traffic at 1000 Mbit/s. **Table 4-68** lists attributes of a GE optical interface.

Table 4-68 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 9.5 GE eSFP Optical Modules.
Standards compliance	IEEE 802.3z

USB 3.0 Interface

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-69** lists attributes of a USB 3.0 interface.

Table 4-69 USB 3.0 interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

Technical Specifications

Table 4-70 lists the technical specifications of the AR651F-Lite router.

Table 4-70 Technical specifications of the AR651F-Lite router

Item	Specification	
System parameters		
Processor	Quad-core, 1.2 GHz	
Memory	1 GB	
Flash	512 MB	
	To view the available memory size, run the dir command.	
Micro SD card	Not supported	
Built-in hard disk	Not supported	
External hard disk	Not supported	
Dimensions and weight		
Dimensions (H x W x D)	Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 250.0 mm x 210.2 mm (1.72 in. x 9.84 in. x 8.28 in.)	
	Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 250.0 mm x 215 mm (1.72 in. x 9.84 in. x 8.46 in.)	
Weight	3.1 kg (6.82 lb)	
Power specifications		
Rated AC input voltage	100 V to 240 V, 50 Hz/60 Hz	

Item	Specification
Maximum AC input voltage	90 V to 264 V, 47 Hz to 63 Hz
Maximum output current	3 A
Maximum output power	36 W
Power consumption	
Maximum power consumption	23.6 W
Heat dissipation	
Fans	Not supported
Airflow (facing the front panel)	Natural heat dissipation NOTE The router uses natural heat dissipation. Compared with the air-cooled model, the router surface temperature is high when the device is working properly. This is a normal phenomenon and meets the safety requirements. The router functions and reliability are not affected.
Interface density	
Management interfaces	1 (RJ45)
Console interfaces	1 (RJ45)
USB 3.0 interfaces	1
Service interfaces	LAN interfaces: six GE electrical interfaces and two GE optical interfaces WAN interfaces: two GE electrical interfaces and two GE optical interfaces
Extended slots (standard configuration)	Not supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)

Item	Specification
Part number	02351YRV

4.2.11 AR651U-A4

Version Mapping

Table 4-71 lists the mapping between the AR651U-A4 series routers and software versions.

Table 4-71 Version mapping

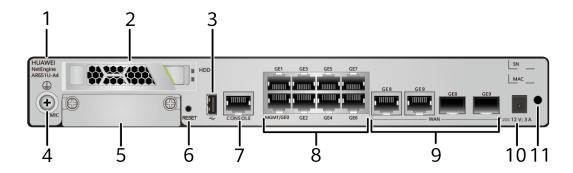
Router Model	Software Version
AR651U-A4	V300R019C10 and later versions

Appearance and Structure

Figure 4-25 shows the appearance of the AR651U-A4 router.

Figure 4-25 AR651U-A4 appearance





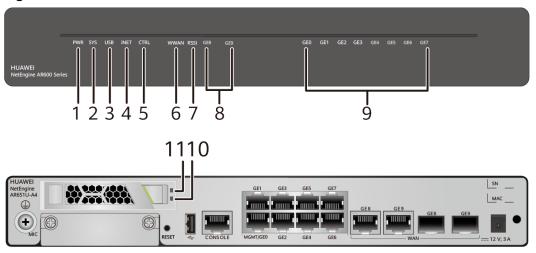
1	Product model silkscreen	2	One hard disk interface NOTE SSD 2.5-inch hard drive is supported. AR651U-A4: The SSD-Sata240G hard disk (BOM: 02312SEU) is recommended.
3	One USB 2.0 interface	4	Ground point NOTE It is used together with a Ground Cable.
5	One MIC slot Applicable MIC cards: 1CLTE4-CN 1ELTE6-EA 1LTE4-EA 1LTE6-EA 1LTE4 NOTE AR651U-A4-L4EA: equipped with the 1LTE4-EA card. If the 1LTE6-EA is configured, the device model is AR651U-A4-L6EA: equipped with the 1LTE6-EA card.	6	 NOTE This button is used to reset the router. In an empty configuration scenario, ensure that the router has no console port input, and has no user login routers. If the Reset button is pressed and held for at least 5 seconds, you will access the registration query center of Huawei devices and obtain the cloud management platform address of routers for plug-and-play deployment. In the configured scenario, hold down the button for at least 5 seconds to restore the factory settings. To reset the router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	One console interface	8	LAN interfaces: eight GE electrical interfaces NOTE • GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. • All GE LAN interfaces can be configured as WAN interfaces.

9	WAN interfaces: two GE combo interfaces NOTE GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.	1 0	Power socket NOTE It is used together with a 36 W Power Adapter.
1	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

Indicator Description

Figure 4-26 shows the indicators on the AR651U-A4 router.

Figure 4-26 Indicators on the AR651U-A4 router



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

Numbe r	Indicator	Color	Description
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 and cannot be rectified automatically. The fault needs to be rectified manually.
			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	iNET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Blinking: The plug-and-play deployment is ongoing by the registration query center.
			Off: The Agile Controller-Campus does not manage the router.
6	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.

Numbe r	Indicator	Color	Description
7	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
			Fast blinking: The 4G/3G/2G signal strength is medium.
			Slow blinking: The 4G/3G/2G signal strength is low.
			Off: No 4G/3G/2G signal is available.
8	GE combo interface indicator (GE8 and	Green	Steady on: A link has been established on the corresponding GE combo interface. Blinking: Data is being transmitted or
	GE9)		received on the corresponding GE combo interface.
			Off: No link is established on the corresponding GE combo interface.
9	LAN (GE0- GE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
10	Hard disk	Green	Stead on: A hard disk is present.
	ACT indicator		Blinking: The system is performing the read-write operation on the hard disk.
			Off: No hard disk is present.
11	Hard disk error	Red	Steady on: The hard disk does not work normally.
	indicator		Off: The hard disk is working normally.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-72 lists attributes of the console interface.

Table 4-72 Console interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-73** lists attributes of a GE electrical interface.

Table 4-73 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an Ethernet Cable.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB 2.0 Interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-74** lists attributes of a USB interface.

Table 4-74 USB interface attributes

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

Technical Specifications

Table 4-75 lists the technical specifications of the AR651U-A4 router.

Table 4-75 Technical specifications of the AR651U-A4 router

Item	Specification
System parameters	
Processor	Quad-core, 1.4 GHz
Memory	4 GB
Flash	1 GB
	To view the available memory size, run the dir command.
Micro SD card	Not supported
Built-in hard disk	Not supported
External hard disk	Supported
Dimensions and weight	

Item	Specification	
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.0 mm x 300.0 mm x 220.3 mm (1.73 in. x 11.8 in. x 8.67 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.0 mm x 300.0 mm x 224.7 mm (1.73 in. x 11.8 in. x 8.85 in.) 	
Weight	1.92 kg (4.22 lb)	
Power specifications		
Rated AC input voltage	100 V AC to 240 V AC, 50/60 Hz	
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz	
Maximum output current	3 A	
Maximum output power	36 W	
Power consumption		
Minimum power consumption	25 W	
Maximum power consumption	35 W	
Heat dissipation		
Fans	Built-in, unpluggable fans	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interface	1 (RJ45)	
Console interface	1 (RJ45)	
USB 2.0 interface	1	
Service interfaces	WAN interface: two GE combo interfaces LAN interface: eight GE electrical interfaces	
Extended slots (standard configuration)	1 x MIC	
Environment parameters		

Item	Specification
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	 AR651U-A4-L4EA equipped with the 1LTE4-EA card: 02351WGP (supported in V300R003C00 to V300R019C00 versions) AR651U-A4-L6EA equipped with the 1LTE6-EA card: 02351WGN (supported in V300R003C00 to V300R019C00 versions) AR651U-A4: 50010484 (supported in V300R019C10 and later versions)

4.2.12 AR651W-X4

Version Mapping

Table 4-76 lists the mapping between the AR651W-X4 router and software versions.

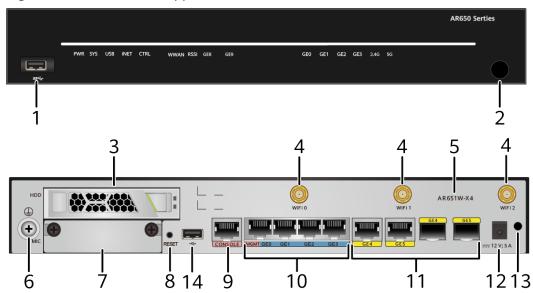
Table 4-76 Mapping between the AR651W-X4 router and software versions

Router Model	Software Version
AR651W-X4	V300R003C00 to V300R019C00 versions

Appearance and Structure

Figure 4-27 shows the appearance of the AR651W-X4 router.

Figure 4-27 AR651W-X4 appearance



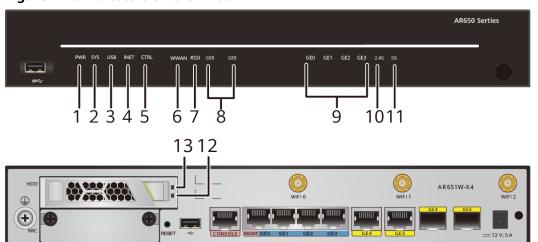
1	One USB 3.0 interface	2	Power button
			NOTE
			 To power off the router, hold down the button for at least 5 seconds.
			To power on the router, hold down the button for less than 1 second.
3	One interface for mechanical hard disks	4	LAN interfaces: three Wi-Fi antenna interfaces
	NOTE		NOTE
	SATA 2.5-inch hard drive is supported. The AR-HDD1TTS-D hard disk (BOM: 02311XKB) is recommended.		It is used together with a Wi-Fi Antenna .
5	Product model silkscreen	6	Ground point
			NOTE
			It is used together with a Ground Cable .
7	One MIC slot	8	RESET button
	NOTE		NOTE
	The MIC card does not support hot		This button is used to reset the router.
	swap.		 To restore the factory settings, hold down the button for at least 5 seconds.
			To reset the router, hold down the button for less than 5 seconds.
			Resetting the router will interrupt services. Exercise caution when deciding to press this button.

9	One console interface	1 0	LAN interfaces: four GE electrical interfaces
			GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.
1	WAN interfaces: two GE combo interfaces NOTE GE4 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.	1 2	Power socket NOTE It is used together with a 60 W Power Adapter.
1 3	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	1 4	One USB 2.0 interface

Indicator Description

Figure 4-28 shows the indicators on the AR651W-X4 router.

Figure 4-28 Indicators on the AR651W-X4



Numbe r	Indicator	Color	Description
1	PWR	Green	Steady on: The router power supply is normal. Off: The router power is off.

Numbe r	Indicator	Color	Description
2	SYS	Red and green	Slow blinking green: The router is running properly. Fast blinking green: The router is being powered on or restarting. Steady red: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually. Off: The router software is not running or is resetting.
3	USB	Red and green	Steady green: The router has been upgraded or configured using a USB flash drive. Blinking green: The router is being upgraded or configured using a USB flash drive. Steady red: The router fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, or the USB interface has failed, or the indicator has failed.
4	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
6	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
7	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high. Fast blinking: The 4G/3G/2G signal strength is medium. Slow blinking: The 4G/3G/2G signal strength is low. Off: No 4G/3G/2G signal is available.

Numbe r	Indicator	Color	Description
8	GE combo interface indicator (GE4 to GE5)	Green	Steady on: A link has been established on the corresponding GE combo interface. Blinking: Data is being transmitted or received on the corresponding GE combo interface. Off: No link is established on the corresponding GE combo interface.
9	LAN (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding LAN interface. Blinking: Data is being transmitted or received on the corresponding LAN interface. Off: No link is established on the corresponding LAN interface.
10	WLAN 2.4G (effective when working on the 2.4 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
11	WLAN 5G (effective when working on the 5 GHz band)	Green	Steady on: A WLAN link has been established on the corresponding interface. Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
12	Hard disk act indicator	Green	Stead on: A hard disk is present. Blinking: The system is performing the read-write operation on the hard disk. Off: No hard disk is present.
13	Hard disk error indicator	Red	Steady on: The hard disk does not work normally. Off: The hard disk is working normally.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-77 lists attributes of the console interface.

Table 4-77 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-78** lists attributes of a GE electrical interface.

Table 4-78 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:

- FE SFP/eSFP Optical Module
- GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-79** lists attributes of a Wi-Fi antenna interface.

Table 4-79 Wi-Fi antenna interface attributes

Attribute	Description
Connector type	RP-SMA-K (screw threads outside and a pin inside)
Standards compliance	2.4 GHz: 802.11b/g/n5.0 GHz: 802.11a/n/ac
Frequency bands supported	2.4 GHz5.0 GHz
Rate	2.4 GHz: 450 Mbit/s5.0 GHz: 1300 Mbit/s
MIMO mode (Tx x Rx)	3x3
Gain	2.15 dBi/3.0 dBi
Cable type	Wi-Fi Whip Antenna

USB 3.0 Interface

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-80** lists attributes of a USB 3.0 interface.

Table 4-80 USB 3.0 interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

USB 2.0 Interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-81** lists attributes of a USB interface.

Table 4-81 USB interface attributes

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

Technical Specifications

Table 4-82 lists technical specifications of the AR651W-X4 router.

Table 4-82 AR651W-X4 technical specifications

Item	Specification	
System parameters		
Processor	Quad-core, 2.2 GHz	
Memory	16 GB	
Flash	16 MB To view the available memory size, run	
	the dir command.	
Micro SD card	Not supported	
Built-in hard disk	64 GB To view the available memory size, run the dir command.	
External hard disk	Supported	
Dimensions and weight		
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.0 mm x 300.0 mm x 210.5 mm (1.73 in. x 11.81 in. x 8.29 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.0 mm x 300.0 mm x 219.7 mm (1.73 in. x 11.81 in. x 8.65 in.) 	
Weight	1.9 kg (4.19 lb)	
Power specifications		
Rated AC input voltage	100 V AC to 240 V AC, 50 Hz/60 Hz	

Item	Specification	
Maximum AC input voltage	90 V AC to 264 V AC, 47 Hz to 63 Hz	
Maximum output current	5 A	
Maximum output power	60 W	
Power consumption		
Maximum power consumption	37 W	
Heat dissipation		
Fans	Built-in, unpluggable fans	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interface	1 (RJ45)	
Console Interface	1 (RJ45)	
USB 3.0 interfaces	1	
USB 2.0 interfaces	1	
Service interfaces	WAN interface: two GE combo interfaces	
	LAN interfaces: four GE electrical interfaces and three Wi-Fi antenna interfaces	
Extended slots (standard configuration)	1xMIC	
Environment parameters		
Operating temperature	0°C to 40°C (32°F to 104°F) NOTE When the altitude is 1800 m-5000 m (5906ft16404.2 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	02351RHE	

4.2.13 AR651W

Version Mapping

Table 4-83 lists the mapping between the AR651W router and software versions.

Table 4-83 Version mapping

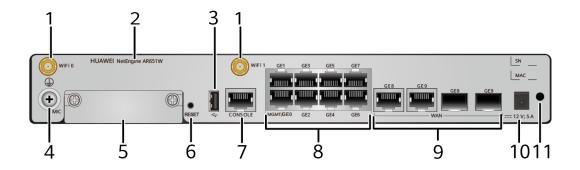
Router Model	Software Version
AR651W	V300R019C10 and later versions

Appearance and Structure

Figure 4-29 shows the appearance of the AR651W router.

Figure 4-29 AR651W appearance





1	Two Wi-Fi antenna interfaces	2	Product model silkscreen
3	One USB 2.0 interface	4	Ground point
			NOTE It is used together with a Ground Cable.

5	One MIC slot	6	RESET button
			 NOTE This button is used to reset the router. In an empty configuration scenario, ensure that the router has no console port input, and has no user login routers. If the Reset button is pressed and held for at least 5 seconds, you will access the registration query center of Huawei devices and obtain the cloud management platform address of routers for plug-and-play deployment. In the configured scenario, hold down the button for at least 5 seconds to restore the factory settings. To reset the router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
7	One console interface	8	LAN interfaces: eight GE electrical interfaces NOTE GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.
9	WAN interfaces: two GE combo interfaces NOTE GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.	1 0	Power socket NOTE It is used together with a 60 W Power Adapter.
1	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

Indicator Description

Figure 4-30 shows the indicators on the AR651W router.

PWR 5YS USB INET CTRL WWAN RSSI GEB GE9 GE0 GE1 GE2 GE3 GE4 GE5 GE6 GE7 2.4G 5G

HUAWEI NetEngine ARG00 Series 9 10 11

Figure 4-30 Indicators on the AR651W

Numbe r	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	iNET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router.
			Blinking: The plug-and-play deployment is ongoing by the registration query center. Off: The Agile Controller-Campus does not
			manage the router.

Numbe r	Indicator	Color	Description
6	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
7	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
			Fast blinking: The 4G/3G/2G signal strength is medium.
			Slow blinking: The 4G/3G/2G signal strength is low.
			Off: No 4G/3G/2G signal is available.
8	GE combo interface	Green	Steady on: A link has been established on the corresponding GE combo interface.
	indicator (GE8 and GE9)		Blinking: Data is being transmitted or received on the corresponding GE combo interface.
			Off: No link is established on the corresponding GE combo interface.
9	LAN (GE0 to GE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
10	WLAN 2.4G (effective when	Green	Steady on: A WLAN link has been established on the corresponding interface.
	working on the 2.4 GHz band)		Blinking: The WLAN link is transmitting data. Off: The WLAN link is shut down.
11	WLAN 5G (effective when	Green	Steady on: A WLAN link has been established on the corresponding interface.
	working on the 5 GHz band)		Blinking: The WLAN link is transmitting data.
	Jana,		Off: The WLAN link is shut down.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-84 lists attributes of the console interface.

Table 4-84 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-85** lists attributes of a GE electrical interface.

Table 4-85 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB 2.0 Interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-86** lists attributes of a USB interface.

Table 4-86 USB interface attributes

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

Wi-Fi Antenna Interface

Ⅲ NOTE

If the router uses channels 12 and 13 of the 2.4 GHz band to provide Wi-Fi service, connect an LTE remote antenna to the router.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-87** lists attributes of a Wi-Fi antenna interface.

Table 4-87 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	866.6 Mbit/s
MIMO mode (Tx x Rx)	2x2

Attribute	Description
Gain	2.15 dBi/3.0 dBi
Cable type	Wi-Fi Whip Antenna

Technical Specifications

Table 4-88 lists technical specifications of the AR651W router.

Table 4-88 AR651W technical specifications

Item	Specification
	Specification
System parameters	
Processor	Quad-core, 1.4 GHz
Memory	2 GB
Flash	1 GB
	To view the available memory size, run the dir command.
Micro SD card	Not supported
Built-in hard disk	Not supported
External hard disk	Not supported
Dimensions and weight	
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.0 mm x 300.0 mm x 220.3 mm (1.73 in. x 11.8 in. x 8.67 in.)
	Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.0 mm x 300.0 mm x 224.7 mm (1.73 in. x 11.8 in. x 8.85 in.)
Weight	1.82 kg (4.0 lb)
Power specifications	
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum output current	5 A
Maximum output power	60 W

Item	Specification
Power consumption	
Minimum power consumption	31 W
Maximum power consumption	42 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
Console interface	1 (RJ45)
USB 2.0 interface	1
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces LAN interfaces: eight GE electrical interfaces and two Wi-Fi antenna interfaces
Extended slots (standard configuration)	1 x MIC
Environment parameters	,
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352CRB: the router is supported in V300R019C00 version. 50010485: the router is supported in V300R019C10 and later versions.

4.2.14 AR657W

Version Mapping

Table 4-89 lists the mapping between the AR657W router and software versions.

Table 4-89 Version mapping

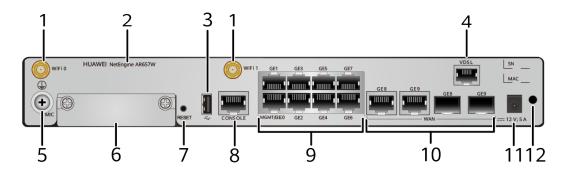
Router Model	Software Version
AR657W	V300R019C10 and later versions

Appearance and Structure

Figure 4-31 shows the appearance of the AR657W router.

Figure 4-31 AR657W appearance





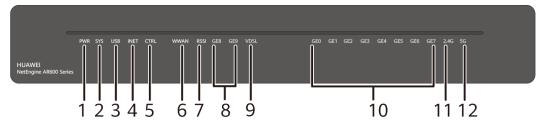
1	Two Wi-Fi antenna interfaces	2	Product model silkscreen
3	One USB 2.0 interface	4	WAN interface: VDSL interface
5	Ground point	6	One MIC slot
	NOTE		
	It is used together with a Ground Cable .		

7	RESET button	8	One console interface
	 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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button. 		
9	LAN interfaces: eight GE electrical interfaces NOTE	1 0	WAN interfaces: two GE combo interfaces NOTE
	 GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces. 		GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.
1	Power socket NOTE It is used together with a 60 W Power Adapter.	1 2	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

Indicator Description

Figure 4-32 shows the indicators on the AR657W router.

Figure 4-32 Indicators on the AR657W



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

Numbe r	Indicator	Color	Description
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
3	USB	Red and green	is resetting. 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	INET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
5	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
6	WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
7	RSSI	Green	Steady on: The 4G/3G/2G signal strength is high. Fast blinking: The 4G/3G/2G signal strength is medium. Slow blinking: The 4G/3G/2G signal strength is low. Off: No 4G/3G/2G signal is available.

Numbe r	Indicator	Color	Description
8	GE combo interface	Green	Steady on: A link has been established on the corresponding GE combo interface.
	indicator (GE8 and GE9)		Blinking: Data is being transmitted or received on the corresponding GE combo interface.
			Off: No link is established on the corresponding GE combo interface.
9	VDSL interface	Green	Steady on: A link has been established on the corresponding VDSL interface.
	indicator (LINK)		Blinking: A link is activating on the corresponding VDSL interface.
			Off: No link is established on the corresponding VDSL interface.
10	LAN (GE0 to GE7)	Green	Steady on: A link has been established on the corresponding LAN interface.
			Blinking: Data is being transmitted or received on the corresponding LAN interface.
			Off: No link is established on the corresponding LAN interface.
11	WLAN 2.4G (effective when	Green	Steady on: A WLAN link has been established on the corresponding interface.
	working on the 2.4 GHz band)		Blinking: The WLAN link is transmitting data.
			Off: The WLAN link is shut down.
12	WLAN 5G (effective when	Green	Steady on: A WLAN link has been established on the corresponding interface.
	working on the 5 GHz band)		Blinking: The WLAN link is transmitting data.
	Dariu)		Off: The WLAN link is shut down.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 4-90** lists attributes of the console interface.

Table 4-90 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-91** lists attributes of a GE electrical interface.

Table 4-91 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	8.3.1 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:

- FE SFP/eSFP Optical Module
- GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

USB 2.0 Interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-92** lists attributes of a USB interface.

Table 4-92 USB interface attributes

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

Wi-Fi Antenna Interface

□ NOTE

If the router uses channels 12 and 13 of the 2.4 GHz band to provide Wi-Fi service, connect an LTE remote antenna to the router.

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-93** lists attributes of a Wi-Fi antenna interface.

Table 4-93 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	866.6 Mbit/s
MIMO mode (Tx x Rx)	2x2
Gain	2.15 dBi/3.0 dBi
Cable type	Wi-Fi Whip Antenna

VDSL Interface

■ NOTE

Only the VDSL over POTS is supported.

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 4-94** lists attributes of a VDSL interface.

Table 4-94 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	 ANSI T1.413 Issue 2 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 Mbi 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 Mbit/s and uplink rate of 1 Mbit/s VDSL2 35B mode (ITU-T G.993.2): downlink rate of 350 Mbit/s and uplink rate of 40 Mbit/s 	
Cable type	Universal Telephone Cable	

Technical Specifications

Table 4-95 lists technical specifications of the AR657W router.

Table 4-95 AR657W technical specifications

Item	Specification	
System parameters		
Processor	Quad-core, 1.4 GHz	
Memory	2 GB	
Flash	1 GB	
	To view the available memory size, run the dir command.	

Item	Specification		
Micro SD card	Not supported		
Built-in hard disk	Not supported		
External hard disk	Not supported		
Dimensions and weight			
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.0 mm x 300.0 mm x 220.3 mm (1.73 in. x 11.8 in. x 8.67 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.0 mm x 300.0 mm x 229.0 mm (1.73 in. x 11.8 in. x 9.02 in.) 		
Weight	1.88 kg (4.14 lb)		
Power specifications			
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz		
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz		
Maximum output current	5 A		
Maximum output power	60 W		
Power consumption			
Minimum power consumption	34 W		
Maximum power consumption	45 W		
Heat dissipation			
Fans	Built-in, unpluggable fans		
Airflow (facing the front panel)	Left to right		
Interface density			
Management interface	1 (RJ45)		
Console interface	1 (RJ45)		
USB 2.0 interface	1		
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces and one VDSL interface LAN interfaces: eight GE electrical interfaces and two Wi-Fi antenna interfaces		

Item	Specification	
Extended slots (standard configuration)	1 x MIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (590 ft16404.2 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	50010486	

4.3 AR1600 Series

4.3.1 AR1610-X6

Version Mapping

Table 4-96 lists the mapping between the AR1610-X6 router and software versions.

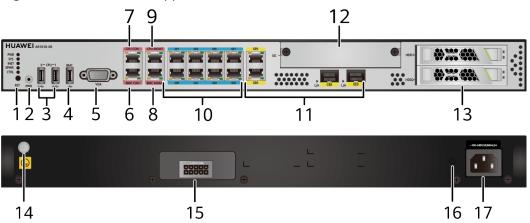
Table 4-96 Mapping between the AR1610-X6 router and software versions

Router Model	Software Version
AR1610-X6	V300R003C00 to V300R019C00 versions

Appearance and Structure

Figure 4-33 shows the appearance of the AR1610-X6 router.

Figure 4-33 AR1610-X6 appearance



1	RST button	2	Power button
	 NOTICE 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 router, hold down the button for less than 5 seconds. You can use this button 30s later after the router starts up. Resetting the router will interrupt services. Exercise caution when deciding to press this button. 		 Both the CPU and BMC are working: After you hold the button for 5 seconds, the CPU changes to the standby state, and the BMC works normally. The CPU is in power-off state and the BMC is working: After you hold the button for 2 seconds, the CPU starts to work again.
3	Two USB 3.0 interfaces (CPU)	4	One USB 2.0 interface (BMC)
5	One VGA interface	6	Console interface (BMC)
7	Console interface (CPU)		Management interface (BMC)
9	Management interface (CPU)	1 0	LAN interfaces: eight GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.
1	WAN interfaces: two GE combo interfaces	1 2	One SIC slot

1 3	Two hard disk interfaces NOTE SATA, SAS, and NVMe 2.5-inch hard drives are supported. The AR-HDD1TTS-D hard disk (BOM: 02311XKB) is recommended.	1 4	Ground point NOTE It is used together with a Ground Cable.
1 5	Extension DC power socket NOTE This is an extension power socket reserved for future use.	1 6	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.
1 7	AC power socket NOTE It is used together with an AC Power Cable.	-	-

Indicator Description

Figure 4-34 shows the indicators on the AR1610-X6 router.

Figure 4-34 Indicators on the AR1610-X6



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

Number	Indicator	Color	Description
2	SYS	Red, yellow and green	 When no USB flash drive is connected to the router, the indicator works as the SYS indicator: Slow blinking green: The router is running properly. Fast blinking green: The router is being powered on or restarting. Steady red: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually. Off: The router software is not running or is resetting. When a USB flash drive is connected to the router, the indicator works as the USB indicator. Steady green: The USB-based deployment is successful. Blinking green: The USB-based deployment has not started yet and the interface card is to be registered. Steady red: The USB-based deployment has failed. Fast blinking red (3 s): The USB-based deployment is starting or ending.
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.

Number	Indicator	Color	Description
4	EPWR	Green	Steady on: An extension power supply is present. Off: No extension power supply is connected to the router.
5	CTRL	Red and green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller- Campus does not manage the router.
6	MGMT (CPU/ BMC)	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.
 	GE electrical interface indicators		Steady on: A link has been established on the corresponding interface.
	(GE0 to GE9)		Off: No link is established on the corresponding interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding interface.
			Off: No data is being transmitted or received on the corresponding interface.
8	L/A (GE8 to GE9)	Green	Steady on: A link has been established on the corresponding GE optical interface. Blinking: Data is being transmitted or received on the corresponding GE optical
			corresponding GE optical interface. Off: The corresponding GE optical interface is not connected.

Number	Indicator	Color	Description
9	Hard disk act indicator	Green	Stead on: A hard disk is present.
			Blinking: The system is performing the read-write operation on the hard disk.
			Off: No hard disk is present.
			NOTE The ACT indicator does not blink when the read-write operation is performed on the NVMe hard drive.
10	Hard disk error	Red	Steady on: The hard disk does not work normally.
indicator	indicator		Off: The hard disk is working normally.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-97 lists attributes of the console interface.

Table 4-97 Console interface attributes

Attribute	Description		
Connector type	RJ45		
Standards compliance	RS232		
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)		
Data equipment type	Data circuit-terminating equipment (DCE)		
Cable type	Console Cable		

GE Electrical Interface

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. **Table 4-98** lists attributes of a GE electrical interface.

Table 4-98 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface cannot work in FE mode and transmits and receives services at 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

VGA Interface

A video graphics array (VGA) interface provides VGA video output. **Table 4-99** lists attributes of a VGA interface.

Table 4-99 VGA interface attributes

Attribute	Description	
Connector type	VGA connector	
Signal type supported	VGA signal	
Cable type	VGA Cable	

USB 2.0 Interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-100** lists attributes of a USB interface.

Table 4-100 USB interface attributes

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

USB 3.0 Interface

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-101** lists attributes of a USB 3.0 interface.

Table 4-101 USB 3.0 interface attributes

Attribute	Description		
Connector type	TYPE A		
Standards compliance	USB 3.0 and USB 2.0		
Working mode	Host		

Heat Dissipation

The AR1610-X6 router uses built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-35**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-35 Airflow



Technical Specifications

Table 4-102 lists technical specifications of the AR1610-X6 router.

Table 4-102 AR1610-X6 technical specifications

Item	Specification	
	Specification	
System parameters		
Processor	6-core, 1.9 GHz	
Memory	32 GB	
Micro SD card	Not supported	
Built-in hard disk	64 GB	
	To view the available memory size, run the dir command.	
External hard disk	Supported	
Dimensions and weight		
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442 mm x 320.5 mm (1.72 in. x 17.40 in. x 12.62 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 330.2 mm (1.72 in. x 17.4 in. x 13 in.) 	
Weight	12 kg (26.4 lb)	
Power specifications		
Rated AC input voltage	100 V to 240 V, 50/60 Hz	
Maximum AC input voltage	90 V to 264 V, 47 Hz to 63 Hz	
Maximum input current	2 A	
Maximum output power	150 W	
Dual power supply backup	Not supported	
PoE power supply	Not supported	
Power consumption (empty chassis)		
Typical power consumption	100 W	
Maximum power consumption	120 W	
Heat dissipation		

Item	Specification	
Fans	Built-in, unpluggable fans	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interfaces	2 (one RJ45 and one BMC/CPU)	
Console interfaces	2 (one RJ45 and one BMC/CPU)	
USB interfaces	USB 3.0 (CPU): 2USB 2.0 (BMC): 1	
Service interfaces	WAN interface: two GE combo interfaces LAN interfaces: eight GE electrical interfaces	
Extended slots (standard configuration)	1xSIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906ft16404.2 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	02351JVS	

4.4 AR6000 Series

4.4.1 AR6120

Version Mapping

Table 4-103 lists the mapping between the AR6120 router and software versions.

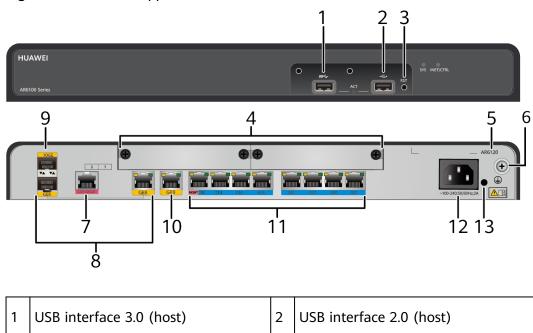
Table 4-103 Version mapping

Router Model	Software Version
AR6120	V300R003C10 and later versions

Appearance and Structure

Figure 4-36 shows the appearance of the AR6120 router.

Figure 4-36 AR6120 appearance



3	RST button	4	Two SIC slots
	 NOTE This button is used to reset the router. In an empty configuration scenario, ensure that the router has no console port input, and has no user login routers. If the Reset button is pressed and held for at least 5 seconds, you will access the registration query center of Huawei devices and obtain the cloud management platform address of routers for plug-and-play deployment. In the configured scenario, hold down the button for at least 5 seconds to restore the factory settings. To reset the router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.		
5	Product model silkscreen	6	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
7	Console interface	8	WAN interface: GE combo interface
9	WAN interface: one 10GE optical interface	1 0	WAN interface: one GE electrical interface
1	LAN interfaces: eight GE electrical interfaces NOTE GEO is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.	1 2	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
1 3	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

Slot Distribution

■ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-37 shows the slot distribution of the AR6120.

Figure 4-37 AR6120 slot distribution

Device Model		Slot Distribution	Slot Combination	
	Front view	NA	NA	
AR6120	Rear view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot	

Slot 1 and slot 2 are combined into new slot 2.

NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 30 W or contact technical support engineers to obtain more suggestions.

Indicator Description

Figure 4-38 shows the indicators on the AR6120 router.

Figure 4-38 Indicators on the AR6120





Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking 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 and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	iNET/CTRL	Green	Steady on: The device has been connected to the cloud management platform.
			Blinking: The plug-and-play deployment (via the registration center) is in progress.
			Off: The device is not connected to the cloud management platform.
4	GE optical interface indicator (GE8/10GE)	Green	Steady on: A link has been established on the corresponding GE/10GE interface.
			Off: No link is established on the interface.

Number	Indicator	Color	Description
	Yellow	Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
5	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established on the corresponding GE interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
6	GE electrical interface indicator (LAN)	Green	Steady on: A link has been established on the corresponding GE interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-104** lists attributes of a console interface.

Table 4-104 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	Console Cable	

GE Electrical Interface

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. **Table 4-105** lists attributes of a GE electrical interface.

Table 4-105 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

◯ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

10GE Optical Interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 4-106** lists attributes of a 10GE optical interface.

Table 4-106 10GE optical interface attributes

Attribute	Description	
Connector type	LC/PC	
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.	
Standards compliance	IEEE802.3ae	

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-107** lists attributes of a USB 3.0 interface.

Table 4-107 USB 3.0 interface attributes

Attribute	Description		
Connector type	Type A		
Standards compliance	USB 3.0 and USB 2.0		
Working mode	Host		

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-108** lists attributes of a USB interface.

Table 4-108 USB interface attributes

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

Heat Dissipation

The AR6120 router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-39**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-39 Airflow



Technical Specifications

Table 4-109 lists technical specifications of the AR6120 router.

Table 4-109 Technical specifications of the AR6120 router

Item	Specification		
System parameters			
Processor	Quad-core, 1.4 GHz		
Memory	2 GB		
Flash	512 MB		
	To view the available memory size, run the dir command.		
Micro SD card	Not supported		
Built-in hard disk	Not supported		
External hard disk	Not supported		
Dimensions and weight			
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 390.0 mm x 229.8 mm (1.75 in. x 15.35 in. x 9.05 in.) 		
	Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 390.0 mm x 234.6 mm (1.75 in. x 15.35 in. x 9.24 in.)		
Weight	2.9 kg (6.39 lb)		
Power specifications			
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz		

Item	Specification	
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz	
Maximum input current	2 A	
Maximum output power	60 W	
Dual power supply backup	Not supported	
PoE power supply	Not supported	
Power consumption		
Minimum power consumption	17 W	
Maximum power consumption	20 W	
Heat dissipation		
Fans	Built-in, unpluggable fans	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interface	1 (RJ45)	
CON/AUX interfaces	1 (RJ45)	
USB 3.0 interface	1	
USB 2.0 interface	1	
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one 10GE optical interface, and one GE electrical interface LAN interfaces: eight GE electrical interfaces	
Extended slots (standard configuration)	2 × SIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	02352CQW	

4.4.2 AR6120-VW

Version Mapping

Table 4-110 lists the mapping between the AR6120-VW router and software versions.

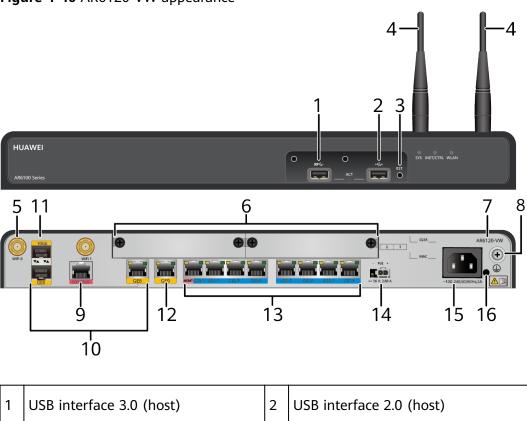
Table 4-110 Version mapping

Router Model	Software Version	
AR6120-VW	V300R019C00 and later versions	

Appearance and Structure

Figure 4-40 shows the appearance of the AR6120-VW router.

Figure 4-40 AR6120-VW appearance



3	RST button	4	Two Wi-Fi antennas
	 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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button. 		
5	Two Wi-Fi antenna interfaces	6	Two SIC slots
7	Product model silkscreen	8	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
9	Console interface	1 0	WAN interface: GE combo interface
1	WAN interface: one 10GE optical interface	1 2	WAN interface: one GE electrical interface
1 3	LAN interfaces: eight GE electrical interfaces NOTE GEO is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.	1 4	PoE power jack NOTE The PoE power jack connects to a 150 W PoE Power Adapter with an Adapter Cable to provide power for PDs (such as IP phones, WLAN APs, and cameras) connected to FE interfaces of the router.
1 5	AC power jack NOTE Use an AC power cable to connect the router to an external power source.	1 6	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.

Slot Distribution

◯ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-41 shows the slot distribution of the AR6120-VW router.

Figure 4-41 Slot distribution of the AR6120-VW router

Device Mod	el	Slot Distribution	Slot Combination
	Front view	NA	NA
AR6120-VW	Rear view	2(SIC) : 1(SIC)	Two SIC slots are combined into one WSIC slot
		2(3/6) ; 1(3/6)	2(11312)

• Slot 1 and slot 2 are combined into new slot 2.

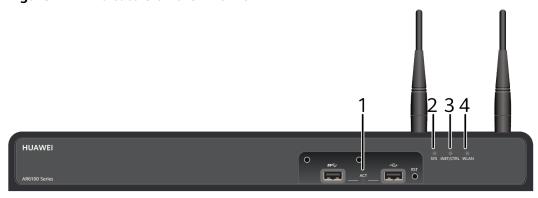
NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 30 W or contact technical support engineers to obtain more suggestions.

Indicator Description

Figure 4-42 shows the indicators on the AR6120-VW router.

Figure 4-42 Indicators on the AR6120-VW





Number	Indicator	Color	Description
1	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking 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 and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	iNET/CTRL	Green	Steady on: The controller has been connected.
			Slow blinking: The protocol on the WAN interface is UP but the controller is not connected.
			Off: The protocol on the WAN interface is not UP.
4	WLAN	AN Green	Steady on: A WLAN link has been established on the corresponding interface.
			Blinking: The WLAN link is transmitting data.
			Off: The WLAN link has not been established or is inactive.

Number	Indicator	Color	Description
5	GE optical interface indicator (GE8/10GE)	Green	Steady on: A link has been established on the corresponding GE/10GE interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
6	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established on the corresponding GE interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
7	GE electrical interface indicator (LAN)	Green	Steady on: A link has been established on the corresponding GE interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-111** lists attributes of a console interface.

Table 4-111 Console interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-112** lists attributes of a GE electrical interface.

Table 4-112 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, IEEE802.3at
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	8.3.1 Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an Ethernet Cable.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

■ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

10GE Optical Interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 4-113** lists attributes of a 10GE optical interface.

Table 4-113 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-114** lists attributes of a USB 3.0 interface.

Table 4-114 USB 3.0 interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-115** lists attributes of a USB interface.

Table 4-115 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0

Attribute	Description
Working mode	Host

Wi-Fi Antenna Interface

A Wi-Fi antenna interface connects to a Wi-Fi antenna to transmit and receive data. **Table 4-116** lists attributes of a Wi-Fi antenna interface.

Table 4-116 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	1166 Mbit/s	
MIMO mode (Tx x Rx)	2x2	
Gain	2.15 dBi/3.0 dBi	
Cable type	Wi-Fi Whip Antenna	

Heat Dissipation

The AR6120-VW router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-43**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-43 Airflow



Technical Specifications

Table 4-117 lists technical specifications of the AR6120-VW router.

Table 4-117 AR6120-VW technical specifications

Item	Specification
System parameters	
Processor	Quad-core, 1.4 GHz
Memory	2 GB
Flash	1 GB To view the available memory size, run the dir command.
Micro SD card	Not supported
Built-in hard disk	Not supported
External hard disk	Not supported
Dimensions and weight	
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 390.0 mm x 229.8 mm (1.75 in. x 15.35 in. x 9.05 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 390.0 mm x 239 mm (1.75 in. x 15.35 in. x 9.41 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
Dual power supply backup	Not supported
PoE power supply	Supported (interfaces GE0 to GE7)
Power consumption	
Minimum power consumption	21 W
Maximum power consumption	30 W

Item	Specification
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 2.0 interface	1
USB 3.0 interface	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one 10GE optical interface, and one GE electrical interface LAN interfaces: eight GE electrical interfaces
Extended slots (standard configuration)	2 × SIC
DSP DIMM slot	Supported
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352CQY

4.4.3 AR6121

Version Mapping

Table 4-118 lists the mapping between the AR6121 router and software versions.

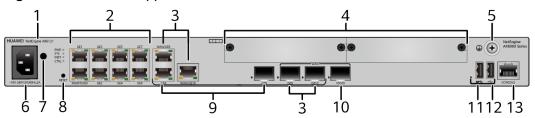
Table 4-118 Version mapping

Router Model	Software Version
AR6121	V300R019C10 and later versions

Appearance and Structure

Figure 4-44 shows the appearance of the AR6121 router.

Figure 4-44 AR6121 appearance



1	Product model silkscreen	2	LAN interfaces: eight GE electrical interfaces
			GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be
3	WAN interfaces: two GE combo interfaces	4	configured as WAN interfaces. Two SIC slots
5	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	6	AC power jack NOTE Use an AC power cable to connect the router to an external power source.

7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	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 router, hold down the
			button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
9	LAN interfaces: GE combo interface NOTE GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.	1 0	WAN interface: one 10GE optical interface
1	USB interface 3.0 (host)	1 2	USB interface 2.0 (host)
1	Console interface	-	-

Slot Distribution

■ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-45 shows the slot distribution of the AR6121

Figure 4-45 AR6121 slot distribution

Device Mod	Device Model Slot Distribution		Slot Combination
	Rear view	NA	NA
AR6121	Front		Two SIC slots are combined into one WSIC slot
	view	2(SIC) 1(SIC)	2(WSIC)

• Slot 1 and slot 2 are combined into new slot 2.

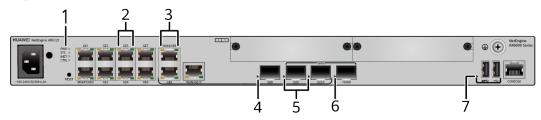
NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 29 W or contact technical support engineers to obtain more suggestions.

Indicator Description

Figure 4-46 shows the indicators on the AR6121 router.

Figure 4-46 Indicators on the AR6121



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.
	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
	INET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.

Number	Indicator	Color	Description
	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller- Campus does not manage the router.
2 GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the corresponding GE interface. Off: No link is established on the interface.	
		Yellow	Blinking: Data is being transmitted over the link. Off: No data is being transmitted or received.
int	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established on the corresponding GE interface. Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link. Off: No data is being transmitted or received.
4	GE optical interface indicator (LAN)	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 on the interface.
5	GE optical interface indicator (WAN)	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 on the interface.

Number	Indicator	Color	Description
6	10GE optical interface indicator (WAN)	Green	Steady on: A link has been established on the corresponding 10GE interface. Blinking: Data is being transmitted over the link. Off: No link is established on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-119** lists attributes of a console interface.

Table 4-119 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	Console Cable

GE Electrical Interface

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. **Table 4-120** lists attributes of a GE electrical interface.

Table 4-120 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an Ethernet Cable.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

10GE Optical Interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 4-121** lists attributes of a 10GE optical interface.

Table 4-121 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-122** lists attributes of a USB 3.0 interface.

Table 4-122 USB 3.0 interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-123** lists attributes of a USB interface.

Table 4-123 USB interface attributes

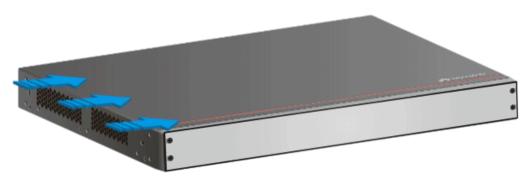
Attribute	Description	
Connector type	Type A	
Standards compliance	USB2.0	
Working mode	Host	

Heat Dissipation

The AR6121 router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-47**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-47 Airflow



Technical Specifications

Table 4-124 lists technical specifications of the AR6121 router.

Table 4-124 Technical specifications of the AR6121 router

Item	Specification		
System parameters	•		
Processor	Quad-core, 1.4 GHz		
Memory	2 GB		
Flash	1 GB To view the available memory size, run the dir command.		
Micro SD card	Not supported		
Built-in hard disk	Not supported		
External hard disk	Not supported		
Dimensions and weight			
Dimensions (H x W x D)	Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 220.4 mm (1.75 in. x 17.41 in. x 8.68 in.)		
	• Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 225.2 mm (1.75 in. x 17.41 in. x 8.87 in.)		
Weight	3.2 kg (7.04 lb)		
Power specifications			

Item	Specification		
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz		
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz		
Maximum input current	2 A		
Maximum output power	60 W		
Dual power supply backup	Not supported		
PoE power supply	Not supported		
Power consumption			
Minimum power consumption	18 W		
Maximum power consumption	31 W		
Heat dissipation			
Fans	Built-in, unpluggable fans		
Airflow (facing the front panel)	Left to right		
Interface density			
Management interface	1 (RJ45)		
CON/AUX interfaces	1 (RJ45)		
USB 3.0 interface	1		
USB 2.0 interface	1		
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces and one 10GE optical interface LAN interfaces: one GE combo		
	interface and eight GE electrical interfaces		
Extended slots	2 × SIC		
Environment parameters			
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)		
Operating relative humidity	5% to 95%, noncondensing		
Operating altitude	< 5000 m (16404.2 ft.)		

Item	Specification	
Part number	02353BVK	

4.4.4 AR6121K

Version Mapping

Table 4-125 lists the mapping between the AR6121K router and software versions.

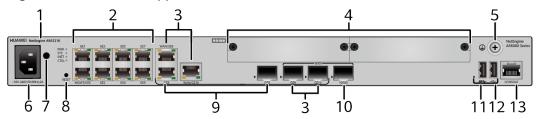
Table 4-125 Version mapping

Router Model	Software Version
AR6121K	V300R019C11 and later versions

Appearance and Structure

Figure 4-48 shows the appearance of the AR6121K router.

Figure 4-48 AR6121K appearance



1	Product model silkscreen	2	LAN interfaces: eight GE electrical interfaces
			NOTE
			 GE0 is the management network port on a device. It can implement web-based network management and email-based deployment.
			 All GE LAN interfaces can be configured as WAN interfaces.
3	WAN interfaces: two GE combo interfaces	4	Two SIC slots

5	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	6	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
9	LAN interfaces: GE combo interface NOTE GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.	1 0	WAN interface: one 10GE optical interface
1 1	USB interface 3.0 (host)	1 2	USB interface 2.0 (host)
1	Console interface	-	-

Slot Distribution

◯ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-49 shows the slot distribution of the AR6121K

Figure 4-49 AR6121K slot distribution

Device Model		Slot Distribution	Slot Combination
	Rear view		NA
AR6121K	Front view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot

• Slot 1 and slot 2 are combined into new slot 2.

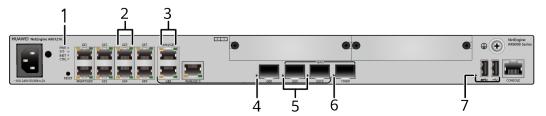
NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 29 W or contact technical support engineers to obtain more suggestions.

Indicator Description

Figure 4-50 shows the indicators on the AR6121K router.

Figure 4-50 Indicators on the AR6121K



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally.
			Off: The router is not powered on.

Number	Indicator	Color	Description
	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
	INET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-
			Campus does not manage the router.
2	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the corresponding GE interface. Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
3	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established on the corresponding GE interface.
			Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.

Number	Indicator	Color	Description
4	GE optical interface indicator	Green	Steady on: A link has been established on the corresponding GE interface.
	(LAN)		Blinking: Data is being transmitted over the link.
			Off: No link is established on the interface.
5	GE optical interface indicator	Green	Steady on: A link has been established on the corresponding GE interface.
	(WAN)		Blinking: Data is being transmitted over the link.
			Off: No link is established on the interface.
6	10GE optical interface indicator (WAN)		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 on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-126** lists attributes of a console interface.

Table 4-126 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	Console Cable

GE Electrical Interface

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. **Table 4-127** lists attributes of a GE electrical interface.

Table 4-127 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:

- FE SFP/eSFP Optical Module
- GE eSFP Optical Module

■ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

10GE Optical Interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 4-128** lists attributes of a 10GE optical interface.

Table 4-128 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-129** lists attributes of a USB 3.0 interface.

Table 4-129 USB 3.0 interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-130** lists attributes of a USB interface.

Table 4-130 USB interface attributes

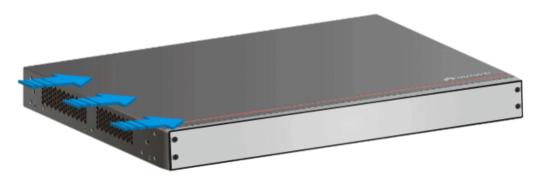
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR6121K router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-51**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-51 Airflow



Technical Specifications

Table 4-131 lists technical specifications of the AR6121K router.

Table 4-131 Technical specifications of the AR6121K router

Item	Specification	
System parameters		
Processor	Quad-core, 1.4 GHz	
Memory	2 GB	
Flash	1 GB	
	To view the available memory size, run the dir command.	

Item	Specification	
Micro SD card	Not supported	
Built-in hard disk	Not supported	
External hard disk	Not supported	
Dimensions and weight		
Dimensions (H x W x D)	Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 220.4 mm (1.75 in. x 17.41 in. x 8.68 in.) Manieum dimensions (the death is	
	 Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 225.2 mm (1.75 in. x 17.41 in. x 8.87 in.) 	
Weight	3.2 kg (7.04 lb)	
Power specifications		
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz	
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz	
Maximum input current	2 A	
Maximum output power	60 W	
Dual power supply backup	Not supported	
PoE power supply	Not supported	
Power consumption		
Minimum power consumption	18 W	
Maximum power consumption	31 W	
Heat dissipation		
Fans	Built-in, unpluggable fans	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interface	1 (RJ45)	
CON/AUX interfaces	1 (RJ45)	
USB 3.0 interface	1	
USB 2.0 interface	1	

Item	Specification
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces and one 10GE optical interface
	LAN interfaces: one GE combo interface and eight GE electrical interfaces
Extended slots (standard configuration)	2 × SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F)
	NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353NTK

4.4.5 AR6140-16G4XG

Version Mapping

Table 4-132 lists the mapping between the AR6140-16G4XG router and software versions.

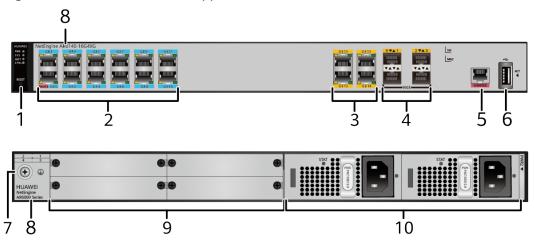
Table 4-132 Version mapping

Router Model	Software Version
AR6140-16G4XG	V300R019C00 and later versions

Appearance and Structure

Figure 4-52 shows the appearance of the AR6140-16G4XG router.

Figure 4-52 AR6140-16G4XG appearance



1	 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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button. 	2	LAN interfaces: twelve GE electrical interfaces NOTE GE0 is the management network port on a device. It can implement webbased network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.
3	WAN interfaces: four GE electrical interfaces	4	WAN interface: four 10GE optical interface
5	Console interface	6	USB interface 2.0 (host)
7	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	8	Product model silkscreen
9	Four SIC slots	1 0	Two power module slots Applicable power modules: 5.7 150 W AC Power Module

Slot Distribution

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-53 shows the slot distribution of the AR6140-16G4XG router.

Figure 4-53 Slot distribution of the AR6140-16G4XG router

Device Model	l	Slot Distribution	Slot Combination
	Front view	NA	NA
AR6140-16G4XG	Rear	2/9/5\:1/9/5\	Two SIC slots are combined into one WSIC slot
		2(SIC) 1(SIC) 4(SIC) 3(SIC) NA	2(WSIC) 4(WSIC) NA

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.

□ NOTE

When only one WSIC card is installed on the router, you can only install the WSIC card in slot 4 (combined of slot 3 and slot 4).

Indicator Description

Figure 4-54 shows the indicators on the AR6140-16G4XG router.

Figure 4-54 Indicators on the AR6140-16G4XG



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.

Number	Indicator	Color	Description
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	INET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller- Campus does not manage the router.
5 and 6	GE electrical interface indicators (GE0 to GE13)	Green	Steady on: A link has been established on the corresponding GE electrical interface. Off: No link is established on the corresponding GE electrical interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE electrical interface. Off: No data is being transmitted or received on the corresponding GE electrical interface.
	GE electrical interface indicators (GE14 to GE15)	Green	Steady on: A link has been established on the corresponding GE electrical interface. Off: No link is established on the corresponding GE electrical interface.

Number	Indicator	Color	Description
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE electrical interface.
			Steady on: No data is being transmitted or received on the corresponding GE electrical interface.
7 and 8	10GE optical interface indicators (10GE0 to	Green	Steady on: A link has been established on the corresponding 10GE optical interface.
10GE3)		Off: No link is established on the corresponding 10GE optical interface.	
		Yellow	Blinking: Data is being transmitted or received on the corresponding 10GE optical interface.
			Off: No data is being transmitted or received on the corresponding 10GE optical interface.
9	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 4-133** lists attributes of the console interface.

Table 4-133 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-134** lists attributes of a GE electrical interface.

Table 4-134 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 4-135** lists attributes of a 10GE optical interface.

Table 4-135 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC

Attribute	Description
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-136** lists attributes of a USB interface.

Table 4-136 USB interface attributes

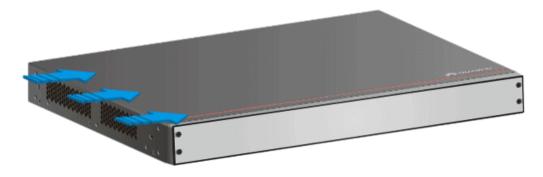
Attribute	Description
Connector type	TYPE A
Standards compliance	USB 2.0
Working mode	Host

Heat Dissipation

The AR6140-16G4XG router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-55**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-55 Airflow



Technical Specifications

Table 4-137 lists technical specifications of the AR6140-16G4XG router.

Table 4-137 AR6140-16G4XG technical specifications

Function	Description	
System parameters		
Processor	16-core, 1.85 GHz	
Memory	4 GB	
Flash	1 GB	
	To view the available memory size, run the dir command.	
Micro SD card	Not supported	
Built-in hard disk	Not supported	
External hard disk	Not supported	
Dimensions and weight		
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 428.2 mm (1.73 in. x 17.40 in. x 16.86 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 450.2 mm (1.73 in. x 17.40 in. x 17.72 in.) 	
Weight	7.85 kg (17.27 lb)	
Power specifications		
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz	
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz	
Maximum input current	3 A	
Maximum output power	150 W	
Dual power supply backup	Supported	
PoE power supply	Not supported	
Power consumption (empty chassis)		
Typical power consumption	41 W	
Maximum power consumption	60 W	
Heat dissipation		
Fans	Built-in, unpluggable fans	

Function	Description	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interface	1 (RJ45)	
CON/AUX interfaces	1 (RJ45)	
USB 2.0 interface	1	
Service interfaces (standard configuration)	LAN interfaces: twelve GE electrical interfaces	
	WAN interfaces: four GE electrical interfaces and four 10GE optical interfaces	
Extended slots (standard configuration)	4 × SIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	02352MQU	

4.4.6 AR6140-9G-2AC

Version Mapping

Table 4-138 lists the mapping between the AR6140-9G-2AC router and software versions.

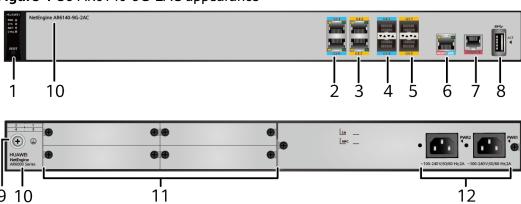
Table 4-138 Version mapping

Router Model	Software Version
AR6140-9G-2AC	V300R019C00 and later versions

Appearance and Structure

Figure 4-56 shows the appearance of the AR6140-9G-2AC router.

Figure 4-56 AR6140-9G-2AC appearance



			,
1	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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	2	LAN interface: two GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.
3	WAN interfaces: two GE electrical interfaces	4	LAN interfaces: two GE optical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.
5	WAN interfaces: two GE optical interfaces	6	LAN interface: one GE electrical interface NOTE GE8 is the management network port on a device. It can implement webbased network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.
7	Console interface	8	USB interface 3.0 (host)

9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	1 0	Product model silkscreen
1	Four SIC slots	1 2	 Two AC power jacks NOTE Support double power supply (1:1 backup). Use an AC power cable to connect the router to an external power source.

Slot Distribution

Figure 4-57 shows the slot distribution of the AR6140-9G-2AC router.

Figure 4-57 Slot distribution of the AR6140-9G-2AC router

Device Model		Slot Distribution	Slot Combination
	Front view	NA	NA
AR6140-9G-2AC	Rear		Two SIC slots are combined into one WSIC slot
	view	2(SIC) 1(SIC) 4(SIC) 3(SIC) NA	2(WSIC) NA

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.

When only one WSIC card is installed on the router, you can only install the WSIC card in slot 4 (combined of slot 3 and slot 4).

NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 28 W/38 W or contact technical support engineers to obtain more suggestions.

- If the output of the **display power** command shows that the power is 60 W, ensure that the total power of the boards is not greater than 28 W.
- If the output of the **display power** command shows that the power is 70 W, ensure that the total power of the boards is not greater than 38 W.

Indicator Description

Figure 4-58 shows the indicators on the AR6140-9G-2AC router.

Figure 4-58 Indicators on the AR6140-9G-2AC



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	INET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller- Campus does not manage the router.

Number	Indicator	Color	Description
5 and 6	GE electrical interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding GE electrical interface. Off: No link is established on the corresponding GE electrical interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE electrical interface.
			Off: No data is being transmitted or received on the corresponding GE electrical interface.
7 and 8	GE optical interface indicators (GE4 to GE7)	Green	Steady on: A link has been established on the corresponding GE optical interface.
			Off: No link is established on the corresponding GE optical interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE optical interface.
			Off: No data is being transmitted or received on the corresponding GE optical interface.
9	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-139 lists attributes of the console interface.

Table 4-139 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-140** lists attributes of a GE electrical interface.

Table 4-140 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Optical Interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 4-141** lists attributes of a GE optical interface.

Table 4-141 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see FE SFP/eSFP Optical Module and GE eSFP Optical Modules.
Standards compliance	IEEE 802.3z

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-142** lists attributes of a USB 3.0 interface.

Table 4-142 USB 3.0 interface attributes

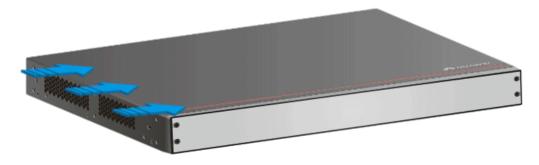
Attribute	Description
Connector type	TYPE A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

Heat Dissipation

The AR6140-9G-2AC router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-59**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-59 Airflow



Technical Specifications

Table 4-143 lists technical specifications of the AR6140-9G-2AC router.

Table 4-143 AR6140-9G-2AC technical specifications

mory 2 sh 1	Quad-core, 1.4 GHz 2 GB 1 GB To view the available memory size, run the dir command.	
mory 2 sh 1	2 GB 1 GB To view the available memory size, run	
sh 1	1 GB To view the available memory size, run	
	To view the available memory size, run	
ro SD card N	Not supported	
lt-in hard disk N	Not supported	
ernal hard disk N	Not supported	
nensions and weight		
nensions (H x W x D) •	 Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 428.2 mm (1.73 in. x 17.4 in. x 16.86 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 431.2 mm (1.73 in. x 17.4 in. x 16.98 in.) 	
ight 7	7.6 kg (16.72 lb)	
ver specifications		
ed input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz	
ximum input voltage range (AC) 9	90 V to 264 V, 47 Hz to 63 Hz	
ximum input current 2	2 A	
ximum output power 6	60 W/70 W	
p	To view the available maximum output power, run the display power command.	
al power supply backup S	Supported	
power supply N	Not supported	
Power consumption (empty chassis)		
nimum power consumption 1	18 W	
ximum power consumption 3	32 W	

Function	Description
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 3.0 interface	1
Service interfaces (standard configuration)	LAN interfaces: three GE electrical interfaces and two GE optical interfaces WAN interfaces: two GE electrical interfaces and two GE optical interfaces
Extended slots (standard configuration)	4 × SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352UNK

4.4.7 AR6140K-9G-2AC

Version Mapping

Table 4-144 lists the mapping between the AR6140K-9G-2AC router and software versions.

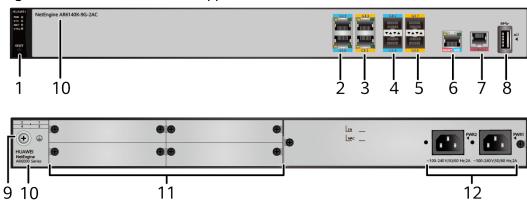
Table 4-144 Version mapping

Router Model	Software Version
AR6140K-9G-2AC	V300R019C11 and later versions

Appearance and Structure

Figure 4-60 shows the appearance of the AR6140K-9G-2AC router.

Figure 4-60 AR6140K-9G-2AC appearance



			<u> </u>
1	RESET button NOTE	2	LAN interface: two GE electrical interfaces
	This button is used to reset the router.		NOTE
	 To restore the factory settings, hold down the button for at least 5 seconds. 		All GE LAN interfaces can be configured as WAN interfaces.
	 To reset the router, hold down the button for less than 5 seconds. 		
	Resetting the router will interrupt services. Exercise caution when deciding to press this button.		
3	WAN interfaces: two GE electrical interfaces	4	LAN interfaces: two GE optical interfaces
			NOTE
			All GE LAN interfaces can be configured as WAN interfaces.

5	WAN interfaces: two GE optical interfaces	6	LAN interface: one GE electrical interface NOTE GE8 is the management network port on a device. It can implement webbased network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.
7	Console interface	8	USB interface 3.0 (host)
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	1 0	Product model silkscreen
1	Four SIC slots	1 2	Two AC power jacks NOTE Support double power supply (1:1 backup). Use an AC power cable to connect the router to an external power source.

Slot Distribution

Figure 4-61 shows the slot distribution of the AR6140K-9G-2AC router.

Figure 4-61 Slot distribution of the AR6140K-9G-2AC router

Device Model		Slot Distribution	Slot Combination
	Front view	NA	NA
AR6140K-9G-2AC	Kear		Two SIC slots are combined into one WSIC slot
	view	2(SIC) 1(SIC) NA 4(SIC) 3(SIC)	2(WSIC) NA

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.

MOTE

When only one WSIC card is installed on the router, you can only install the WSIC card in slot 4 (combined of slot 3 and slot 4).

NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 38 W or contact technical support engineers to obtain more suggestions.

Indicator Description

Figure 4-62 shows the indicators on the AR6140K-9G-2AC router.

Figure 4-62 Indicators on the AR6140K-9G-2AC



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	INET	Green	Steady on: The network service has been established. Off: The network service is unavailable.

Number	Indicator	Color	Description
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller- Campus does not manage the router.
5 and 6	GE electrical interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding GE electrical interface. Off: No link is established on the corresponding GE electrical interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE electrical interface. Off: No data is being transmitted or received on the corresponding GE electrical interface.
7 and 8	GE optical interface indicators (GE4 to GE7)	Green	Steady on: A link has been established on the corresponding GE optical interface. Off: No link is established on the corresponding GE optical interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE optical interface. Off: No data is being transmitted or received on the corresponding GE optical interface.

Number	Indicator	Color	Description
9	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. Table 4-145 lists attributes of the console interface.

Table 4-145 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-146** lists attributes of a GE electrical interface.

Table 4-146 GE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Optical Interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 4-147** lists attributes of a GE optical interface.

Table 4-147 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see FE SFP/eSFP Optical Module and GE eSFP Optical Modules.
Standards compliance	IEEE 802.3z

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-148** lists attributes of a USB 3.0 interface.

Table 4-148 USB 3.0 interface attributes

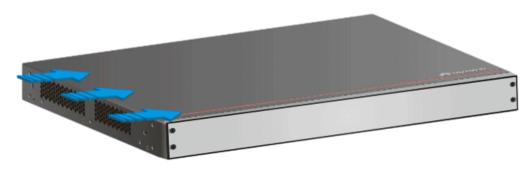
Attribute	Description
Connector type	TYPE A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

Heat Dissipation

The AR6140K-9G-2AC router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-63**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-63 Airflow



Technical Specifications

Table 4-149 lists technical specifications of the AR6140K-9G-2AC router.

Table 4-149 AR6140K-9G-2AC technical specifications

Function	Description		
System parameters			
Processor	Quad-core, 1.4 GHz		
Memory	2 GB		
Flash	1 GB		
	To view the available memory size, run the dir command.		
Micro SD card	Not supported		
Built-in hard disk	Not supported		
External hard disk	Not supported		
Dimensions and weight			

Function	Description		
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 428.2 mm (1.73 in. x 17.4 in. x 16.86 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 431.2 mm (1.73 in. x 17.4 in. x 16.98 in.) 		
Weight	7.6 kg (16.72 lb)		
Power specifications			
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz		
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz		
Maximum input current	2 A		
Maximum output power	70 W		
Dual power supply backup	Supported		
PoE power supply	Not supported		
Power consumption (empty chassis)			
Minimum power consumption	18 W		
Maximum power consumption	32 W		
Heat dissipation			
Fans	Built-in, unpluggable fans		
Airflow (facing the front panel)	Left to right		
Interface density			
Management interface	1 (RJ45)		
CON/AUX interfaces	1 (RJ45)		
USB 3.0 interface	1		
Service interfaces (standard configuration)	LAN interfaces: three GE electrical interfaces and two GE optical interfaces WAN interfaces: two GE electrical interfaces and two GE optical interfaces		
Extended slots (standard configuration)	4 × SIC		

Function	Description
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353NTJ

4.4.8 AR6280

Version Mapping

Table 4-150 lists the mapping between the AR6280 router and software versions.

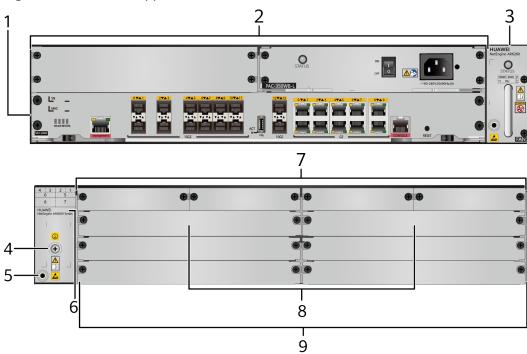
Table 4-150 Mapping between the AR6280 router and software versions

Router Model	Software Version
AR6280	V300R019C00 and later versions

Appearance and Structure

Figure 4-64 shows the appearance of the AR6280 router.

Figure 4-64 AR6280 appearance



1	SRU slots	2	Two power module slots
	Applicable SRUs:		Applicable power modules:
	• SRU-100H		• 350 W AC power module
	• SRU-200H		• 350 W DC power module
	• SRU-400H		• 700 W AC power module
	• SRU-600H		• 850 W AC PoE Power Module
	• SRU-100HH		NOTE
			AC and DC power modules cannot be used together in a router.
3	Fan module slot	4	Ground point
			NOTE
			Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
5	ESD jack	6	Product model silkscreen
	NOTE		
	When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.		
7	Four SIC slots	8	Two WSIC slots

9	Two XSIC slots	-	-	
		l		

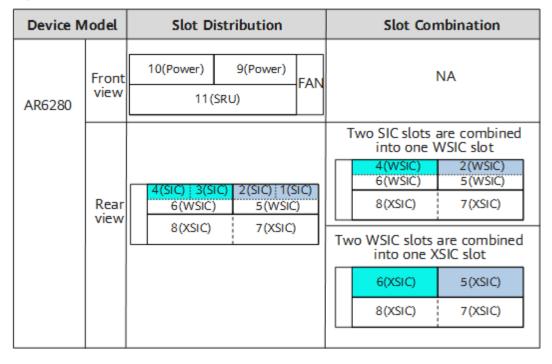
Slot Distribution

□ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 4-65 shows the slot distribution of the AR6280.

Figure 4-65 AR6280 slot distribution



- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

All the indicators seen on the AR6280 front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-66**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-66 Airflow



Technical Specifications

Table 4-151 lists the technical specifications of the AR6280 router.

Table 4-151 AR6280 router technical specifications

Item	Description
System parameters	Depending on the SRU that is used
Dimensions and weight	
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 88.1 mm x 442.0 mm x 470.0 mm (3.47 in. x 17.40 in. x 18.50 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 88.1 mm x 442.0 mm x 474.0 mm (3.47 in. x 17.40 in. x 18.66 in.)
Weight	8.85 kg (19.51 lb)

Item	Description	
Power specifications	AC input voltage	
	Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz	
	Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz	
	DC input voltage	
	 Rated input voltage: -48 V DC to -60 V DC 	
	Maximum input voltage: -38.4 V DC to -72 V DC	
Heat dissipation		
Fans	Independent pluggable fan modules	
Airflow (facing the front panel)	Left to right	
Interface density	Depending on the SRU that is used	
Extended slots (standard	• 4 x SIC	
configuration)	• 2 x WSIC	
	• 2 x XSIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F)	
	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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	02115641	

4.4.9 AR6280K

Version Mapping

Table 4-152 lists the mapping between the AR6280K router and software versions.

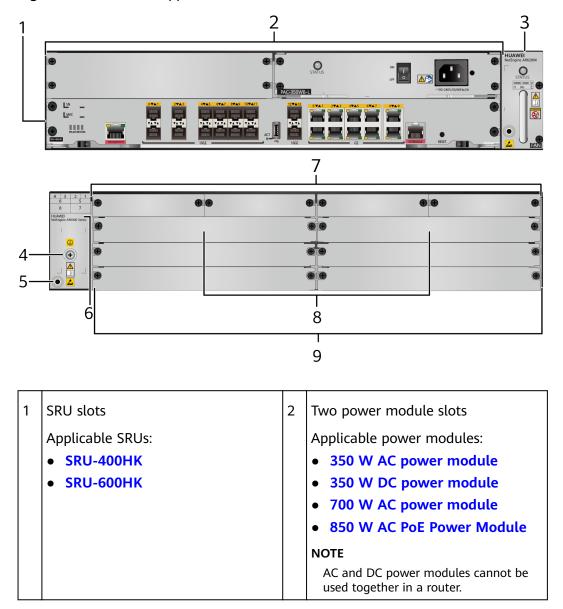
Table 4-152 Mapping between the AR6280K router and software versions

Router Model	Software Version
AR6280K	V300R019C11 and later versions

Appearance and Structure

Figure 4-67 shows the appearance of the AR6280K router.

Figure 4-67 AR6280K appearance



3	Fan module slot	4	Ground point
			NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
5	ESD jack	6	Product model silkscreen
	NOTE		
	When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.		
7	Four SIC slots	8	Two WSIC slots
9	Two XSIC slots	-	-

Slot Distribution

■ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 4-68 shows the slot distribution of the AR6280K.

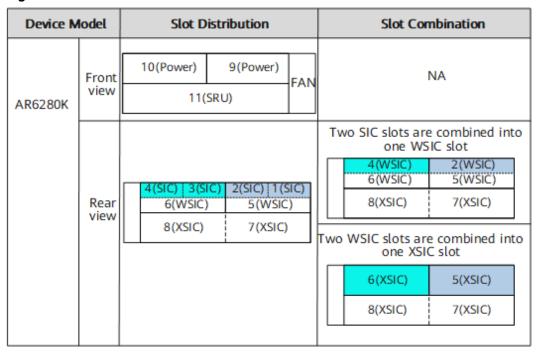


Figure 4-68 AR6280K slot distribution

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

Indicator Description

All the indicators seen on the AR6280K front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-69**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-69 Airflow



Technical Specifications

Table 4-153 lists the technical specifications of the AR6280K router.

Table 4-153 AR6280K router technical specifications

Item	Description
System parameters	Depending on the SRU that is used
Dimensions and weight	
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 88.1 mm x 442.0 mm x 470.0 mm (3.47 in. x 17.40 in. x 18.50 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 88.1 mm x 442.0 mm x 474.0 mm (3.47 in. x 17.40 in. x 18.66 in.)
Weight	8.85 kg (19.51 lb)

Item	Description	
Power specifications	AC input voltage	
	Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz	
	Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz	
	DC input voltage	
	 Rated input voltage: -48 V DC to -60 V DC 	
	Maximum input voltage: -38.4 V DC to -72 V DC	
Heat dissipation		
Fans	Independent pluggable fan modules	
Airflow (facing the front panel)	Left to right	
Interface density	Depending on the SRU that is used	
Extended slots (standard	• 4 x SIC	
configuration)	• 2 x WSIC	
	• 2 x XSIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F)	
	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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	02116205	

4.4.10 AR6300

Version Mapping

Table 4-154 lists the mapping between the AR6300 router and software versions.

Table 4-154 Mapping between the AR6300 router and software versions

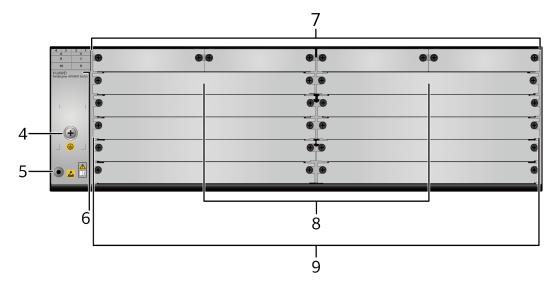
Router Model	Software Version
AR6300	V300R019C00 and later versions

Appearance and Structure

Figure 4-70 shows the appearance of the AR6300 router.

Figure 4-70 AR6300 appearance





		_	
1	Two SRU slots	2	Two power module slots
	Applicable SRUs:		Applicable power modules:
	• SRU-100H		• 350 W AC power module
	• SRU-200H		• 350 W DC power module
	• SRU-400H		• 700 W AC Power Module
	• SRU-600H		• 850 W AC PoE Power Module
	• SRU-100HH		NOTE
	NOTE The two SRUs must be of the same		AC and DC power modules cannot be used together in a router.
	model for the double SRUs scenarios, and the two SRUs of different models cannot be used together in a router.		It is recommended to configure dual power supplies for the double SRUs scenarios.
3	Fan module slot	4	Ground point
			NOTE
			Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
5	ESD jack	6	Product model silkscreen
	NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.		
7	Four SIC slots	8	Two WSIC slots
9	Four XSIC slots	-	-
		_	

Slot Distribution

□ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 4-71 shows the slot distribution of the AR6300.

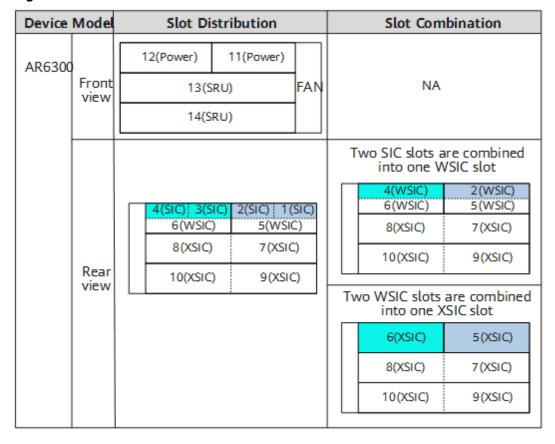


Figure 4-71 AR6300 slot distribution

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

NOTICE

If an AR6300 is equipped with the **350 W AC power module** or **350 W DC power module**, ensure that the total power of cards configured on the AR6300 does not exceed 102 W or contact technical support personnel for more suggestions.

Indicator Description

All the indicators seen on the AR6300 front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-72**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-72 Airflow



Technical Specifications

Table 4-155 lists the technical specifications of the AR6300 router.

Table 4-155 AR6300 router technical specifications

Item	Specification
System parameters	Depending on the SRU that is used
Dimensions and weight	
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 130.5 mm x 442.0 mm x 470.0 mm (5.14 in. x 17.40 in. x 18.50 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 130.5 mm x 442.0 mm x 494.7 mm (5.14 in. x 17.40 in. x 19.48 in.)
Weight	11 kg (24.25 lb)

Item	Specification
Power specifications	AC input voltage
	Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz
	Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz
	DC input voltage
	Rated input voltage: -48 V DC to -60 V DC
	Maximum input voltage: -38.4 V DC to -72 V DC
Heat dissipation	
Fans	Independent pluggable fan modules
Airflow (facing the front panel)	Left to right
Interface density	Depending on the SRU that is used
Extended slots (standard	• 4 x SIC
configuration)	• 2 x WSIC
	• 4 x XSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	AR6300: 02115640 (supported in V300R019C00 and later versions)
	AR6300-2SRU-400H equipped with two SRU-400H cards: 02353SPB (supported in V300R019C11 and later versions)
	AR6300-2SRU-600H equipped with two SRU-600H cards: 02353SPC (supported in V300R019C11 and later versions)

4.4.11 AR6300K

Version Mapping

Table 4-156 lists the mapping between the AR6300K router and software versions.

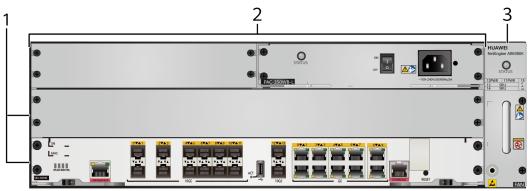
Table 4-156 Mapping between the AR6300K router and software versions

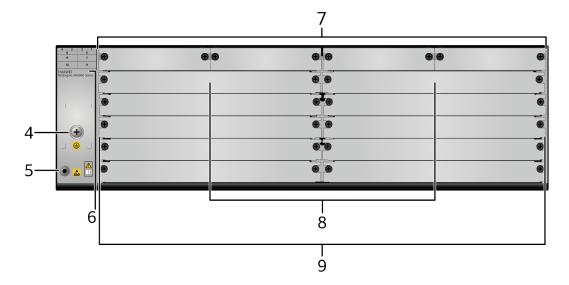
Router Model	Software Version
AR6300K	V300R019C11 and later versions

Appearance and Structure

Figure 4-73 shows the appearance of the AR6300K router.

Figure 4-73 AR6300K appearance





1	Two SRU slots	2	Two power module slots
	Applicable SRUs:		Applicable power modules:
	• SRU-400HK		• 350 W AC power module
	• SRU-600HK		• 350 W DC power module
	NOTE		• 700 W AC Power Module
	The two SRUs must be of the same		• 850 W AC PoE Power Module
	model for the double SRUs scenarios, and the two SRUs of different models		NOTE
	cannot be used together in a router.		AC and DC power modules cannot be used together in a router.
			It is recommended to configure dual power supplies for the double SRUs scenarios.
3	Fan module slot	4	Ground point
			NOTE
			Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
5	ESD jack	6	Product model silkscreen
	NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.		
7	Four SIC slots	8	Two WSIC slots
9	Four XSIC slots	-	-

Slot Distribution

□ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 4-74 shows the slot distribution of the AR6300K.

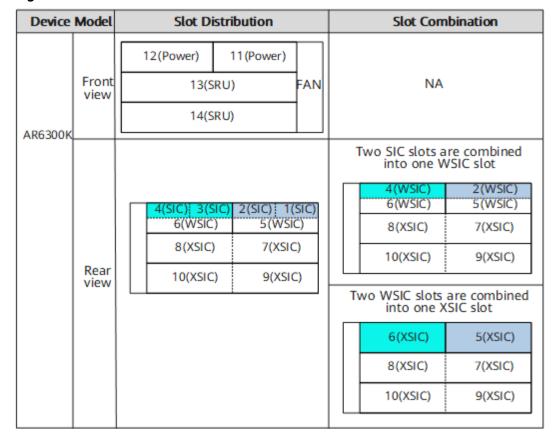


Figure 4-74 AR6300K slot distribution

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

NOTICE

If an AR6300K is equipped with the **350 W AC power module** or **350 W DC power module**, ensure that the total power of cards configured on the AR6300K does not exceed 102 W or contact technical support personnel for more suggestions.

Indicator Description

All the indicators seen on the AR6300K front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-75**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-75 Airflow



Technical Specifications

Table 4-157 lists the technical specifications of the AR6300K router.

Table 4-157 AR6300K router technical specifications

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Item	Specification	
System parameters	Depending on the SRU that is used	
Dimensions and weight		
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 130.5 mm x 442.0 mm x 470.0 mm (5.14 in. x 17.40 in. x 18.50 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 130.5 mm x 442.0 mm x 494.7 mm (5.14 in. x 17.40 in. x 19.48 in.) 	
Weight	11 kg (24.25 lb)	

Item	Specification
Power specifications	AC input voltage
	Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz
	Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz
	DC input voltage
	 Rated input voltage: -48 V DC to -60 V DC
	Maximum input voltage: -38.4 V DC to -72 V DC
Heat dissipation	
Fans	Independent pluggable fan modules
Airflow (facing the front panel)	Left to right
Interface density	Depending on the SRU that is used
Extended slots (standard	• 4 x SIC
configuration)	• 2 x WSIC
	• 4 x XSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F)
	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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02116206

4.5 AR6000-S Series

4.5.1 AR6120-S

Version Mapping

Table 4-158 lists the mapping between the AR6120-S router and software versions.

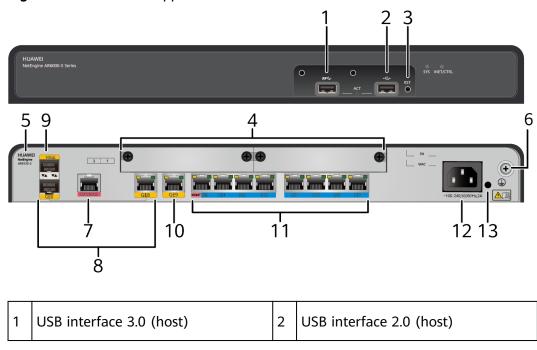
Table 4-158 Version mapping

Router Model	Software Version
AR6120-S	V300R019C00 and later versions

Appearance and Structure

Figure 4-76 shows the appearance of the AR6120-S router.

Figure 4-76 AR6120-S appearance



3	RST button		Two SIC slots
	 NOTE This button is used to reset the router. In an empty configuration scenario, ensure that the router has no console port input, and has no user login routers. If the Reset button is pressed and held for at least 5 seconds, you will access the registration query center of Huawei devices and obtain the cloud management platform address of routers for plug-and-play deployment. In the configured scenario, hold down the button for at least 5 seconds to restore the factory settings. To reset the router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.		
5	Product model silkscreen	6	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
7	Console interface	8	WAN interface: GE combo interface
9	WAN interface: one 10GE optical interface	1 0	WAN interface: one GE electrical interface
1	LAN interfaces: eight GE electrical interfaces NOTE GEO is the management network port on a device. It can implement web-based network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.	1 2	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
1 3	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	-	-

Slot Distribution

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-77 shows the slot distribution of the AR6120-S.

Figure 4-77 AR6120-S slot distribution

Device Model		Slot Distribution	Slot Combination
	Front view	NA	NA
AR6120-S	Rear		Two SIC slots are combined into one WSIC slot
	view	2(SIC) 1(SIC)	2(WSIC)

• Slot 1 and slot 2 are combined into new slot 2.

NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 30 W or contact technical support engineers to obtain more suggestions.

Indicator Description

Figure 4-78 shows the indicators on the AR6120-S router.

Figure 4-78 Indicators on the AR6120-S





Number	Indicator	Color	Description
1	ACT (USB)	CT (USB) Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
2	SYS	Red and green	Slow blinking 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 and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
3	iNET/CTRL	Green	Steady on: The device has been connected to the cloud management platform.
			Blinking: The plug-and-play deployment (via the registration center) is in progress.
			Off: The device is not connected to the cloud management platform.
4	GE optical interface indicator (GE8/10GE)	Green	Steady on: A link has been established on the corresponding GE/10GE interface.
			Off: No link is established on the interface.

Number	Indicator	Color	Description
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
5 GE electrical interface indicators	Green	Steady on: A link has been established on the corresponding GE interface.	
	(WAN)		Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
6	GE electrical interface indicator	Green	Steady on: A link has been established on the corresponding GE interface.
(LAN)		Off: No link is established on the interface.	
	Yellow	Blinking: Data is being transmitted over the link.	
			Off: No data is being transmitted or received.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-159** lists attributes of a console interface.

Table 4-159 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	Console Cable

GE Electrical Interface

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. **Table 4-160** lists attributes of a GE electrical interface.

Table 4-160 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

◯ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

10GE Optical Interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 4-161** lists attributes of a 10GE optical interface.

Table 4-161 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-162** lists attributes of a USB 3.0 interface.

Table 4-162 USB 3.0 interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-163** lists attributes of a USB interface.

Table 4-163 USB interface attributes

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

Heat Dissipation

The AR6120-S router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-79**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-79 Airflow



Technical Specifications

Table 4-164 lists technical specifications of the AR6120-S router.

Table 4-164 Technical specifications of the AR6120-S router

Item	Specification
System parameters	
Processor	Quad-core, 1.4 GHz
Memory	2 GB
Flash	512 MB
	To view the available memory size, run the dir command.
Micro SD card (default sd1)	Not supported
Built-in hard disk	Not supported
External hard disk	Not supported
Dimensions and weight	
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 390.0 mm x 229.8 mm (1.75 in. x 15.35 in. x 9.05 in.)
	Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 390.0 mm x 234.6 mm (1.75 in. x 15.35 in. x 9.24 in.)
Weight	2.9 kg (6.39 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz

Item	Specification
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
Dual power supply backup	Not supported
PoE power supply	Not supported
Power consumption	
Minimum power consumption	17 W
Maximum power consumption	20 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 3.0 interface	1
USB 2.0 interface	1
Service interfaces (standard configuration)	WAN interfaces: one GE combo interface, one 10GE optical interface, and one GE electrical interface LAN interfaces: eight GE electrical interfaces
Extended slots (standard configuration)	2 × SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02352VEK

4.5.2 AR6121-S

Version Mapping

Table 4-165 lists the mapping between the AR6121-S router and software versions.

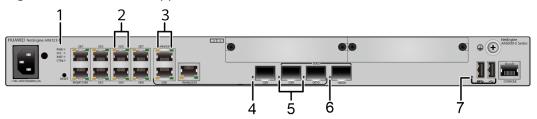
Table 4-165 Version mapping

Router Model	Software Version
AR6121-S	V300R019C10 and later versions

Appearance and Structure

Figure 4-80 shows the appearance of the AR6121-S router.

Figure 4-80 AR6121-S appearance



	·			
1	Product model silkscreen	2	LAN interfaces: eight GE electrical interfaces	
			NOTE	
			 GE0 is the management network port on a device. It can implement web-based network management and email-based deployment. 	
			All GE LAN interfaces can be configured as WAN interfaces.	
3	WAN interfaces: two GE combo interfaces	4	Two SIC slots	
5	Ground point	6	AC power jack	
	NOTE		NOTE	
	Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.		Use an AC power cable to connect the router to an external power source.	

7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	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 router, hold down the
			button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
9	LAN interfaces: GE combo interface NOTE GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.	1 0	WAN interface: one 10GE optical interface
1	USB interface 3.0 (host)	1 2	USB interface 2.0 (host)
1	Console interface	-	-

Slot Distribution

■ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-81 shows the slot distribution of the AR6121-S

Figure 4-81 AR6121-S slot distribution

Device Model		Slot Distribution	Slot Combination
	Rear view	NA	NA
AR6121-S	Front		Two SIC slots are combined into one WSIC slot
	view	2(SIC) 1(SIC)	2(WSIC)

• Slot 1 and slot 2 are combined into new slot 2.

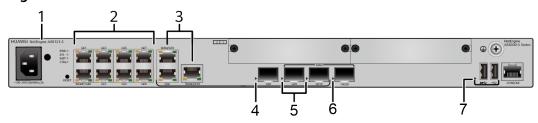
NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 29 W or contact technical support engineers to obtain more suggestions.

Indicator Description

Figure 4-82 shows the indicators on the AR6121-S router.

Figure 4-82 Indicators on the AR6121-S



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.
	SYS	Red and green	Slow blinking: The system is running properly. Fast blinking: The system is
			being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
	INET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.

Number	Indicator	Color	Description
	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-
			Campus does not manage the router.
2	GE electrical interface indicators	Green	Steady on: A link has been established on the corresponding GE interface.
	(LAN)		Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
3	GE electrical interface indicators (WAN)	ce ors	Steady on: A link has been established on the
			corresponding GE interface. Off: No link is established on
			the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
4 GE optical interface indicator (LAN)	Green	Steady on: A link has been established on the corresponding GE interface.	
	(LAN)		Blinking: Data is being transmitted over the link.
			Off: No link is established on the interface.
5	GE optical interface indicator (WAN)	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 on the interface.

Number	Indicator	Color	Description
6	10GE optical interface indicator (WAN)	Green	Steady on: A link has been established on the corresponding 10GE interface. Blinking: Data is being transmitted over the link. Off: No link is established on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive. Blinking green: The system is being upgraded or configured using a USB flash drive. Steady red: The system fails to be upgraded or configured using a USB flash drive. Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-166** lists attributes of a console interface.

Table 4-166 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	Console Cable

GE Electrical Interface

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. **Table 4-167** lists attributes of a GE electrical interface.

Table 4-167 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an Ethernet Cable.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

□ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

10GE Optical Interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 4-168** lists attributes of a 10GE optical interface.

Table 4-168 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-169** lists attributes of a USB 3.0 interface.

Table 4-169 USB 3.0 interface attributes

Attribute	Description		
Connector type	Type A		
Standards compliance	USB 3.0 and USB 2.0		
Working mode	Host		

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-170** lists attributes of a USB interface.

Table 4-170 USB interface attributes

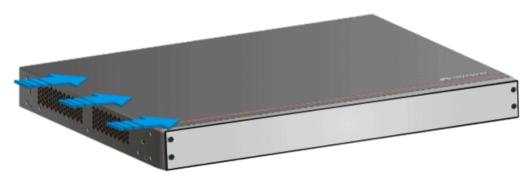
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR6121-S router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-83**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-83 Airflow



Technical Specifications

Table 4-171 lists technical specifications of the AR6121-S router.

Table 4-171 Technical specifications of the AR6121-S router

Item	Specification			
System parameters				
Processor	Quad-core, 1.4 GHz			
Memory	2 GB			
Flash	1 GB To view the available memory size, run the dir command.			
Micro SD card	Not supported			
Built-in hard disk	Not supported			
External hard disk	Not supported			
Dimensions and weight				
Dimensions (H x W x D)	Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 220.4 mm (1.75 in. x 17.41 in. x 8.68 in.)			
	• Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 225.2 mm (1.75 in. x 17.41 in. x 8.87 in.)			
Weight	3.2 kg (7.04 lb)			
Power specifications				

Item	Specification		
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz		
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz		
Maximum input current	2 A		
Maximum output power	60 W		
Dual power supply backup	Not supported		
PoE power supply	Not supported		
Power consumption			
Minimum power consumption	18 W		
Maximum power consumption	31 W		
Heat dissipation			
Fans	Built-in, unpluggable fans		
Airflow (facing the front panel)	Left to right		
Interface density			
Management interface	1 (RJ45)		
CON/AUX interfaces	1 (RJ45)		
USB 3.0 interface	1		
USB 2.0 interface	1		
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces and one 10GE optical interface LAN interfaces: one GE combo interface and eight GE electrical interfaces		
Extended slots (standard configuration)	2 × SIC		
Environment parameters			
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)		
Operating relative humidity	5% to 95%, noncondensing		

Item	Specification	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	02353NTG	

4.5.3 AR6121C-S

Version Mapping

Table 4-172 lists the mapping between the AR6121C-S router and software versions.

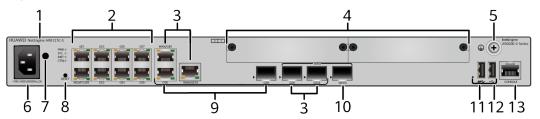
Table 4-172 Version mapping

Router Model	Software Version
AR6121C-S	V300R019C10 and later versions

Appearance and Structure

Figure 4-84 shows the appearance of the AR6121C-S router.

Figure 4-84 AR6121C-S appearance



1	Product model silkscreen	2	LAN interfaces: eight GE electrical interfaces
			NOTE
			 GE0 is the management network port on a device. It can implement web-based network management and email-based deployment.
			 All GE LAN interfaces can be configured as WAN interfaces.
3	WAN interfaces: two GE combo interfaces	4	Two SIC slots

5	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	6	AC power jack NOTE Use an AC power cable to connect the router to an external power source.
7	Jack for power cable locking strap NOTE Insert a power cable locking strap in this jack to secure the power cable.	8	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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.
9	LAN interfaces: GE combo interface NOTE GE8 is the BootROM management network port on a device and is used to upgrade the device software through the BootROM menu.	1 0	WAN interface: GE optical interface
1 1	USB interface 3.0 (host)	1 2	USB interface 2.0 (host)
1	Console interface	-	-

Slot Distribution

◯ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-85 shows the slot distribution of the AR6121C-S

Figure 4-85 AR6121C-S slot distribution

Device Model		Slot Distribution	Slot Combination
	Rear view	NA	NA
AR6121C-S	Front view	2(SIC) 1(SIC)	Two SIC slots are combined into one WSIC slot

• Slot 1 and slot 2 are combined into new slot 2.

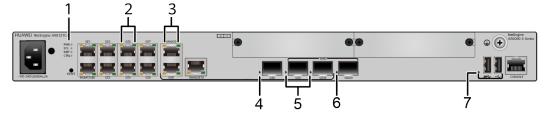
NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 29 W or contact technical support engineers to obtain more suggestions.

Indicator Description

Figure 4-86 shows the indicators on the AR6121C-S router.

Figure 4-86 Indicators on the AR6121C-S



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.

Number	Indicator	Color	Description
	SYS	Red and green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
			Off: The system software is not running or is resetting.
	INET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller-
			Campus does not manage the router.
2	GE electrical interface indicators (LAN)	Green	Steady on: A link has been established on the corresponding GE interface. Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.
3	GE electrical interface indicators (WAN)	Green	Steady on: A link has been established on the corresponding GE interface.
	(VVAIV)		Off: No link is established on the interface.
		Yellow	Blinking: Data is being transmitted over the link.
			Off: No data is being transmitted or received.

Number	Indicator	Color	Description
4	GE optical interface indicator (LAN)	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 on the interface.
5 and 6	GE optical interface indicator (WAN)	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 on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

A console interface can connect to an operation terminal for onsite configuration. **Table 4-173** lists attributes of a console interface.

Table 4-173 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)

Attribute	Description
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-174** lists attributes of a GE electrical interface.

Table 4-174 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Combo Interface

A GE combo interface consists of an optical Ethernet interface and an electrical Ethernet interface on the panel. The two interfaces have only one internal forwarding interface. The electrical and optical interfaces are multiplexed, and only either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

□ NOTE

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 can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 4-175** lists attributes of a GE optical interface.

Table 4-175 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see FE SFP/eSFP Optical Module and GE eSFP Optical Modules.
Standards compliance	IEEE 802.3z

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-176** lists attributes of a USB 3.0 interface.

Table 4-176 USB 3.0 interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB 3.0 and USB 2.0
Working mode	Host

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-177** lists attributes of a USB interface.

Table 4-177 USB interface attributes

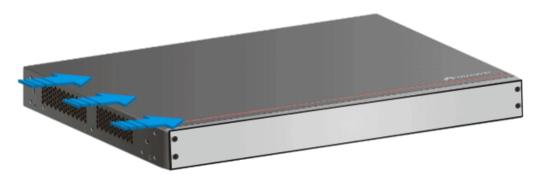
Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
Working mode	Host

Heat Dissipation

The AR6121C-S router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-87**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-87 Airflow



Technical Specifications

Table 4-178 lists technical specifications of the AR6121C-S router.

Table 4-178 Technical specifications of the AR6121C-S router

Item	Specification	
System parameters		
Processor	Quad-core, 1.4 GHz	
Memory	2 GB	
Flash	1 GB	
	To view the available memory size, run the dir command.	
Micro SD card	Not supported	
Built-in hard disk	Not supported	
External hard disk	Not supported	
Dimensions and weight		

Item	Specification
Dimensions (H x W x D)	Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 220.4 mm (1.75 in. x 17.41 in. x 8.68 in.)
	• Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 225.2 mm (1.75 in. x 17.41 in. x 8.87 in.)
Weight	3.2 kg (7.04 lb)
Power specifications	
Rated input voltage range (AC)	100 V AC to 240 V AC, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W
Dual power supply backup	Not supported
PoE power supply	Not supported
Power consumption	
Minimum power consumption	18 W
Maximum power consumption	31 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 3.0 interface	1
USB 2.0 interface	1
Service interfaces (standard configuration)	WAN interfaces: two GE combo interfaces and one GE optical interface
	LAN interfaces: one GE combo interface and eight GE electrical interfaces

Item	Specification
Extended slots (standard configuration)	2 × SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353NTF

4.5.4 AR6140-S

Version Mapping

Table 4-179 lists the mapping between the AR6140-S router and software versions.

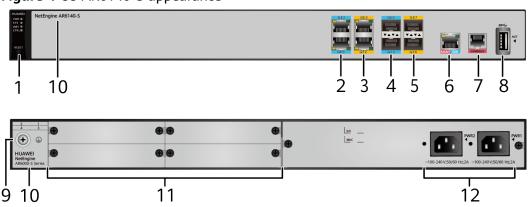
Table 4-179 Version mapping

Router Model	Software Version
AR6140-S	V300R019C00 and later versions

Appearance and Structure

Figure 4-88 shows the appearance of the AR6140-S router.

Figure 4-88 AR6140-S appearance



1	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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	2	LAN interface: two GE electrical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.
3	WAN interfaces: two GE electrical interfaces	4	LAN interfaces: two GE optical interfaces NOTE All GE LAN interfaces can be configured as WAN interfaces.
5	WAN interfaces: two GE optical interfaces	6	LAN interface: one GE electrical interface NOTE GE8 is the management network port on a device. It can implement webbased network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.
7	Console interface	8	USB interface 3.0 (host)
9	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	1 0	Product model silkscreen
1	Four SIC slots	1 2	 Two AC power jacks NOTE Support double power supply (1:1 backup). Use an AC power cable to connect the router to an external power source.

Slot Distribution

Figure 4-89 shows the slot distribution of the AR6140-S router.

Figure 4-89 Slot distribution of the AR6140-S router

Device Model S		Slot Distribution	Slot Combination
	Front view	NA	NA
AR6140-S	Rear view	2(SIC) 1(SIC) NA 4(SIC) 3(SIC)	Two SIC slots are combined into one WSIC slot 2(WSIC) 4(WSIC) NA

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.

■ NOTE

When only one WSIC card is installed on the router, you can only install the WSIC card in slot 4 (combined of slot 3 and slot 4).

NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 28 W/38 W or contact technical support engineers to obtain more suggestions.

- If the output of the **display power** command shows that the power is 60 W, ensure that the total power of the boards is not greater than 28 W.
- If the output of the **display power** command shows that the power is 70 W, ensure that the total power of the boards is not greater than 38 W.

Indicator Description

Figure 4-90 shows the indicators on the AR6140-S router.

Figure 4-90 Indicators on the AR6140-S



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.

Number	Indicator	Color	Description
2 SYS	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	INET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller- Campus does not manage the router.
5 and 6	GE electrical interface indicators (GE0 to GE3)	Green	Steady on: A link has been established on the corresponding GE electrical interface.
			Off: No link is established on the corresponding GE electrical interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE electrical interface.
			Off: No data is being transmitted or received on the corresponding GE electrical interface.
7 and 8	GE optical interface indicators (GE4 to GE7)	Green	Steady on: A link has been established on the corresponding GE optical interface.
			Off: No link is established on the corresponding GE optical interface.

Number	Indicator	Color	Description
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE optical interface.
			Off: No data is being transmitted or received on the corresponding GE optical interface.
9	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 4-180** lists attributes of the console interface.

Table 4-180 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-181** lists attributes of a GE electrical interface.

Table 4-181 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

GE Optical Interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 4-182** lists attributes of a GE optical interface.

Table 4-182 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see FE SFP/eSFP Optical Module and GE eSFP Optical Modules.
Standards compliance	IEEE 802.3z

USB Interface 3.0 (Host)

A USB 3.0 interface provides up to 5 Gbit/s upload and download rates. **Table 4-183** lists attributes of a USB 3.0 interface.

Table 4-183 USB 3.0 interface attributes

Attribute	Description
Connector type	TYPE A
Standards compliance	USB 3.0 and USB 2.0

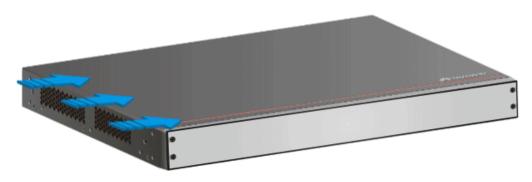
Attribute	Description
Working mode	Host

Heat Dissipation

The AR6140-S router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-91**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-91 Airflow



Technical Specifications

Table 4-184 lists technical specifications of the AR6140-S router.

Table 4-184 AR6140-S technical specifications

Function	Description
System parameters	
Processor	Quad-core, 1.4 GHz
Memory	2 GB
Flash	1 GB
	To view the available memory size, run the dir command.
Micro SD card (default sd1)	Not supported
Built-in hard disk	Not supported
External hard disk	Not supported
Dimensions and weight	

Function	Description
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 428.2 mm (1.73 in. x 17.4 in. x 16.86 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 431.2 mm (1.73 in. x 17.4 in. x 16.98 in.)
Weight	7.6 kg (16.72 lb)
Power specifications	
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz
Maximum input current	2 A
Maximum output power	60 W/70 W To view the available maximum output power, run the display power command.
Dual power supply backup	Supported
PoE power supply	Not supported
Power consumption	
Minimum power consumption	18 W
Maximum power consumption	32 W
Heat dissipation	
Fans	Built-in, unpluggable fans
Airflow (facing the front panel)	Left to right
Interface density	
Management interface	1 (RJ45)
CON/AUX interfaces	1 (RJ45)
USB 3.0 interface	1

Function	Description
Service interfaces (standard configuration)	LAN interfaces: three GE electrical interfaces and two GE optical interfaces
	WAN interfaces: two GE electrical interfaces and two GE optical interfaces
Extended slots (standard configuration)	4× SIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F)
	When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02353BMU

4.5.5 AR6140H-S

Version Mapping

Table 4-185 lists the mapping between the AR6140H-S router and software versions.

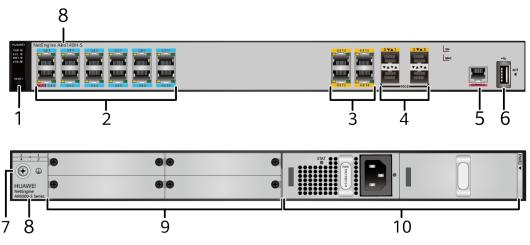
Table 4-185 Version mapping

Router Model	Software Version
AR6140H-S	V300R019C10 and later versions

Appearance and Structure

Figure 4-92 shows the appearance of the AR6140H-S router.

Figure 4-92 AR6140H-S appearance



1	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 router, hold down the button for less than 5 seconds. Resetting the router will interrupt services. Exercise caution when deciding to press this button.	2	LAN interfaces: twelve GE electrical interfaces NOTE GE0 is the management network port on a device. It can implement webbased network management and email-based deployment. All GE LAN interfaces can be configured as WAN interfaces.
3	WAN interfaces: four GE electrical interfaces	4	WAN interface: four 10GE optical interface
5	Console interface	6	USB interface 2.0 (host)
7	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.	8	Product model silkscreen
9	Four SIC slots	1 0	Two power module slots Applicable power modules: 5.7 150 W AC Power Module

Slot Distribution

□ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.

Figure 4-93 shows the slot distribution of the AR6140H-S router.

Figure 4-93 Slot distribution of the AR6140H-S router

Device Mod	lel	Slot Distribution	Slot Combination	
	Front view	NA	NA	
AR6140H-S	Rear view	2(SIC) 1(SIC) 4(SIC) 3(SIC) NA	Two SIC slots are combined into one WSIC slot 2(WSIC) NA	

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.

Indicator Description

Figure 4-94 shows the indicators on the AR6140H-S router.

Figure 4-94 Indicators on the AR6140H-S



Number	Indicator	Color	Description
1	PWR	Green	Steady on: The router is powered by the built-in power module normally. Off: The router is not powered on.
2	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
3	INET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Off: The Agile Controller- Campus does not manage the router.
5 and 6	GE electrical interface indicators (GE0 to GE13)	Green	Steady on: A link has been established on the corresponding GE electrical interface. Off: No link is established on the corresponding GE electrical interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE electrical interface. Off: No data is being transmitted or received on the corresponding GE electrical interface.
	GE electrical interface indicators (GE14 to GE15)	Green	Steady on: A link has been established on the corresponding GE electrical interface. Off: No link is established on the corresponding GE electrical interface.

Number	Indicator	Color	Description
		Yellow	Blinking: Data is being transmitted or received on the corresponding GE electrical interface.
			Steady on: No data is being transmitted or received on the corresponding GE electrical interface.
7 and 8	10GE optical interface indicators (10GE0 to 10GE3)	Green	Steady on: A link has been established on the corresponding 10GE optical interface.
			Off: No link is established on the corresponding 10GE optical interface.
		Yellow	Blinking: Data is being transmitted or received on the corresponding 10GE optical interface.
			Off: No data is being transmitted or received on the corresponding 10GE optical interface.
9	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.

Interface Description

Console Interface

The console interface of a router can connect to an operation terminal for onsite configuration. **Table 4-186** lists attributes of the console interface.

Table 4-186 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data circuit-terminating equipment (DCE)
Cable type	Console Cable

GE Electrical Interface

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. **Table 4-187** lists attributes of a GE electrical interface.

Table 4-187 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 4-188** lists attributes of a 10GE optical interface.

Table 4-188 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC

Attribute	Description
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

USB Interface 2.0 (Host)

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 4-189** lists attributes of a USB interface.

Table 4-189 USB interface attributes

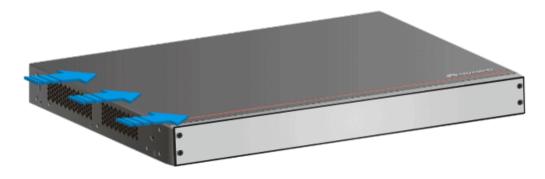
Attribute	Description
Connector type	TYPE A
Standards compliance	USB 2.0
Working mode	Host

Heat Dissipation

The AR6140H-S router has built-in fans to cool the system. The fans are unpluggable.

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-95**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-95 Airflow



Technical Specifications

Table 4-190 lists technical specifications of the AR6140H-S router.

Table 4-190 AR6140H-S technical specifications

Function Description				
System parameters				
Processor	16-core, 1.85 GHz			
Memory	4 GB			
Flash	1 GB			
	To view the available memory size, run the dir command.			
Micro SD card	Not supported			
Built-in hard disk	Not supported			
External hard disk	Not supported			
Dimensions and weight				
Dimensions (H x W x D)	 Basic dimensions (excluding the parts protruding from the body): 44.4 mm x 442.0 mm x 428.2 mm (1.73 in. x 17.40 in. x 16.86 in.) Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 44.4 mm x 442.0 mm x 450.2 mm (1.73 in. x 17.40 in. x 17.72 in.) 			
Weight	5.93 kg (13.05 lb)			
Power specifications				
Rated input voltage range (AC)	100 V to 240 V, 50 Hz/60 Hz			
Maximum input voltage range (AC)	90 V to 264 V, 47 Hz to 63 Hz			
Maximum input current	3 A			
Maximum output power	150 W			
Dual power supply backup	Supported			
PoE power supply	Not supported			
Power consumption (empty chassis)				
Typical power consumption	41 W			
Maximum power consumption	60 W			
Heat dissipation				
Fans	Built-in, unpluggable fans			

Function	Description	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interface	1 (RJ45)	
CON/AUX interfaces	1 (RJ45)	
USB 2.0 interface	1	
Service interfaces (standard configuration)	LAN interfaces: twelve GE electrical interfaces WAN interfaces: four GE electrical interfaces and four 10GE optical	
	interfaces	
Extended slots (standard configuration)	4× SIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F) NOTE When the altitude is 1800 m-5000 m (5906 ft16404.2 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number	02353NTH	

4.5.6 AR6280-S

Version Mapping

Table 4-191 lists the mapping between the AR6280-S router and software versions.

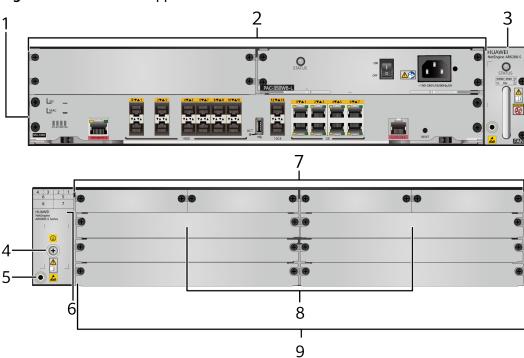
Table 4-191 Mapping between the AR6280-S router and software versions

Router Model	Software Version
AR6280-S	V300R019C10 and later versions

Appearance and Structure

Figure 4-96 shows the appearance of the AR6280-S router.

Figure 4-96 AR6280-S appearance



1	SRU slots Applicable SRU: SRU-100HH	2	Two power module slots Applicable power modules: 350 W AC power module
3	Fan module slot	4	Ground point NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
5	ESD jack NOTE When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.	6	Product model silkscreen
7	Four SIC slots	8	Two WSIC slots
9	Two XSIC slots	-	-

Slot Distribution

Ⅲ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 4-97 shows the slot distribution of the AR6280-S.

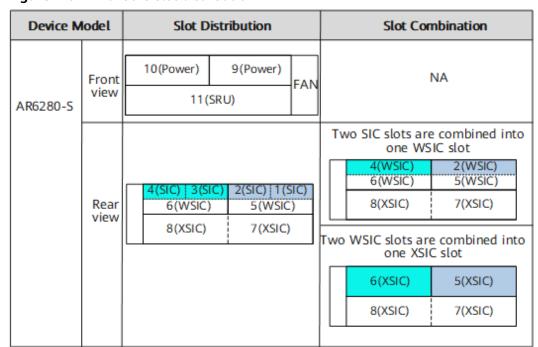


Figure 4-97 AR6280-S slot distribution

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

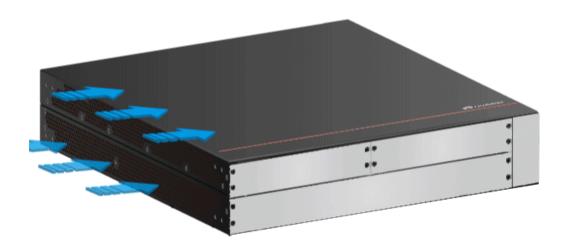
Indicator Description

All the indicators seen on the AR6280-S front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-98**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-98 Airflow



Technical Specifications

Table 4-192 lists the technical specifications of the AR6280-S router.

Table 4-192 AR6280-S router technical specifications

Item	Description	
System parameters		
Processor	16-core, 2.26 GHz	
Memory	8 GB	
Flash	2 GB	
	To view the available memory size, run the dir command.	
Micro SD card (sd1 by default)	Not supported	
Hard disk	Not supported	
Dimensions and weight		
Dimensions (H x W x D)	Basic dimensions (excluding the parts protruding from the body): 88.1 mm x 442.0 mm x 470.0 mm (3.47 in. x 17.40 in. x 18.50 in.)	
	 Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 88.1 mm x 442.0 mm x 474.0 mm (3.47 in. x 17.40 in. x 18.66 in.) 	

Item	Description
Weight	8.85 kg (19.51 lb)
Power specifications	AC input voltage Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz
	Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz
	DC input voltage
	 Rated input voltage: -48 V DC to -60 V DC
	Maximum input voltage: -38.4 V DC to -72 V DC
Heat dissipation	
Fans	Independent pluggable fan modules
Airflow (facing the front panel)	Left to right
Interface density	Depending on the SRU that is used
Extended slots (standard	• 4 x SIC
configuration)	• 2 x WSIC
	• 2 x XSIC
Environment parameters	
Operating temperature	0°C to 45°C (32°F to 113°F)
	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 +70°C (-40°F to +158°F)
Operating relative humidity	5% to 95%, noncondensing
Operating altitude	< 5000 m (16404.2 ft.)
Part number	02116207

4.5.7 AR6300-S

Version Mapping

Table 4-193 lists the mapping between the AR6300-S router and software versions.

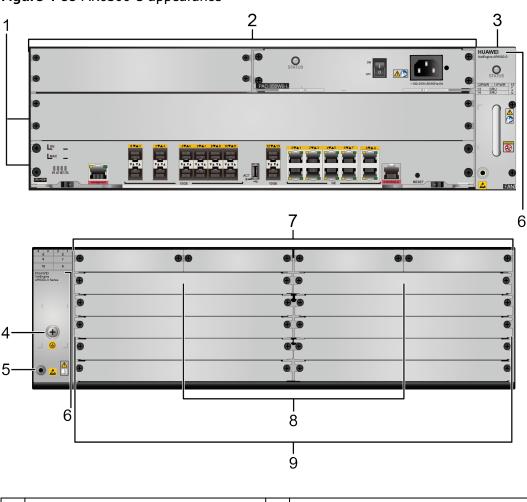
Table 4-193 Mapping between the AR6300-S router and software versions

Router Model	Software Version
AR6300-S	V300R019C00 and later versions

Appearance and Structure

Figure 4-99 shows the appearance of the AR6300-S router.

Figure 4-99 AR6300-S appearance



1 Two SRU slots

Applicable SRU: **SRU-400H**

NOTE

The two SRUs must be of the same model for the double SRUs scenarios, and the two SRUs of different models cannot be used together in a router.

Two power module slots

Applicable power modules: **350 W AC power module**

NOTE

It is recommended to configure dual power supplies for the double SRUs scenarios.

3	Fan module slot	4	Ground point
			NOTE Reliably ground the router by connecting a ground cable to the ground point to protect the router against lightning and interference.
5	ESD jack	6	Product model silkscreen
	NOTE		
	When maintaining the router, wear an ESD wrist strap and insert the other end of the ESD wrist strap in the ESD jack.		
7	Four SIC slots	8	Two WSIC slots
9	Four XSIC slots	-	-

Slot Distribution

■ NOTE

- Two SIC slots can be combined into one WSIC slot by removing the guide rail between them.
- Two SIC slots and the WSIC slot below them can be combined into one XSIC slot by removing the guide rails.
- After two slots are combined into one, the new slot ID is the larger one between the two original slot IDs.
- In V200R002C00 and later versions, a WSIC card can be inserted into an XSIC slot. The WSIC card is in the lower part of the slot and uses the XSIC slot ID as its own slot ID.

Figure 4-100 shows the slot distribution of the AR6300-S.

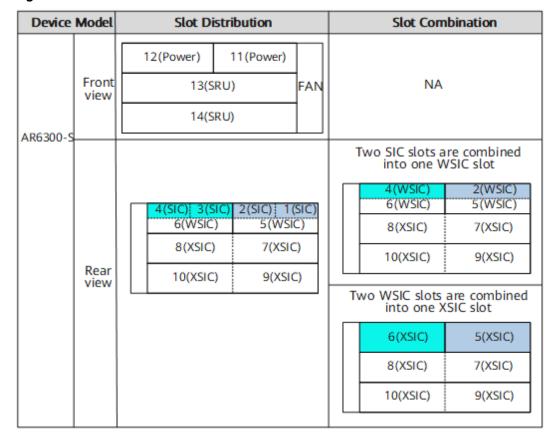


Figure 4-100 AR6300-S slot distribution

- Slot 1 and slot 2 are combined into new slot 2.
- Slot 3 and slot 4 are combined into new slot 4.
- New slot 2 and slot 5 are combined into new slot 5.
- New slot 4 and slot 6 are combined into new slot 6.

NOTICE

When configuring cards, ensure that the total power of the configured cards does not exceed 102 W or contact technical support engineers to obtain more suggestions.

Indicator Description

All the indicators seen on the AR6300-S front panel are module indicators. For details about these indicators, see "Indicator Description" of the specific module.

Heat Dissipation

Seen from the front panel, the airflow is left to right, as shown in **Figure 4-101**. Cold air flows into the router from the left side and is exhausted from the right side, taking away heat generated by the router.

Figure 4-101 Airflow



Technical Specifications

Table 4-194 lists the technical specifications of the AR6300-S router.

Table 4-194 AR6300-S router technical specifications

Item	Specification	
System parameters		
Processor	16-core, 2.26 GHz	
Memory	8 GB	
Flash	2 GB	
	To view the available memory size, run the dir command.	
Micro SD card (sd1 by default)	Not supported	
Hard disk	Not supported	
Dimensions and weight		
Dimensions (H x W x D)	Basic dimensions (excluding the parts protruding from the body): 130.5 mm x 442.0 mm x 470.0 mm (5.14 in. x 17.40 in. x 18.50 in.) Maximum dimensions (the depth is	
	 Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 130.5 mm x 442.0 mm x 494.7 mm (5.14 in. x 17.40 in. x 19.48 in.) 	

Item	Specification	
Weight	18 kg (39.6 lb)	
Power specifications	 AC input voltage Rated input voltage range: 100 V to 240 V, 50 Hz/60 Hz Maximum input voltage range: 90 V to 264 V, 47 Hz to 63 Hz 	
	DC input voltage Rated input voltage: -48 V DC to -60 V DC Maximum input voltage: -38.4 V DC to -72 V DC	
Heat dissipation		
Fans	Independent pluggable fan modules	
Airflow (facing the front panel)	Left to right	
Interface density		
Management interfaces	1 (RJ45)	
CON/AUX interface	1 (RJ45)	
USB 2.0 interfaces	1	
Service interfaces (standard configuration)	WAN interfaces: ten GE electrical interfaces, and fourteen 10GE optical interfaces	
Extended slots	4 x SIC2 x WSIC4 x XSIC	
Environment parameters		
Operating temperature	0°C to 45°C (32°F to 113°F) 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 +70°C (-40°F to +158°F)	
Operating relative humidity	5% to 95%, noncondensing	
Operating altitude	< 5000 m (16404.2 ft.)	
Part number 02352VEL		

5 Power Supplies

NOTICE

- Do not use AC and DC power modules in the same router.
- Do not use power modules of different power values in the same router.
- A router can use only supported power modules. Using unsupported power modules will bring unexpected risks.
- 5.1 Types of Power Supplies
- 5.2 24 W Separate Power Adapter
- 5.3 1-pin 36 W Power Adapter
- 5.4 36 W Power Adapter
- 5.5 60 W Power Adapter
- 5.6 60 W Power Adapter with an Adapter Cable
- 5.7 150 W AC Power Module
- 5.8 350 W AC Power Module
- 5.9 350 W DC Power Module
- 5.10 700 W AC Power Module
- 5.11 850 W AC PoE Power Module
- 5.12 150 W PoE Power Adapter with an Adapter Cable

5.1 Types of Power Supplies

Table 5-1 describes the types of power supplies supported by AR series routers. The actual power supplies applicable to a router vary depending on the product model.

Table 5-1 Types of power supplies

Power Supply Type	Description
Built-in power module	It is fixed in the chassis and has a power socket on the panel. Use a power cable to connect the power socket to a power source.
Power adapter	It is an external unit used to connect a router to a power source.
PoE power adapter	It is an external unit used to connect a router to a power source. Using the PoE power adapter, the router can supply power to attached powered devices (PDs).
Redundant power supply (RPS)	It is an independent power supply used to provide power redundancy for a router. Use an RPS cable to connect the router to the RPS, and then use a power cable to connect the RPS to a power source.
AC/DC power module	It is installed in a power slot of a router. Two power modules can work in 1+1 redundancy mode. Use power cables to connect the power modules to a power source.
AC PoE power module	It is installed in a power slot of a router. Two AC PoE power modules can work in 1+1 redundancy mode. Use power cables to connect the power modules to a power source. Then the router can supply power to attached PDs.

5.2 24 W Separate Power Adapter

Product Support

Table 5-2 lists the device models that support a 24 W separate power adapter.

Table 5-2 Product support

Module Name	Product Support
24 W separate power adapter	4.2.1 AR611W
	4.2.2 AR611W-LTE4CN
	4.2.3 AR617VW
	4.2.4 AR617VW-LTE4EA
	4.2.5 AR617VW-LTE4

Appearance

Figure 5-1 shows the appearance of a 24 W separate power adapter.

Figure 5-1 24 W separate power adapter



Table 5-3 describes functions of a 24 W separate power adapter.

Table 5-3 Function description

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

Technical Specifications

Table 5-4 lists the technical specifications of a 24 W separate power adapter.

Table 5-4 Technical specifications

Item	Specification	
Dimensions (H x W x D)	27 mm x 88 mm x 50 mm (1.06 in. x 3.46 in. x 1.97 in.)	
Weight	0.1 kg (0.22 lb)	

Item	Specification	
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz	
	Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz	
	Maximum input current: 0.8 A	
Output	Rated output voltage: 12 V DC	
	Maximum output voltage range: 11.4 V DC to 12.6 V DC	
	Maximum output power: 24 W	
	Maximum output current: 2 A	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-5 provides 24 W separate power adapter ordering information.

Table 5-5 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02220493	-	-	Adapter, 0degC, 40degC, 100V, 240V, 12V/2A, C8/2.1*5.5*9.5 H DC PLUG("L"), SABS/SASO

5.3 1-pin 36 W Power Adapter

Product Support

Table 5-6 lists the device models that support a 1-pin 36 W power adapter.

Table 5-6 Product support

Module Name	Product Support
1-pin 36 W power	4.2.3 AR617VW
adapter	4.2.4 AR617VW-LTE4EA

Appearance

Figure 5-2 shows the appearance of a 1-pin 36 W power adapter.

Figure 5-2 1-pin 36 W power adapter



Table 5-7 describes functions of a 1-pin 36 W power adapter.

Table 5-7 Function description

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

Technical Specifications

Table 5-8 lists the technical specifications of a 1-pin 36 W power adapter.

Table 5-8 Technical specifications

Item	Specification	
Dimensions (H x W x D)	32 mm x 100 mm x 54 mm (1.26 in. x 3.94 in. x 2.13 in.)	
Weight	0.2 kg (0.44 lb)	

Item	Specification	
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz	
	Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz	
	Maximum input current: 1 A	
Output	Rated output voltage: 12 V DC	
	Maximum output voltage range: 11.4 V DC to 12.6 V DC	
	Maximum output power: 36 W	
	Maximum output current: 3 A	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-9 provides 24 W separate power adapter ordering information.

Table 5-9 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02221316	HW-36-12AC 8D-1	-	Adapter, -5degC, 45degC, 90V, 270V, 12V3A, 2.1*5.5*9.5 H DC PLUG ("L")

5.4 36 W Power Adapter

Version Mapping

Table 5-10 lists the device models that support a 36 W power adapter.

Table 5-10 Product support

Power Module Name	Product Support
36 W power	AR651
adapter	AR651K
	4.2.9 AR651C
	AR651F-Lite
	AR651U-A4

Appearance

Figure 5-3 shows the appearance of a 36 W power adapter.

Figure 5-3 36 W power adapter



Function

Table 5-11 describes functions of a 36 W power adapter.

Table 5-11 Function description

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

Technical Specifications

Table 5-12 lists technical specifications of a 36 W power adapter.

Table 5-12 Technical specifications

Item	Specification
Dimensions (H x W x D)	32 mm x 100 mm x 54 mm (1.26 in. x 3.94 in. x 2.13 in.)

Item	Specification		
Weight	0.2 kg (0.44 lb)		
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz		
	Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz		
	Maximum input current: 1 A		
Output	Rated output voltage: 12 V DC		
	Maximum output voltage range: 11.4 V DC to 12.6 V DC		
	Maximum output power: 36 W		
	Maximum output current: 3 A		

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-13 provides 36 W power adapter ordering information.

Table 5-13 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02220947	HW-120300 D1D	-	Adapter-5degC, 40degC, 90V, 264V, 12V/3A, C8/2.1*5.5*9.5 H PLUG, safety PSE/PSB/FCC/ERP5, Tuning fork DC output

5.5 60 W Power Adapter

Version Mapping

Table 5-14 lists the device models that support a 60 W power adapter.

Table 5-14 Product support

Power Module Name	Product Support	
60 W power adapter	AR651W-X4 AR651-X8 AR651W AR657W	

Appearance

Figure 5-4 shows the appearance of a 60 W power adapter.

Figure 5-4 60 W power adapter



Function

Table 5-15 describes functions of a 60 W power adapter.

Table 5-15 Function description

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

Function	Description	
Heat dissipation	The power adapter does not have built-in fans and uses natural heat dissipation.	

Technical Specifications

Table 5-16 lists technical specifications of a 60 W power adapter.

Table 5-16 Technical specifications

Item	Specification		
Dimensions (H x W x D)	31.5 mm x 62 mm x 110 mm (1.24 in. x 2.44 in. x 4.33 in.)		
Weight	0.33 kg (0.73 lb)		
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz		
	Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz		
	Maximum input current: 1.5 A		
Output	Rated output voltage: 12 V DC		
	Maximum output voltage range: 11.4 V DC to 12.6 V DC		
	Maximum output power: 60 W		
	Maximum output current: 5 A		

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-17 provides 60 W power adapter ordering information.

Table 5-17 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02220993	HW-120500T 1D	-	60W Power adapter, 2PIN In/2PIN Out tuning fork DC plug

5.6 60 W Power Adapter with an Adapter Cable

Product Support

Table 5-18 lists the device models that support a 60 W power adapter with an adapter cable.

Table 5-18 Product support

Module Name	Product Support	
60 W power adapter with an adapter cable	AR651W-X4 AR651-X8 AR651W AR657W	

Appearance

Figure 5-5 shows the appearance of a 60 W power adapter with an adapter cable.



Table 5-19 describes functions of a 60 W power adapter with an adapter cable.

Table 5-19 Function description

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

Technical Specifications

Table 5-20 lists the technical specifications of a 60 W power adapter with an adapter cable.

Table 5-20 Technical specifications

Item	Specification	
Dimensions (H x W x D)	31.5 mm x 62 mm x 110 mm (1.24 in. x 2.44 in. x 4.33 in.)	
Weight	0.33 kg (0.73 lb)	
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz	
	Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz	
	Maximum input current: 1.5 A	

Item	Specification	
Output	Rated output voltage: 12 V DC	
	Maximum output voltage range: 11.4 V DC to 12.6 V DC	
	Maximum output power: 60 W	
	Maximum output current: 5 A	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-21 provides 60 W power adapter with an adapter cable ordering information.

Table 5-21 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312PBQ	AR60WAPDC	-	60 W Power adapter, 2PIN In/ 4PIN Out to tuning fork DC plug
			NOTE The grounding feature is supported.

5.7 150 W AC Power Module

Product Support

Table 5-22 lists the device models that support a 150 W AC power module.

Table 5-22 Product support

Power Module Name	Product Support	
150 W AC Power	4.4.5 AR6140-16G4XG	
Module	4.5.5 AR6140H-S	

Appearance

Figure 5-6 shows the appearance of a 150 W AC power module.



Figure 5-6 150 W AC power module

Table 5-23 describes functions of a 150 W AC power module.

Table 5-23 Function description

Function	Description	
Input undervoltage protection	Stops power output and automatically restores power output after the input voltage becomes normal.	
Input overcurrent protection	Stops power output and does not automatically restore power output after the input current becomes normal.	
Output overvoltage protection	Intermittently stops output and automatically restores output after the overvoltage condition is removed.	
Output current limiting protection	Intermittently provides output and automatically restores normal output after the output current falls within a normal range.	
Output short circuit protection	Intermittently provides output and automatically restores normal output after the output short circuit is removed.	
Overtemperature protection	When the temperature of the power module reaches a preset threshold, the power module stops power output and will automatically restore power output after the temperature drops back to the normal range.	
Heat dissipation	The power adapter does not have fans. The heat dissipation is provided by the fan module of the device.	

Function	Description	
Hot swap	The device has 1+1 power module redundancy. You can hot-swap a 150 W power module without interrupting device operation.	

Panel

Figure 5-7 shows the panel of a 150 W AC power module.



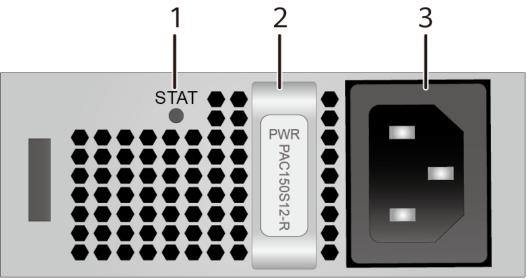


Table 5-24 Components on the panel

Number	Name	Description	
1	Power indicator (STATUS)	 Steady green: The power output of the power module is normal. Blinking green: The output power is out of range. For example, overvoltage, overcurrent, or short circuit has occurred. Off: The input of the AC power module is out of range. For example, no AC input, AC input overvoltage, or AC input undervoltage has occurred. The output of the AC power module 	
		is out of range. For example, undervoltage, or overtemperature has occurred.	

Number	Name	Description
AC power socket Use an 8.1.2 AC Power Cable to conthe the router to a power source.		
3	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Technical Specifications

Table 5-25 lists the technical specifications of a 150 W AC power module.

Table 5-25 Technical specifications

Item	Specification		
Dimensions (H x W x D)	39.8 mm x 90 mm x 214.3 mm (1.57 in. x 3.54 in. x 8.44 in.)		
Weight	0.76 kg (1.68 lb)		
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage range: 90 V AC to 264 V AC, 47 Hz to 63 Hz		
	Maximum input current: 3 A		
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.64 V DC to 12.36 V DC Maximum output power: 150 W Maximum output current: 12.5 A		

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-26 provides 150 W AC power module ordering information.

Table 5-26 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312DUY	PSU- PAC150S12- R	PAC150S12- R	PSU-PAC150S12-R-150W AC Power Module

5.8 350 W AC Power Module

Product Support

Table 5-27 lists the device models that support a 350 W AC power module.

Table 5-27 Product support

Power Module Name	Product Support	
350 W AC Power	AR6280	
Module	AR6300	
	AR6280K	
	AR6300K	
	AR6280-S	
	4.5.7 AR6300-S	

Appearance

Figure 5-8 shows the appearance of a 350 W AC power module.

Figure 5-8 350 W AC power module



Function

Table 5-28 describes functions of a 350 W AC power module.

Table 5-28 Function description

Function	Description	
Input undervoltage protection	The power module can automatically resume power supply from this protection state.	
Input overvoltage protection	The power module can automatically resume power supply from this protection state.	
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.	
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.	
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.	
Output short-circuit protection	The power module can automatically resume power supply from this protection state.	
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.	
Hot swap	Supported	

Panel

Figure 5-9 shows the panel of a 350 W AC power module.

Figure 5-9 Panel of a 350 W AC power module

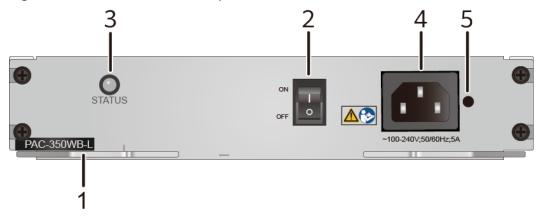


Table 5-29 Components on the panel

Number	Name Description		
1	Ejector lever	Used to lock or release the power module during installation or removing.	
2	Power switch	Used to turn on or off the power output.	
3	Power indicator (STATUS)	Steady green: The power output of the power module is normal.	
		Steady red: The power output is abnormal and the power module is in protection state. (The indicator blinks if the power module is in hiccup protection state.)	
4	AC power socket	Use an 8.1.2 AC Power Cable to connect the router to a power source.	
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.	

Technical Specifications

Table 5-30 lists the technical specifications of a 350 W AC power module.

Table 5-30 Technical specifications

Item	Specification		
Dimensions (H x W x D)	40 mm x 201 mm x 253 mm (1.57 in. x 7.91 in. x 9.96 in.)		
Weight	1.5 kg (3.31 lb)		
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz		
	Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz		
	Maximum input current: 5 A		
Output	Rated output voltage: 12 V DC		
	Maximum output voltage range: 11.64 V DC to 12.36 V DC		
	Maximum output power: 350 W		
	Maximum output current: 29.2 A		

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-31 provides 350 W AC power module ordering information.

Table 5-31 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02131212	PAC-350WB- L	PAC-350WB- L	350 W AC Power Module

5.9 350 W DC Power Module

Product Support

Table 5-32 lists the device models that support a 350 W DC power module.

Table 5-32 Product support

Power Module Name	Product Support
350 W DC Power Module	AR6280 AR6300
	AR6280K
Module	

Appearance

Figure 5-10 shows the appearance of a 350 W DC power module.

Figure 5-10 350 W DC power module



Table 5-33 describes functions of a 350 W DC power module.

Table 5-33 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overvoltage protection	The power module can automatically resume power supply from this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap	Supported

Panel

Figure 5-11 shows the panel of a 350 W DC power module.

Figure 5-11 Panel of a 350 W DC power module

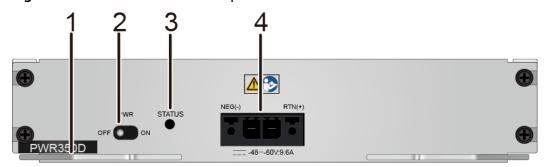


Table 5-34 Components on the panel

Number	Name	Description
1	Ejector lever	Used to lock or release the power module during installation or removing.
2	Power switch	Used to turn on or off the power output.
3	Power indicator (STATUS)	 Steady green: The power output of the power module is normal. Steady red: The power output is abnormal and the power module is in protection state. (The indicator blinks if the power module is in hiccup
		protection state.)
4	DC power socket	Use DC power cables to connect the router to a power source.

Technical Specifications

Table 5-35 lists the technical specifications of a 350 W DC power module.

Table 5-35 Technical specifications

Item	Specification	
Dimensions (H x W x D)	40 mm x 201 mm x 253 mm (1.57 in. x 7.91 in. x 9.96 in.)	
Weight	1.5 kg (3.31 lb)	
Input	Rated input voltage range: -48 V DC to -60 V DC Maximum input voltage range: -38.4 V DC to -72 V DC Maximum input current: 9.6 A	
Output	Rated output voltage: 12 V DC Maximum output voltage range: 11.64 V DC to 12.36 V DC Maximum output power: 350 W	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-36 provides 350 W DC power module ordering information.

Table 5-36 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310FGS	AROMPSDP3 500	PWR350D	350 W DC Power Module

5.10 700 W AC Power Module

Product Support

Table 5-37 lists the device models that support a 700 W AC power module.

Table 5-37 Product support

Module Name	Product Support
700 W AC power	AR6280
module	AR6300
	AR6280K
	AR6300K

Appearance

Figure 5-12 shows the appearance of a 700 W AC power module.

Figure 5-12 700 W AC power module



Function

Table 5-38 describes functions of a 700 W AC power module.

Table 5-38 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overvoltage protection	The power module can automatically resume power supply from this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap	Supported

Panel

Figure 5-13 shows the panel of a 700 W AC power module.

Figure 5-13 Panel of a 700 W AC power module

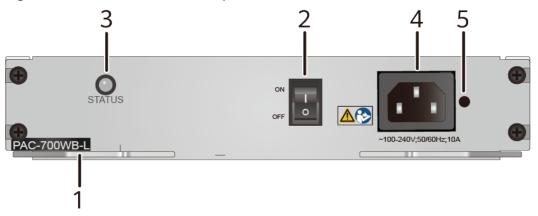


Table 5-39 Components on the panel

Number	Name	Description
1	Ejector lever	Used to lock or release the power module during installation or removing.
2	Power switch	Used to turn on or off the power output.
3	Power indicator (STATUS)	Steady green: The power output of the power module is normal.
		Steady red: The power output is abnormal and the power module is in protection state. (The indicator blinks if the power module is in hiccup protection state.)
4	AC power socket	Use an 8.1.2 AC Power Cable to connect the router to a power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Technical Specifications

Table 5-40 lists the technical specifications of a 700 W AC power module.

Table 5-40 Technical specifications

Item	Specification	
Dimensions (H x W x D)	40 mm x 201 mm x 253 mm (1.57 in. x 7.91 in. x 9.96 in.)	
Weight	1.7 kg (3.75 lb)	
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz	
	Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz	
	Maximum input current: 10 A	
Output	Rated output voltage: 12 V DC	
	Maximum output voltage range: 11.64 V DC to 12.36 V DC	
	Maximum output power: 700 W	
	Maximum output current: 58.33 A	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-41 provides 700 W AC power module ordering information.

Table 5-41 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02131206	PAC-700WB- L	PAC-700WB- L	700 W AC Power Module

5.11 850 W AC PoE Power Module

Product Support

Table 5-42 lists the device models that support an 850 W AC PoE power module.

Table 5-42 Product support

Module Name	Product Support
850 W AC PoE	AR6280
power module	AR6300
	AR6280K
	AR6300K

Appearance

Figure 5-14 shows the appearance of an 850 W AC PoE power module.

Figure 5-14 Appearance of an 850 W AC PoE power module



Table 5-43 describes functions of an 850 W AC PoE power module.

Table 5-43 Function description

Function	Description
Input undervoltage protection	The power module can automatically resume power supply from this protection state.
Input overvoltage protection	The power module can automatically resume power supply from this protection state.
Input overcurrent protection	The power module cannot automatically resume power supply from this protection state.
Output overvoltage protection	The power module cannot automatically resume power supply from this protection state.
Output current limiting protection	The power module cannot automatically resume power supply from this protection state.
Output short-circuit protection	The power module can automatically resume power supply from this protection state.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap	Supported

Panel

Figure 5-15 shows the panel of an 850 W AC PoE power module.

Figure 5-15 Panel of an 850 W AC PoE power module

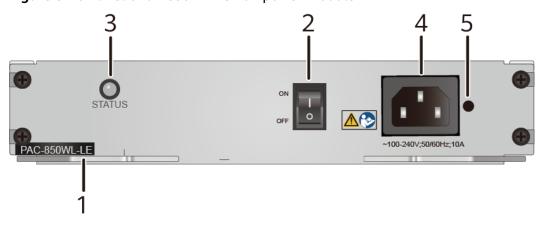


Table 5-44 Components on the panel

Number	Name	Description
1	Ejector lever	Used to lock or release the power module during installation or removing.
2	Power switch	Used to turn on or off the power output.
3	Power indicator (STATUS)	 Steady green: The power output of the power module is normal. Steady red: The power output is abnormal and the power module is in protection state. (The indicator blinks if the power module is in hiccup
		protection state.)
4	AC power socket	Use an 8.1.2 AC Power Cable to connect the router to a power source.
5	Jack for power cable locking strap	Insert a power cable locking strap in this jack to secure the power cable.

Technical Specifications

Table 5-45 lists the technical specifications of an 850 W AC PoE power module.

Table 5-45 Technical specifications

Item	Specification
Dimensions (H x W x D)	40 mm x 201 mm x 253 mm (1.57 in. x 7.91 in. x 9.96 in.)
Weight	1.85 kg (4.08 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz
	Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	Maximum input current: 10 A
Output	Rated output voltage: 12 V DC or -53.5 V DC
	Maximum output voltage range: 11.64 V DC to 12.36 V DC or -51.895 V DC to -55.105 V DC
	Maximum output power: 850 W
	Maximum output current: 29.2 A or 9.35 A

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-46 provides 850 W AC PoE power module ordering information.

Table 5-46 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02131247	PAC-850WL- LE	PAC-850WL- LE	850 W AC PoE Power Module

5.12 150 W PoE Power Adapter with an Adapter Cable

Product Support

Table 5-47 lists the device models that support a 150 W PoE power adapter with an adapter cable.

Table 5-47 Product support

Power Module Name	Product Support
150 W PoE Power Adapter with an Adapter Cable	AR6120-VW

Appearance

Figure 5-16 shows the appearance of a 150 W PoE power adapter with an adapter cable.



Figure 5-16 150 W PoE power adapter with an adapter cable

Table 5-48 describes functions of a 150 W PoE power adapter with an adapter cable.

Table 5-48 Function description

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

NOTICE

Do not touch the power adapter for a long time because the plastic shell may be slightly hot when the power adapter is heavily loaded. This condition does not affect the performance and reliability of the adapter.

Technical Specifications

Table 5-49 lists the technical specifications of a 150 W PoE power adapter with an adapter cable.

Table 5-49 Technical specifications

Item	Specification
Dimensions (H x W x D)	44 mm x 80 mm x 180 mm (1.73 in. x 3.15 in. x 7.09 in.)
Weight	0.75 kg (1.65 lb)
Input	Rated input voltage range: 100 V AC to 240 V AC, 50 Hz/60 Hz
	Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	Maximum input current: 2 A
Output	Rated output voltage: 56 V DC
	Maximum output voltage range: 54 V DC to 57 V DC
	Maximum output power: 150 W
	Maximum output current: 2.68 A

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 5-50 provides the 150 W PoE power adapter with an adapter cable ordering information.

Table 5-50 Ordering information

Part Number	Model	Description
02221024	HW-560268D0D	150 W AC-DC Power Adapter
04052074	LIN2P-YIN	Connecting cable for power adapter

6 Fan Modules

- 6.1 AR6280-FAN
- 6.2 AR6280-S-FAN
- 6.3 AR6280K-FAN
- 6.4 AR6300-FAN
- 6.5 AR6300-S-FAN
- 6.6 AR6300K-FAN

6.1 AR6280-FAN

Product Support

Table 6-1 lists the device model that supports the AR6280-FAN module.

Table 6-1 Product support

Fan Module Name	Product Support
AR6280-FAN	AR6280

Appearance

Figure 6-1 shows the appearance of the AR6280-FAN module.



Figure 6-1 AR6280-FAN appearance

The AR6280-FAN module contains five fans to cool the router.

This fan module is hot swappable.

Panel

Figure 6-2 shows the AR6280-FAN panel.

Figure 6-2 AR6280-FAN panel HUAWEI NetEngine AR6280

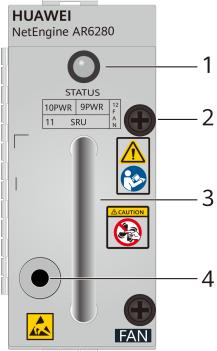


Table 6-2 AR6280-FAN panel

Number	Name	Specification
1	STATUS indicator (red and green)	 Slow blinking green: The fan module is running properly. Fast blinking green: The fan module cannot communicate with the system. Blinking red: The fan module has failed, and an alarm has been
		generated.
2	Captive screw	Used to fix the fan module.
3	Handle	Hold it to install or remove the power module.
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)

Technical Specifications

Table 6-3 lists the technical specifications of the AR6280-FAN module.

Table 6-3 Technical specifications

Item	Specification
Dimensions (H x W x D)	84.3 mm x 27.4 mm x 478.6 mm (3.32 in. x 1.08 in. x 18.84 in.)
Fans	5
Weight	1.05 kg (2.31 lb)
Maximum power consumption	30 W
Maximum wind pressure	150 Pa
Maximum airflow	400 CFM
Maximum noise	65.7 dB

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 6-4 provides the AR6280-FAN ordering information.

Table 6-4 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specification
02312FND	AR6280-FAN	AR6280-FAN	Fan Box For AR6280

6.2 AR6280-S-FAN

Product Support

Table 6-5 lists the device model that supports the AR6280-S-FAN module.

Table 6-5 Product support

Fan Module Name	Product Support
AR6280-S-FAN	AR6280-S

Appearance

Figure 6-3 shows the appearance of the AR6280-S-FAN module.

Figure 6-3 AR6280-S-FAN appearance



Function

The AR6280-S-FAN module contains five fans to cool the router.

This fan module is hot swappable.

Panel

Figure 6-4 shows the AR6280-S-FAN panel.

Figure 6-4 AR6280-S-FAN panel

Table 6-6 AR6280-S-FAN panel

Number	Name	Specification		
1	STATUS indicator (red and green)	 Slow blinking green: The fan module is running properly. Fast blinking green: The fan module cannot communicate with the system. Blinking red: The fan module has failed, and an alarm has been generated. 		
2	Captive screw	Used to fix the fan module.		
3	Handle	Hold it to install or remove the power module.		
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)		

4

Technical Specifications

Table 6-7 lists the technical specifications of the AR6280-S-FAN module.

Table 6-7 Technical specifications

Item	Specification
Dimensions (H x W x D)	84.3 mm x 27.4 mm x 478.6 mm (3.32 in. x 1.08 in. x 18.84 in.)
Fans	5
Weight	1.05 kg (2.31 lb)
Maximum power consumption	30 W
Maximum wind pressure	150 Pa
Maximum airflow	400 CFM
Maximum noise	65.7 dB

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 6-8 provides the AR6280-S-FAN ordering information.

Table 6-8 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specification
02312XQV	AR6280-S- FAN	AR6280-S- FAN	Fan Box For AR6280-S

6.3 AR6280K-FAN

Product Support

Table 6-9 lists the device model that supports the AR6280K-FAN module.

Table 6-9 Product support

Fan Module Name	Product Support
AR6280K-FAN	AR6280K

Appearance

Figure 6-5 shows the appearance of the AR6280K-FAN module.

Figure 6-5 AR6280K-FAN appearance



Function

The AR6280K-FAN module contains five fans to cool the router.

This fan module is hot swappable.

Panel

Figure 6-6 shows the AR6280K-FAN panel.

Figure 6-6 AR6280K-FAN panel HUAWEI

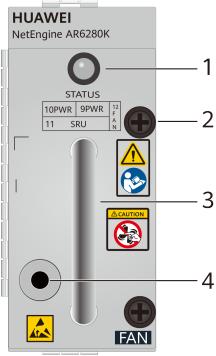


Table 6-10 AR6280K-FAN panel

Number	Name	Specification
1	STATUS indicator (red and green)	 Slow blinking green: The fan module is running properly. Fast blinking green: The fan module cannot communicate with the system. Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Used to fix the fan module.
3	Handle	Hold it to install or remove the power module.
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)

Technical Specifications

Table 6-11 lists the technical specifications of the AR6280K-FAN module.

Table 6-11 Technical specifications

Item	Specification
Dimensions (H x W x D)	84.3 mm x 27.4 mm x 478.6 mm (3.32 in. x 1.08 in. x 18.84 in.)
Fans	5
Weight	1.05 kg (2.31 lb)
Maximum power consumption	30 W
Maximum wind pressure	150 Pa
Maximum airflow	400 CFM
Maximum noise	65.7 dB

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 6-12 provides the AR6280K-FAN ordering information.

Table 6-12 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specification
02312XQU	AR6280K- FAN	AR6280K- FAN	Fan Box For AR6280K

6.4 AR6300-FAN

Product Support

Table 6-13 lists the device model that supports the AR6300-FAN module.

Table 6-13 Product support

Fan Module Name	Product Support
AR6300-FAN	AR6300

Appearance

Figure 6-7 shows the appearance of the AR6300-FAN module.

Figure 6-7 AR6300-FAN appearance



Function

The AR6300-FAN module contains three fans to cool the router.

This fan module is hot swappable.

Panel

Figure 6-8 shows the AR6300-FAN panel.

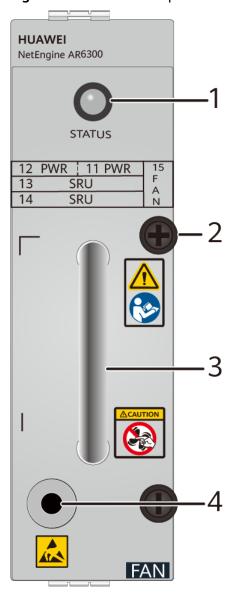


Figure 6-8 AR6300-FAN panel

Table 6-14 AR6300-FAN panel

Number	Name	Description
1	STATUS indicator (red and green)	Slow blinking green: The fan module is running properly.
		Fast blinking green: The fan module cannot communicate with the system.
		Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Used to fix the fan module.
3	Handle	Hold it to install or remove the power module.

Number	Name	Description
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)

Technical Specifications

Table 6-15 lists the technical specifications of the AR6300-FAN module.

Table 6-15 Technical specifications

Item	Specification
Dimensions (H x W x D)	125.7 mm x 27.4 mm x 478.6 mm (4.95 in. x 1.08 in. x 18.84 in.)
Fans	3
Weight	1.45 kg (3.20 lb)
Maximum power consumption	70 W
Maximum wind pressure	226 Pa
Maximum airflow	543 CFM
Maximum noise	75.2 dB

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 6-16 provides the AR6300-FAN ordering information.

Table 6-16 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specification
02312FNC	AR6300-FAN	AR6300-FAN	Fan Box For AR6300

6.5 AR6300-S-FAN

Product Support

Table 6-17 lists the device model that supports the AR6300-S-FAN module.

Table 6-17 Product support

Fan Module Name	Product Support
AR6300-S-FAN	4.5.7 AR6300-S

Appearance

Figure 6-9 shows the appearance of the AR6300-S-FAN module.

Figure 6-9 AR6300-S-FAN appearance



Function

The AR6300-S-FAN module contains three fans to cool the router.

This fan module is hot swappable.

Panel

Figure 6-10 shows the AR6300-S-FAN panel.

Figure 6-10 AR6300-S-FAN panel

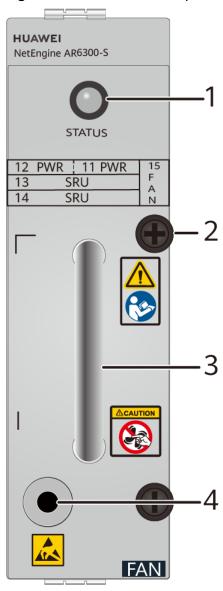


Table 6-18 AR6300-S-FAN panel

Number	Name	Description
1	STATUS indicator (red	 Slow blinking green: The fan module is running properly.
	and green)	Fast blinking green: The fan module cannot communicate with the system.
		 Blinking red: The fan module has failed, and an alarm has been generated.

Number	Name	Description
2	Captive screw	Used to fix the fan module.
3	Handle	Hold it to install or remove the power module.
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)

Technical Specifications

Table 6-19 lists the technical specifications of the AR6300-S-FAN module.

Table 6-19 Technical specifications

Item	Specification
Dimensions (H x W x D)	125.7 mm x 27.4 mm x 478.6 mm (4.95 in. x 1.08 in. x 18.84 in.)
Fans	3
Weight	1.45 kg (3.20 lb)
Maximum power consumption	70 W
Maximum wind pressure	226 Pa
Maximum airflow	543 CFM
Maximum noise	75.2 dB

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 6-20 provides the AR6300-S-FAN ordering information.

Table 6-20 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specification
02312PDG	AR6300-S- FAN	AR6300-S- FAN	Fan Box For AR6300-S

6.6 AR6300K-FAN

Product Support

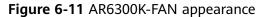
Table 6-21 lists the device model that supports the AR6300K-FAN module.

Table 6-21 Product support

Fan Module Name	Product Support
AR6300K-FAN	AR6300K

Appearance

Figure 6-11 shows the appearance of the AR6300K-FAN module.





Function

The AR6300K-FAN module contains three fans to cool the router.

This fan module is hot swappable.

Panel

Figure 6-12 shows the AR6300K-FAN panel.

Figure 6-12 AR6300K-FAN panel

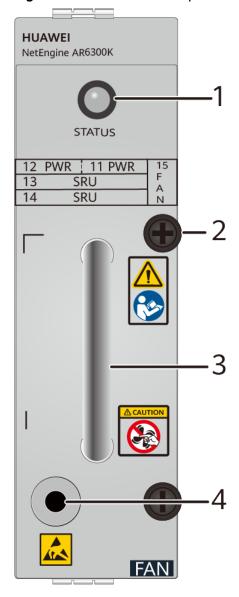


Table 6-22 AR6300K-FAN panel

Number	Name	Description
1	STATUS indicator (red and green)	 Slow blinking green: The fan module is running properly. Fast blinking green: The fan module cannot communicate with the system. Blinking red: The fan module has failed, and an alarm has been generated.
2	Captive screw	Used to fix the fan module.
3	Handle	Hold it to install or remove the power module.
4	ESD jack	Used to connect an ESD wrist strap. (The ground point must have been grounded.)

Technical Specifications

Table 6-23 lists the technical specifications of the AR6300K-FAN module.

Table 6-23 Technical specifications

Item	Specification
Dimensions (H x W x D)	125.7 mm x 27.4 mm x 478.6 mm (4.95 in. x 1.08 in. x 18.84 in.)
Fans	3
Weight	1.45 kg (3.20 lb)
Maximum power consumption	70 W
Maximum wind pressure	226 Pa
Maximum airflow	543 CFM
Maximum noise	75.2 dB

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 6-24 provides the AR6300K-FAN ordering information.

Table 6-24 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specification
02312XQW	AR6300K- FAN	AR6300K- FAN	Fan Box For AR6300K

7 Cards

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7.1 Basic Concepts of Cards
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7.2 SRU

7.3 Ethernet LAN Card

7.4 Ethernet WAN Card

7.5 E1/T1 Card

7.6 E3/T3 Card

7.7 Synchronous/Asynchronous Card

7.8 3G/LTE Card

7.9 5G Card

7.10 E&M Card

7.11 POS/CPOS Card

7.12 ISDN S/T WAN Card

7.13 Voice Card

7.14 xDSL Card

7.15 xPON Card

7.16 Capacitor Card

7.1 Basic Concepts of Cards

7.1.1 Card Structure and Dimensions

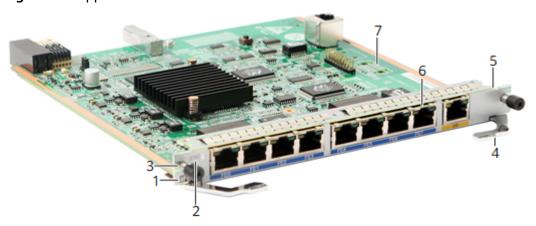
Card Structure

□ NOTE

The routers support MIC, service interface card (SIC), wide service interface card (WSIC), extended service interface card (XSIC), and service and router unit (SRU) cards. These cards have the same structure, and a WSIC card is used as an example here.

Figure 7-1 shows the appearance of a WSIC card.

Figure 7-1 Appearance of a WSIC card



1. Card name silkscreen	2. Indicator	3. Captive screw	
4. Handle	5. Front panel plate	6. Ports	
7. Printed circuit board (PCB)	-	-	

A card consists of:

• The PCB contains all the functional chips and is the core of the card The PCB provides indicators, buttons, and ports on the front panel. PCBs of some cards provide space for installing daughter cards.

∩ NOTE

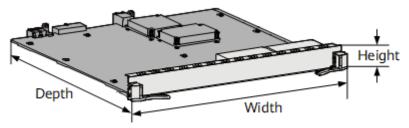
Different cards provide different indicators, buttons, and ports. Some cards support daughter cards, while some cards do not. For details, see the description of specific cards.

- Front panel, consisting of screws, ejector levers, and plate.
 - Screws: fix the card into the chassis.
 - Ejector lever: allows you to insert and remove the card.
 - Plate: connects the ejector levers and the PCB. Labels, such as the bar code and laser label, are also attached on the plate.

Card Dimensions

Figure 7-2 illustrates the dimensions of a card.

Figure 7-2 Card dimensions



NOTE

The card dimensions are defined as follows:

- Depth: distance between the top of an ejector lever and the end of the PCB
- Width: longest distance between the tops of two ejector levers
- Height: height of the front panel

Table 7-1 lists the typical cards supported by the router.

Table 7-1 Card dimensions

Card Type	Dimensions (H x W x D)
MIC card	18.70 mm x 67.86 mm x 87.55 mm (0.74 in. x 2.67 in. x 3.45 in.)
SIC card	19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)
WSIC card	19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)
XSIC card	40.14 mm x 201 mm x 223.5 mm (1.58 in. x 7.91 in. x 8.80 in.)
SRU/EXSIC card	40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.)

7.1.2 Port Numbering

On the router, interfaces are numbered in the format of slot ID/subcard ID/interface sequence number.

Slot ID

The slot ID identifies the slot in which a card is installed.

□ NOTE

- The SRU slot ID is 0.
- When slots are combined into one slot, the greater slot ID is used as the new slot ID. For example, when slot 1 and slot 2 are combined, slot ID 2 is used as the new slot ID.

Subcard ID

The subcard ID specifies the ID of a subcard. The router does not support subcards. Therefore, the subcard ID of the router is always 0.

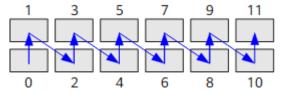
• Interface sequence number

The interface sequence number indicates the number of each interface on a card.

- If there is only one row of interfaces on a card, the interfaces are numbered from left to right starting with 0.



- If there are two rows of interfaces on a card, the interfaces are numbered from bottom to top and left to right starting with 0.



7.2 SRU

7.2.1 SRU-100H

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 7-3 shows the appearance of an SRU-100H card.

Figure 7-3 SRU-100H card appearance



Version Mapping

Table 7-2 lists the device models and software versions supporting the SRU-100H.

Table 7-2 Version mapping

Card Name	Device Model
SRU-100H	AR6280
NOTE The SRU is supported in V300R019C00 and later versions.	AR6300

Functions and Features

Table 7-3 describes the functions and features of the SRU-100H.

Table 7-3 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high- speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 7-4 shows indicators on an SRU-100H card, and **Table 7-4** describes the indicator states and meanings.

1234 5 6 5 5 6 7 8

Figure 7-4 SRU-100H indicators and RESET button

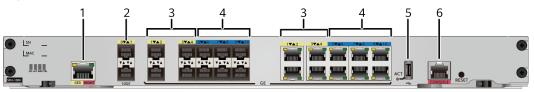
Table 7-4 Indicator and RESET button description

Numbe r	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/ standby status		Steady on: The SRU is in active state.
	indicator)		Off: The SRU is in standby state.
3	iNET Green	Steady on: The network service has been established.	
			Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller- Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
5 and 6	GE optical/ electrical interface indicators: • 5: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.

Numbe r	Indicator	Color	Description
	6: LINK indicator, green		ACT indicator off: No data is being transmitted or received on the interface.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	RESET button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	

Figure 7-5 shows interfaces on the SRU-100H.

Figure 7-5 Interfaces on the SRU-100H



1. One GE electrical interface	2. Two 10GE optical interfaces	3. WAN interfaces: four GE combo interfaces
NOTE GE0 is the management network port on a device. It can implement web-based network management and email-based deployment.	NOTE GE optical modules can be inserted into these two optical interfaces.	
4. LAN interfaces: six GE combo interfaces	5. USB 2.0 interface	6. Console interface

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 7-5** lists attributes of a USB interface.

Table 7-5 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
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 either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE electrical interface

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. **Table 7-6** lists attributes of a GE electrical interface.

Table 7-6 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing

Attribute	Description
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 7-7** lists attributes of a 10GE optical interface.

Table 7-7 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 7-8** lists attributes of a console interface.

Table 7-8 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	Console Cable

Technical Specifications

Table 7-9 lists the technical specifications of the SRU-100H.

Table 7-9 Technical specifications

Item	Specifications		
Card type	EXSIC		
Hot swap	Supported		
Processor	16-core, 1.85 GHz		
Memory	4 GB		
Flash	1 GB		
	To view the available memory size, run the dir command.		
Micro SD card (sd1 by default)	Not supported		
Hard disk	Not supported		
Physical specifications	 Dimensions (H x W x D): 40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.) Maximum power consumption: 57 W Weight: 2.3 kg (5.07 lb) 		
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 		

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-10 provides the SRU-100H ordering information.

Table 7-10 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312GJM	SRU-100H	SRU-100H	Service and Router unit 100H, 11GE(10 GE Combo, 1GE Copper), 2 10GE(2 SFP+), 1 USB

7.2.2 SRU-100HH

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 7-6 shows the appearance of an SRU-100HH card.

Figure 7-6 SRU-100HH card appearance



Version Mapping

Table 7-11 lists the device models and software versions supporting the SRU-100HH.

Table 7-11 Version mapping

Card Name	Device Model
SRU-100HH	AR6280-S
NOTE The SRU is supported in V300R019C10 and later versions.	AR6280 AR6300

Functions and Features

Table 7-12 describes the functions and features of the SRU-100HH.

Table 7-12 Functions and features

Function and Feature	Description	
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.	

Function and Feature	Description	
Voice function	Not supported	
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.	
Switching module	Acts as the service switching plane and provides high- speed channels for service switching functions.	
Power module	Provides power for other modules of the SRU.	
Clock module	Not supported	

Panel

Figure 7-7 shows indicators and the RST button on an SRU-100HH card, and Table 7-13 describes the indicator states and meanings.

Figure 7-7 SRU-100HH indicators and RESET button

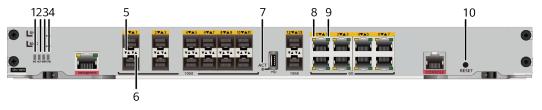


Table 7-13 Indicator and RESET button description

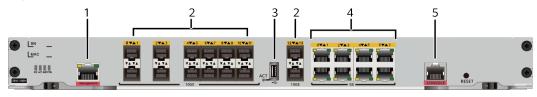
Numbe r	Indicator	Color	Description
1 SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being	
			powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/ standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.

Numbe r	Indicator	Color	Description
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Blinking: The plug-and-play deployment is ongoing by the registration query center. Off: The Agile Controller-Campus does not manage the router.
5 and 6	10GE optical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
	• 5: ACT indicator, yellow		LINK indicator off: No link is established on the interface.
	• 6: LINK indicator, green	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.
7	7 ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8 and 9	GE electrical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
	8: ACT indicator, yellow		LINK indicator off: No link is established on the interface.

Numbe r	Indicator	Color	Description
	9: LINK indicator, green	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.
10	RESET button	 NOTE This button is used to reset the router. • In an empty configuration scenario, ensure that the router has no console port input, and has no user login routers. If the Reset button is pressed and held for at least 5 seconds, you will access the registration query center of Huawei devices and obtain the cloud management platform address of routers for plugand-play deployment. • In the configured scenario, hold down the button for at least 5 seconds to restore the factory settings. 	
		• To reset the ro 5 seconds.	outer, hold down the button for less than
			ter will interrupt services. Exercise iding to press this button.

Figure 7-8 shows interfaces on the SRU-100HH.

Figure 7-8 Interfaces on the SRU-100HH



1. One MEth interface 2. WAN interfaces: 3. USB 2.0 interface fourteen 10GE optical NOTE interfaces MEth interface is the NOTE management network port on a device. It can GE optical modules can be implement web-based inserted into these fourteen network management and optical interfaces. email-based deployment. All 10GE WAN interfaces can be configured as LAN interfaces.

4. WAN interfaces: eight GE electrical interfaces	5. Console interface	-
NOTE All GE WAN interfaces can be configured as LAN interfaces.		

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 7-14** lists attributes of a USB interface.

Table 7-14 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-15** lists attributes of a GE electrical interface.

Table 7-15 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 7-16** lists attributes of a 10GE optical interface.

Table 7-16 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 7-17** lists attributes of a console interface.

Table 7-17 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	Console Cable

Technical Specifications

Table 7-18 lists the technical specifications of the SRU-100HH.

Table 7-18 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 2.26 GHz
Memory	8 GB
Flash	2 GB
	To view the available memory size, run the dir command.

Item	Specifications	
Micro SD card (sd1 by default)	Not supported	
Hard disk	Not supported	
Physical specifications	• Dimensions (H x W x D): 40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.)	
	Maximum power consumption: 92 W	
	Weight: 3.3 kg (7.27 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-19 provides the SRU-100HH ordering information.

Table 7-19 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312XRX	SRU-100HH	SRU-100H	Service and Router Unit 100HH, 14*10GE(SFP+), 8*GE Copper, 1*USB2.0

7.2.3 SRU-200H

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.

• Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 7-9 shows the appearance of an SRU-200H card.

Figure 7-9 SRU-200H card appearance



Version Mapping

Table 7-20 lists the device models and software versions supporting the SRU-200H.

Table 7-20 Version mapping

Card Name	Device Model
SRU-200H	AR6280
NOTE This SRU is supported in V300R019C00 and later versions.	AR6300

Functions and Features

Table 7-21 describes the functions and features of the SRU-200H.

Table 7-21 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high- speed channels for service switching functions, including voice switching, data switching, and conversion between voice and data packets.
Power module	Provides power for other modules of the SRU.

Function and Feature	Description
Clock module	Not supported

Panel

Figure 7-10 shows the indicators on an SRU-200H card, and **Table 7-22** describes the indicator states and meanings.

Figure 7-10 SRU-200H indicators and RESET button

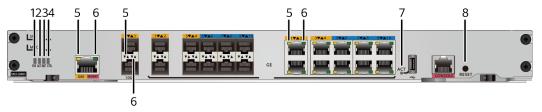


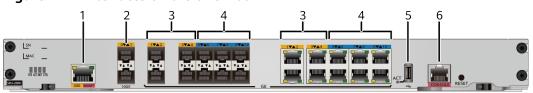
Table 7-22 Indicator and RESET button description

Numbe r	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
	ACT (active/ standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	INET	Green	Steady on: The network service has been established.
			Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller- Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.

Numbe r	Indicator	Color	Description
5 and 6	GE optical/ electrical interface	Green	LINK indicator steady on: A link has been established on the interface.
	indicators: • 5: ACT indicator,		LINK indicator off: No link is established on the interface.
	yellow • 6: LINK indicator,	Yellow	ACT indicator blinking: Data is being transmitted or received on the interface.
	green		ACT indicator off: No data is being transmitted or received on the interface.
7 ACT (USB)	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8	RESET button	NOTICE This button is used to reset the SRU manually. Resetting the SRU will cause service interruption. Exercise caution when using this button.	

Figure 7-11 shows the interfaces on the SRU-200H.

Figure 7-11 Interfaces on the SRU-200H



1. One GE electrical interface	2. Two 10GE optical interfaces	3. WAN interfaces: four GE combo interfaces
NOTE GE0 is the management network port on a device. It can implement web-based network management and email-based deployment.	NOTE GE optical modules can be inserted into these two optical interfaces.	
4. LAN interfaces: six GE combo interfaces	5. USB 2.0 interface	6. Console interface

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 7-23** lists attributes of a USB interface.

Table 7-23 USB interface attributes

Attribute	Description
Connector type	Type A
Standards compliance	USB2.0
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 either of them can work at a time. When either 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. It must be used with an **Ethernet Cable**.
- The GE optical interface (100/1000 Mbit/s auto-sensing) transmits and receives services at 100 Mbit/s or 1000 Mbit/s. It must be used with the fiber and optical module. The following optical modules are supported:
 - FE SFP/eSFP Optical Module
 - GE eSFP Optical Module

Ⅲ NOTE

A combo interface works in auto mode and automatically works as an optical or electrical interface by default.

GE electrical interface

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. **Table 7-24** lists attributes of a GE electrical interface.

Table 7-24 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 7-25** lists attributes of a 10GE optical interface.

Table 7-25 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 7-26** lists attributes of a console interface.

Table 7-26 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	Console Cable

Technical Specifications

Table 7-27 lists technical specifications of the SRU-200H.

Table 7-27 Technical specifications

Item	Specification
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 1.85 GHz
Memory	4 GB
Flash	1 GB To view the available memory size, run the dir command.
Micro SD card (sd1 by default)	Not supported
Hard disk	Not supported
DSP DIMM slot	Supported
Physical specifications	 Dimensions (H x W x D): 40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.) Maximum power consumption: 66 W Weight: 2.3 kg (5.07 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-28 provides the SRU-200H ordering information.

Table 7-28 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312HCA	SRU-200H	SRU-200H	SRU-200H, service and router unit 200H, 11*GE (10*GE combo, 1*GE copper), 2*10GE SFP+, 1*USB, 2*DSP slot

7.2.4 SRU-400H

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 7-12 shows the appearance of an SRU-400H card.

Figure 7-12 SRU-400H card appearance



Version Mapping

Table 7-29 lists the device models and software versions supporting the SRU-400H.

Table 7-29 Version mapping

Card Name	Device Model
SRU-400H	AR6280
NOTE The SRU is supported in V300R019C00 and later versions.	AR6300 AR6300-S

Functions and Features

Table 7-30 describes the functions and features of the SRU-400H.

Table 7-30 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high- speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 7-13 shows indicators and the RST button on an SRU-400H card, and **Table 7-31** describes the indicator states and meanings.

Figure 7-13 SRU-400H indicators and RESET button

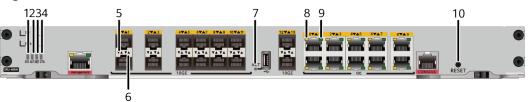


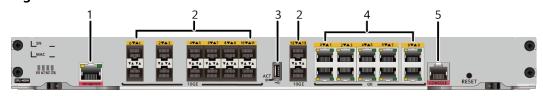
Table 7-31 Indicator and RESET button description

Numbe r	Indicator	Color	Description
1	1 SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/ standby status	Green	Steady on: The SRU is in active state.
	indicator)		Off: The SRU is in standby state.
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Blinking: The plug-and-play deployment is ongoing by the registration query center. Off: The Agile Controller-Campus does not manage the router.
5 and 6	5 and 6 10GE optical interface indicators: • 5: ACT indicator, yellow • 6: LINK indicator, green	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		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.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.

Numbe r	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.
8 and 9	GE electrical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
	 8: ACT indicator, yellow 9: LINK indicator, green 		LINK indicator off: No link is established on the interface.
		9: LINK Yellow indicator,	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.
10	RESET button	NOTE This button is use	d to reset the router.
		In an empty conter has no login routers. for at least 5 squery center conterports.	onfiguration scenario, ensure that the console port input, and has no user If the Reset button is pressed and held seconds, you will access the registration of Huawei devices and obtain the cloud platform address of routers for plug-
			red scenario, hold down the button for onds to restore the factory settings.
		• To reset the ro 5 seconds.	outer, hold down the button for less than
			ter will interrupt services. Exercise iding to press this button.

Figure 7-14 shows interfaces on the SRU-400H.

Figure 7-14 Interfaces on the SRU-400H



1. One MEth interface NOTE MEth interface is the management network port on a device. It can implement web-based network management and email-based deployment.	2. WAN interfaces: fourteen 10GE optical interfaces NOTE GE optical modules can be inserted into these fourteen optical interfaces. All 10GE WAN interfaces can be configured as LAN interfaces.	3. USB 2.0 interface
4. WAN interfaces: ten GE electrical interfaces	5. Console interface	-
NOTE All GE WAN interfaces can be configured as LAN interfaces.		

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 7-32** lists attributes of a USB interface.

Table 7-32 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-33** lists attributes of a GE electrical interface.

Table 7-33 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing

Attribute	Description
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 7-34** lists attributes of a 10GE optical interface.

Table 7-34 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 7-35** lists attributes of a console interface.

Table 7-35 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	Console Cable

Technical Specifications

Table 7-36 lists the technical specifications of the SRU-400H.

Table 7-36 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 2.26 GHz
Memory	8 GB
Flash	2 GB
	To view the available memory size, run the dir command.
Micro SD card (sd1 by default)	Not supported
Hard disk	Not supported
Physical specifications	 Dimensions (H x W x D): 40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.) Maximum power consumption: 92 W Weight: 3.3 kg (7.27 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-37 provides the SRU-400H ordering information.

Table 7-37 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312NEU	SRU-400H	SRU-400H	Service and Router Unit 400H, 14*10GE(SFP+), 10*GE Copper, 1*USB2.0

7.2.5 SRU-400HK

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 7-15 shows the appearance of an SRU-400HK card.

Figure 7-15 SRU-400HK card appearance



Version Mapping

Table 7-38 lists the device models and software versions supporting the SRU-400HK.

Table 7-38 Version mapping

Card Name	Device Model
SRU-400HK	AR6280K
NOTE The SRU is supported in V300R019C11 and later versions.	AR6300K

Functions and Features

Table 7-39 describes the functions and features of the SRU-400HK.

Table 7-39 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.

Function and Feature	Description
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high- speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 7-16 shows indicators and the RST button on an SRU-400HK card, and **Table 7-40** describes the indicator states and meanings.

Figure 7-16 SRU-400HK indicators and RESET button

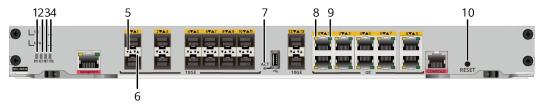


Table 7-40 Indicator and RESET button description

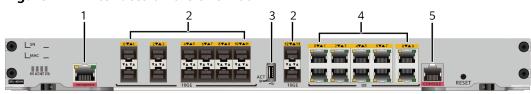
Numbe r	Indicator	Color	Description
1	1 SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
	Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.	
		Off	The system software is not running or is resetting.
2	ACT (active/ standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.

Numbe r	Indicator	Color	Description
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller-Campus has managed the router. Blinking: The plug-and-play deployment is ongoing by the registration query center. Off: The Agile Controller-Campus does not manage the router.
5 and 6	10GE optical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
	• 5: ACT indicator, yellow		LINK indicator off: No link is established on the interface.
	6: LINK indicator, green	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.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8 and 9	GE electrical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
	8: ACT indicator, yellow		LINK indicator off: No link is established on the interface.

Numbe r	Indicator	Color	Description
	• 9: LINK indicator, green	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.
10	RESET button	1 - 1	

Figure 7-17 shows interfaces on the SRU-400HK.

Figure 7-17 Interfaces on the SRU-400HK



1. One MEth interface 2. WAN interfaces: 3. USB 2.0 interface fourteen 10GE optical NOTE interfaces MEth interface is the NOTE management network port on a device. It can GE optical modules can be implement web-based inserted into these fourteen network management and optical interfaces. email-based deployment. All 10GE WAN interfaces can be configured as LAN interfaces.

4. WAN interfaces: ten GE electrical interfaces	5. Console interface	-
NOTE All GE WAN interfaces can be configured as LAN interfaces.		

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 7-41** lists attributes of a USB interface.

Table 7-41 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-42** lists attributes of a GE electrical interface.

Table 7-42 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces (1/10 Gbit/s auto-sensing) can work in GE mode and can transmit and receive service traffic at 1 Gbit/s or 10 Gbit/s. **Table 7-43** lists attributes of a 10GE optical interface.

Table 7-43 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules and GE eSFP Optical Modules.
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 7-44** lists attributes of a console interface.

Table 7-44 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	Console Cable

Technical Specifications

Table 7-45 lists the technical specifications of the SRU-400HK.

Table 7-45 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 2.26 GHz
Memory	8 GB
Flash	2 GB
	To view the available memory size, run the dir command.

Item	Specifications	
Micro SD card (sd1 by default)	Not supported	
Hard disk	Not supported	
Physical specifications	• Dimensions (H x W x D): 40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.)	
	Maximum power consumption: 92 WWeight: 3.3 kg (7.27 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-46 provides the SRU-400HK ordering information.

Table 7-46 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312XRW	SRU-400HK	SRU-400HK	Service and Router Unit 400HK, 14*10GE(SFP+), 10*GE Copper, 1*USB2.0

7.2.6 SRU-600H

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.

• Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 7-18 shows the appearance of an SRU-600H card.

Figure 7-18 SRU-600H card appearance



Version Mapping

Table 7-47 lists the device models and software versions supporting the SRU-600H.

Table 7-47 Version mapping

Card Name	Device Model
SRU-600H	AR6280
NOTE The SRU is supported in V300R019C00 and later versions.	AR6300

Functions and Features

Table 7-48 describes the functions and features of the SRU-600H.

Table 7-48 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high- speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 7-19 shows indicators and the RST button on an SRU-600H card, and **Table 7-49** describes the indicator states and meanings.

Figure 7-19 SRU-600H indicators and RESET button



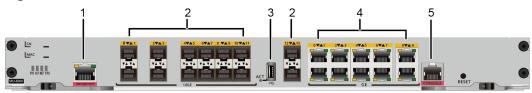
Table 7-49 Indicator and RESET button description

Numbe r	Indicator	Color	Description
1	1 SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	2 ACT (active/ standby status indicator)	Green	Steady on: The SRU is in active state.
			Off: The SRU is in standby state.
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller- Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
5 and 6	and 6 10GE optical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
	• 5: ACT indicator, yellow		LINK indicator off: No link is established on the interface.

Numbe r	Indicator	Color	Description
	• 6: LINK Yellow indicator, green	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.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8 and 9	ind 9 GE electrical interface indicators: • 8: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
	9: LINK indicator, green	9: LINK Yellow indicator,	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.
10	RESET button	NOTE	d to
		 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 router, hold down the button for less the seconds. 	
		Resetting the rou	ter will interrupt services. Exercise iding to press this button.

Figure 7-20 shows interfaces on the SRU-600H.

Figure 7-20 Interfaces on the SRU-600H



1. One MEth interface NOTE MEth interface is the management network port on a device. It can implement web-based network management and email-based deployment.	2. WAN interfaces: fourteen 10GE optical interfaces NOTE GE optical modules can be inserted into these fourteen optical interfaces. All 10GE WAN interfaces can be configured as LAN interfaces.	3. USB 2.0 interface
4. WAN interfaces: ten GE electrical interfaces	5. Console interface	-
NOTE		
All GE WAN interfaces can be configured as LAN interfaces.		

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 7-50** lists attributes of a USB interface.

Table 7-50 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-51** lists attributes of a GE electrical interface.

Table 7-51 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces can work in GE mode and can transmit and receive service traffic at 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. **Table 7-52** lists attributes of a 10GE optical interface.

Table 7-52 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules, GE eSFP Optical Modules, and FE SFP/eSFP Optical Module.
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 7-53** lists attributes of a console interface.

Table 7-53 Console interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	RS232

Attribute	Description
Working mode	Full-duplex Universal Asynchronous Receiver/ Transmitter (UART)
Data equipment type	Data Circuit-terminating Equipment (DCE)
Cable type	Console Cable

Technical Specifications

Table 7-54 lists the technical specifications of the SRU-600H.

Table 7-54 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 2.26 GHz
Memory	16 GB
Flash	4 GB
	To view the available memory size, run the dir command.
Micro SD card (sd1 by default)	Not supported
Hard disk	Not supported
Physical specifications	 Dimensions (H x W x D): 40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.) Maximum power consumption: 94 W
	Weight: 3.3 kg (7.27 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-55 provides the SRU-600H ordering information.

Table 7-55 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312NEV	SRU-600H	SRU-600H	Service and Router Unit 600H, 14*10GE(SFP+), 10*GE Copper, 1*USB2.0

7.2.7 SRU-600HK

Card Overview

A Service and Router Unit (SRU) integrates the control and management functions and provides the control plane, management plane, and switching plane for the system.

- Control plane: provides functions such as protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics collection, and system security.
- Management plane: provides functions such as system monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrade.
- Switching plane: provides high-speed, non-blocking data channels for service switching between service modules.

Figure 7-21 shows the appearance of an SRU-600HK card.

Figure 7-21 SRU-600HK card appearance



Version Mapping

Table 7-56 lists the device models and software versions supporting the SRU-600HK.

Table 7-56 Version mapping

Card Name	Device Model
SRU-600HK	AR6280K
NOTE The SRU is supported in V300R019C11 and later versions.	AR6300K

Functions and Features

Table 7-57 describes the functions and features of the SRU-600HK.

Table 7-57 Functions and features

Function and Feature	Description
Basic function	Stores system configuration data, startup files, upgrade software, and system running logs.
Voice function	Not supported
Control module	Provides the control plane and management plane to implement functions such as protocol processing, route calculation, forwarding control, system management, and system security.
Switching module	Acts as the service switching plane and provides high- speed channels for service switching functions.
Power module	Provides power for other modules of the SRU.
Clock module	Not supported

Panel

Figure 7-22 shows indicators and the RST button on an SRU-600HK card, and **Table 7-58** describes the indicator states and meanings.

Figure 7-22 SRU-600HK indicators and RESET button

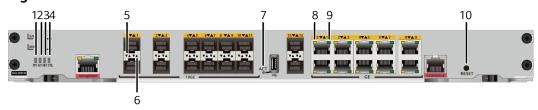


Table 7-58 Indicator and RESET button description

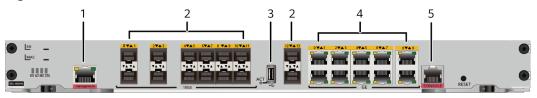
Numbe r	Indicator	Color	Description
1	SYS	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Numbe r	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	ACT (active/ standby status	Green	Steady on: The SRU is in active state.
	indicator)		Off: The SRU is in standby state.
3	iNET	Green	Steady on: The network service has been established. Off: The network service is unavailable.
4	CTRL	Green	Steady on: The Agile Controller- Campus has managed the router. Off: The Agile Controller-Campus does not manage the router.
5 and 6	5 and 6 10GE optical interface indicators:	Green	LINK indicator steady on: A link has been established on the interface.
	• 5: ACT indicator, yellow		LINK indicator off: No link is established on the interface.
	6: LINK indicator, green	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.
7	ACT (USB)	Red and green	Steady green: The system has been upgraded or configured using a USB flash drive.
			Blinking green: The system is being upgraded or configured using a USB flash drive.
			Steady red: The system fails to be upgraded or configured using a USB flash drive.

Numbe r	Indicator	Color	Description
			Off: No USB flash drive is connected, the USB interface has failed, or the indicator has failed.
8 and 9	nd 9 GE electrical interface indicators: • 8: ACT indicator, yellow • 9: LINK indicator, green	nterface ndicators: 8: ACT indicator,	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		9: LINK Yellow indicator,	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.
10	RESET button	NOTE This button is used to reset the router.	
	To restore for at leas:		factory settings, hold down the button seconds.
		 To reset the router, hold down the button 5 seconds. 	
			ter will interrupt services. Exercise iding to press this button.

Figure 7-23 shows interfaces on the SRU-600HK.

Figure 7-23 Interfaces on the SRU-600HK



3. USB 2.0 interface 1. One MEth interface 2. WAN interfaces: fourteen 10GE optical NOTE interfaces MEth interface is the NOTE management network port on a device. It can GE optical modules can be implement web-based inserted into these fourteen network management and optical interfaces. email-based deployment. All 10GE WAN interfaces can be configured as LAN interfaces.

4. WAN interfaces: ten GE electrical interfaces	5. Console interface	-
NOTE All GE WAN interfaces can be configured as LAN interfaces.		

USB 2.0 interface

A USB interface provides up to 480 Mbit/s upload and download rates. **Table 7-59** lists attributes of a USB interface.

Table 7-59 USB interface attributes

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

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-60** lists attributes of a GE electrical interface.

Table 7-60 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3, IEEE802.3u, IEEE802.3ab
Working mode	Full-duplex 10/100/1000 Mbit/s auto-sensing
Maximum transmission distance	100 m
Cable type	Ethernet Cable

10GE optical interface

The 10GE optical interfaces can work in GE mode and can transmit and receive service traffic at 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. **Table 7-61** lists attributes of a 10GE optical interface.

Table 7-61 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 10GE SFP+ Optical Modules, GE eSFP Optical Modules, and FE SFP/eSFP Optical Module.
Standards compliance	IEEE802.3ae

Console interface

A console interface can connect to an operation terminal for onsite configuration. **Table 7-62** lists attributes of a console interface.

Table 7-62 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	Console Cable

Technical Specifications

Table 7-63 lists the technical specifications of the SRU-600HK.

Table 7-63 Technical specifications

Item	Specifications
Card type	EXSIC
Hot swap	Supported
Processor	16-core, 2.26 GHz
Memory	16 GB
Flash	4 GB
	To view the available memory size, run the dir command.

Item	Specifications
Micro SD card (sd1 by default)	Not supported
Hard disk	Not supported
Physical specifications	• Dimensions (H x W x D): 40.14 mm x 402.8 mm x 270.85 mm (1.58 in. x 15.86 in. x 10.66 in.)
	Maximum power consumption: 94 W
	Weight: 3.3 kg (7.27 lb)
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)
parameters	Operating relative humidity: 5% to 95%, noncondensing
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-64 provides the SRU-600HK ordering information.

Table 7-64 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specifications
02312NEV	SRU-600HK	SRU-600HK	Service and Router Unit 600H, 14*10GE(SFP+), 10*GE Copper, 1*USB2.0

7.3 Ethernet LAN Card

7.3.1 8FE1GE (8-Port 100M-RJ45+1-Port 1000M-RJ45-L2 Ethernet Electrical Interface Card)

Card Overview

8FE1GE provides Ethernet access for medium- and small-scale enterprises and enterprise branches, and supports Layer 2 line-rate switching and device management. It provides eight FE interfaces and one GE interface, which can connect to office terminals, PCs, IP phones, and switches.

An 8FE1GE card can be installed in a WSIC slot of a router.

Figure 7-24 shows the appearance of an 8FE1GE card.

Figure 7-24 8FE1GE card appearance



Version Mapping

Table 7-65 lists the device models and software versions supporting the 8FE1GE.

Table 7-65 Version mapping

Card Name	Device Model
8FE1GE	AR6000 series
NOTE This card is supported in V200R001C00 and later versions.	AR6000-S series
When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.	

Functions and Features

Table 7-66 describes the functions and features of an 8FE1GE card.

Table 7-66 Functions and features

Function and Feature	Description
Eight FE interfaces	Provide up to 100 Mbit/s line-rate switching.

Function and Feature	Description
One GE interface	Provides up to 1000 Mbit/s line-rate switching.
Duplex mode	Supports the half duplex mode and full duplex mode. The full duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links into a logical link increasing the link bandwidth and improving link reliability.
VLANIF interface	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Support MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Panel

Figure 7-25 shows the indicators on an 8FE1GE card, and **Table 7-67** describes the indicator states and meanings.

Figure 7-25 Indicators on an 8FE1GE card

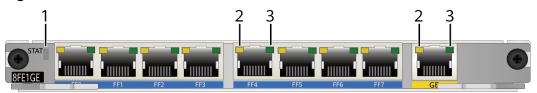


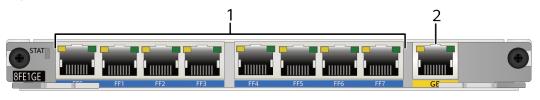
Table 7-67 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	2 ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
3	LINK	Green	Steady on: A link has been established.
			Off: No link is established.

Figure 7-26 shows the interfaces on an 8FE1GE card.

Figure 7-26 Interfaces on the 8FE1GE



Eight FE electrical interfaces	2. One GE electrical interface

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 7-68** lists attributes of an FE electrical interface.

Table 7-68 FE electrical interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Interface	MDI/MDIX
attribute	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	PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at
	PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	8.3.1 Ethernet Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-69** lists attributes of a GE electrical interface.

Table 7-69 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable

Technical Specifications

Table 7-70 lists the technical specifications of an 8FE1GE card.

Table 7-70 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.) Maximum power consumption: 13 W Weight: 0.6 kg (1.33 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-71 provides 8FE1GE card ordering information.

Table 7-71 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XTN	AROMWMF9 TT00	8FE1GE	8-Port 10/100BASE(RJ45) and 1- Port 10/100/1000BASE(RJ45)-L2 Ethernet Switch Electrical Interface Card

7.3.2 9ES2 (8-Port 100BASE-RJ45 and 1-Port 1000BASE-RJ45 L2 Ethernet Interface Card)

Card Overview

The 9ES2 card provides eight FE electrical interfaces and one GE electrical interface. This card is installed in a WSIC slot and provides line-rate Layer 2 and Layer 3 switching and device management functions.

Figure 7-27 shows the appearance of a 9ES2 card.

Figure 7-27 9ES2 card appearance



Version Mapping

Table 7-72 lists the device models and software versions supporting the 9ES2.

Table 7-72 Version mapping

Card Name	Device Model	
9ES2	AR6000 series	
NOTE This card is supported in V200R005C00 and later versions.	AR6000-S series	
When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.		

Functions and Features

Table 7-73 describes the functions and features of a 9ES2 card.

Table 7-73 Functions and features

Function and Feature	Specification
Eight FE interfaces	Provide up to 100 Mbit/s line-rate switching.
One GE electrical interface	Provides up to 1000 Mbit/s line-rate switching.
Duplex mode	Supports the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.

Function and Feature	Specification
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Link aggregation	Bundles multiple physical links into a logical link, increasing the link bandwidth and improving link reliability.
Layer 2 features	Support MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Panel

Figure 7-28 shows the indicators on a 9ES2 card, and **Table 7-74** describes the indicator states and meanings.

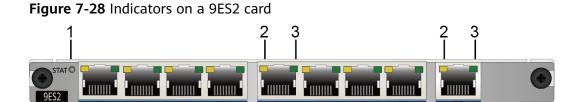
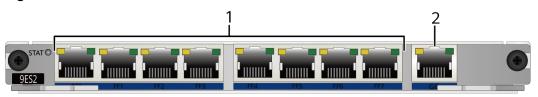


Table 7-74 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system software is running normally. Off: The card is not powered on.
2	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting or receiving data.
3	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.

Figure 7-29 shows the interfaces on a 9ES2 card.

Figure 7-29 Interfaces on a 9ES2 card



1. Eight FE electrical interfaces	2. One GE electrical interface
-----------------------------------	--------------------------------

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 7-75** lists attributes of an FE electrical interface.

Table 7-75 FE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	 PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP
Cable type	8.3.1 Ethernet Cable

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-76** lists attributes of a GE electrical interface.

Table 7-76 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable

Technical Specifications

Table 7-77 lists the technical specifications of a 9ES2 card.

Table 7-77 Technical specifications

Item	Specifications
Card type	WSIC
Hot swap	Supported
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)
	Maximum power consumption: 6 W
	Weight: 0.6 kg (1.32 lb)
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)
parameters	Operating relative humidity: 5% to 95%, noncondensing
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-78 provides 9ES2 card ordering information.

Table 7-78 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021UJL	AR-9ES2-W	9ES2	8 port 100BASE-RJ45 and 1 port 1000BASE-RJ45 L2 Ethernet interface card

7.3.3 24GE (24-Port 1000M-RJ45-L2 Ethernet Electrical Interface Card)

Card Overview

24GE provides 24 GE electrical interfaces, which extend Ethernet forwarding and Layer 2 switching capabilities. The 24GE often applies to the enterprise headquarters and can connect to multiple devices by using the 24 GE interfaces.

A 24GE card can be installed in an XSIC slot of a router.

Figure 7-30 shows the appearance of a 24GE card.

Figure 7-30 24GE card appearance



Version Mapping

Table 7-79 lists the device models and software versions supporting the 24GE.

Table 7-79 Version mapping

Card Name	Device Model
24GE	AR6280
NOTE	AR6280K
This card is supported in V200R001C00 and later versions.	AR6300
	AR6300K
When this card is used on a router, the minimum bandwidth and maximum	AR6280-S
	AR6300-S
bandwidth supported by	
the card are 1 Gbit/s and 10 Gbit/s, respectively,	
due to the backplane	
bandwidth restriction.	

Functions and Features

Table 7-80 describes the functions and features of a 24GE card.

Table 7-80 Functions and features

Function and Feature	Description
24 GE interfaces	Provide up to 1000 Mbit/s line-rate switching.
Duplex mode	Supports the half duplex mode and full duplex modes. The full duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links into a logical link, increasing the bandwidth and improving link reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Support MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Panel

Figure 7-31 shows the indicators on a 24GE card, and **Table 7-81** describes the indicator states and meanings.

Figure 7-31 Indicators on a 24GE card

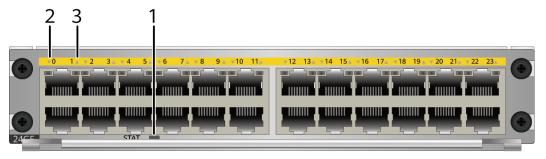
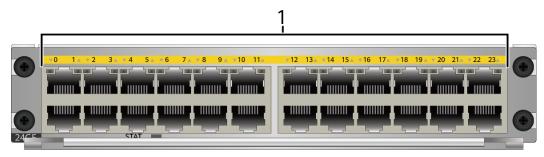


Table 7-81 Indicator description

Number	Indicator	Color	Description
1	1 STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2, 3 One single-color	Green	Steady on: A link has been established.	
	indicator for each interface		Blinking: Data is being transmitted or received.
	Down arrowhea d: interfaces in the lower row Up arrowhea d: interfaces in the upper row		Off: No link is established.

Figure 7-32 shows the interfaces on a 24GE card.

Figure 7-32 Interfaces on a 24GE card



1. 24 GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-82** lists attributes of a GE electrical interface.

Table 7-82 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable

Technical Specifications

Table 7-83 lists the technical specifications of a 24GE card.

Table 7-83 Technical specifications

Item	Specifications
Card type	XSIC
Hot swap	Supported
Physical specifications	• Dimensions (H x W x D): 40.14 mm x 201 mm x 223.5 mm (1.58 in. x 7.91 in. x 8.80 in.)
	Maximum power consumption: 29 WWeight: 0.85 kg (1.87 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-84 provides 24GE card ordering information.

Table 7-84 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020MNS	AROMXEGFT A00	24GE	24-Port 10/100/1000BASE(RJ45)- L2 Ethernet Switch Electrical Interface Card

7.3.4 24ES2GP (24-Port 1000BASE-RJ45 L2 with PoE Ethernet Interface Card)

Card Overview

The 24ES2GP provides 24 GE electrical interfaces, which extend Ethernet forwarding and Layer 2 switching capabilities. The 24ES2GP often applies to the enterprise headquarters and can implement large-capacity, high-density GE Ethernet access. The GE electrical interfaces also support PoE.

A 24ES2GP card can be installed in an XSIC slot of a router.

Figure 7-33 shows the appearance of a 24ES2GP card.

TO 14 TO 32 TO 32

Figure 7-33 24ES2GP card appearance

Version Mapping

Table 7-85 lists the device models and software versions supporting the 24ES2GP.

Table 7-85 Version mapping

Card Name	Device Model
24ES2GP	AR6280
This card is supported in V200R007C00 and later	AR6280K AR6300
versions. When this card is used on a router, the minimum	AR6300K AR6280-S
bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 10 Gbit/s, respectively, due to the backplane bandwidth restriction.	AR6300-S

Functions and Features

Table 7-86 describes the functions and features of a 24ES2GP card.

Table 7-86 Functions and features

Function and Feature	Description
24 GE interfaces	Provide up to 1000 Mbit/s line-rate switching.
PoE power supply	Provides power to powered devices (PDs) connected to the GE electrical interfaces.

Function and Feature	Description
Duplex mode	Supports the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.
VLAN	Supports a maximum of 4094 VLANs.
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.
Link aggregation	Bundles multiple physical links into a logical link, increasing the link bandwidth and improving link reliability.
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.
Layer 2 features	Support MAC, GVRP, STP, RSTP, MSTP, and LLDP.

Panel

Figure 7-34 shows the indicators on a 24ES2GP card, and **Table 7-87** describes the indicator states and meanings.

Figure 7-34 Indicators on a 24ES2GP card



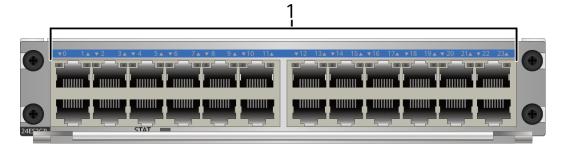
Table 7-87 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2 and 3	and 3 One single- color indicator for each interface	Green	Steady on: A link has been established.
			Blinking: Data is being transmitted or received.
	Down arrowhea d: indicates an interface at the bottom. Up arrowhea d: indicates an interface at the the bottom.		Off: No link is established.

Figure 7-35 shows the interfaces on a 24ES2GP card.

Figure 7-35 Interfaces on a 24ES2GP card



1. 24 GE electrical interfaces

GE Electrical Interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-88** lists attributes of a GE electrical interface.

Table 7-88 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable

Technical Specifications

Table 7-89 lists the technical specifications of a 24ES2GP card.

Table 7-89 Technical specifications

Item	Specifications	
Card type	XSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 40.14 mm x 201 mm x 223.5 mm (1.58 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 33 WWeight: 0.85 kg (1.87lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: < 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-90 provides 24ES2GP card ordering information.

Table 7-90 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03023CNH	AR-24ES2GP-	24ES2GP	24-port 1000BASE-RJ45 L2 PoE Ethernet electrical interface card

7.3.5 4GE-2S (4-Port 1000BASE-SFP-L2 Ethernet Interface Card)

Card Overview

The 4GE-2S often applies to medium-sized enterprises and provides large-capacity gigabit Ethernet access. It provides four GE optical interfaces and can connect to optical interface switches.

A 4GE-2S card can be installed in a WSIC slot of a router.

Figure 7-36 shows the appearance of a 4GE-2S card.

Figure 7-36 4GE-2S card appearance



Version Mapping

Table 7-91 lists the device models and software versions supporting the 4GE-2S.

Table 7-91 Version mapping

Card Name	Device Model
4GE-2S	AR6000 series
NOTE This card is supported in V200R003C00 and later versions.	AR6000-S series
When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	

Functions and Features

Table 7-92 describes the functions and features of a 4GE-2S card.

Table 7-92 Functions and features

Function and Feature	Description	
Four GE optical interfaces	Provide up to 1000 Mbit/s line-rate switching.	
Duplex mode	Supports the half duplex mode and full duplex modes. The full duplex mode is more commonly used.	
VLAN	Supports a maximum of 128 VLANs. NOTE Because the 4GE-2S card is special, you need to run the set vlan-range command to configure the VLAN combination that is allowed to be created. This function takes effect only after the card is restarted.	
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.	
	The interfaces do not support the automatic mode.	
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.	
Layer 2 features	Support MAC, STP, RSTP, MSTP, and LLDP.	

Panel

Figure 7-37 shows the indicators on a 4GE-2S card, and **Table 7-93** describes the indicator states and meanings.

Figure 7-37 Indicators on a 4GE-2S card

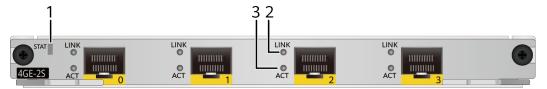
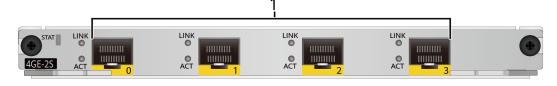


Table 7-93 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running.
			Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: A link has been established.
			Off: No link is established.
3	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Figure 7-38 shows the interfaces on a 4GE-2S card.

Figure 7-38 Interfaces on a 4GE-2S card



1. Four GE optical interfaces

GE optical interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 7-94** lists attributes of a GE optical interface.

Table 7-94 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 9.5 GE eSFP Optical Modules, 9.6 GE SFP Copper Modules, and 9.4 FE SFP/eSFP Optical Modules.
Standards compliance	IEEE 802.3z

Technical Specifications

Table 7-95 lists the technical specifications of a 4GE-2S card.

Table 7-95 Technical specifications

Item	Specifications	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 14 W	
	Weight: 0.3 kg (0.66 lb)	
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	• Operating altitude: 0 to 5000 m (16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-96 provides 4GE-2S card ordering information.

Table 7-96 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RSM	AR01WEG4S B	4GE-2S	4-port 1000BASE-SFP-L2 Ethernet interface card

7.3.6 4ES2G-S (4-Port 1000BASE-RJ45 L2 Ethernet Interface Card)

Card Overview

A 4ES2G-S card provides four GE electrical interfaces. This card is installed in a SIC slot and provides line-rate Layer 2 switching and device management functions.

Figure 7-39 shows the appearance of a 4ES2G-S card.

Figure 7-39 4ES2G-S card appearance



Version Mapping

Table 7-97 lists the device models and software versions supporting the 4ES2G-S.

Table 7-97 Version mapping

Card Name	Device Model
4ES2G-S	AR6000 series
NOTE This card is supported in V200R005C00 and later versions.	AR6000-S series
When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	

Functions and Features

Table 7-98 describes the functions and features of a 4ES2G-S card.

Table 7-98 Functions and features

Function and Feature	Description	
Four GE electrical interfaces	Provide up to 1000 Mbit/s line-rate switching.	
Duplex mode	Supports the half-duplex and full-duplex modes. The full-duplex mode is more commonly used.	
VLAN	Supports a maximum of 4094 VLANs.	
Voice VLAN	Allows voice data flows to be transmitted preferentially, ensuring high quality voice services.	
VLANIF	Supports VLANIF interface configuration to increase the number of Layer 3 interfaces.	
Layer 2 features	Support MAC, STP, RSTP, MSTP, and LLDP.	

Panel

Figure 7-40 shows the indicators on a 4ES2G-S card, and **Table 7-99** describes the indicator states and meanings.

Figure 7-40 Indicators on a 4ES2G-S card

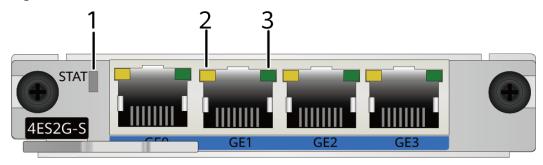
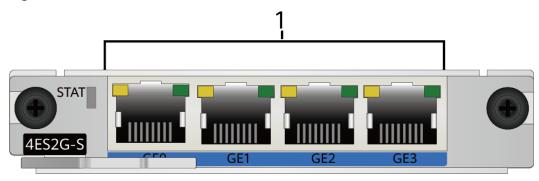


Table 7-99 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system software is running normally.
			Off: The card is not powered on.
2	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting or receiving data.
3	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.

Figure 7-41 shows the interfaces on a 4ES2G-S card.

Figure 7-41 Interfaces on a 4ES2G-S card



1. Four GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-100** lists attributes of a GE electrical interface.

Table 7-100 GE electrical interface attributes

Attribute	Description	
Connector type	RJ45	
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable	

Technical Specifications

Table 7-101 lists the technical specifications of a 4ES2G-S card.

Table 7-101 Technical specifications

Item	Specifications		
Card type	SIC		
Hot swap	Supported		
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 5 W Weight: 0.3 kg (0.66 lb) 		
Environment parameters	 Weight: 0.3 kg (0.66 lb) Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 		

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-102 provides 4ES2G-S card ordering information.

Table 7-102 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021VCC	AR-4ES2G-S	4ES2G-S	4-port 1000BASE-RJ45 L2 Ethernet interface card (SIC)

7.4 Ethernet WAN Card

7.4.1 1GEC (1-Port-GE Combo WAN Interface Card)

Card Overview

1GEC is a GE high-speed WAN access module and a combo interface that can function as the GE electrical or optical interface. You can flexibly select the interface to connect to a WAN.

A 1GEC card can be installed in a SIC slot of a router.

Figure 7-42 shows the appearance of a 1GEC card.

Figure 7-42 1GEC card appearance



Version Mapping

Table 7-103 lists the device models and software versions supporting the 1GEC.

Table 7-103 Version mapping

Card Name	Device Model
1GEC	AR6000 series
NOTE This card is supported in V200R001C01 and later versions.	AR6000-S series

Functions and Features

Table 7-104 describes the functions and features of a 1GEC card.

Table 7-104 Functions and features

Function and Feature	Description
Basic functions	You can flexibly use the electrical or optical interface to connect to a network.
	The GE electrical or optical interface can connect to a WAN at the rate of 1000 Mbit/s to provide Layer 3 services.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Panel

Figure 7-43 shows the indicators on a 1GEC card, and **Table 7-105** describes the indicator states and meanings.

Figure 7-43 Indicators on a 1GEC card

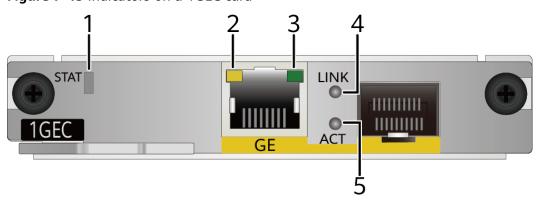
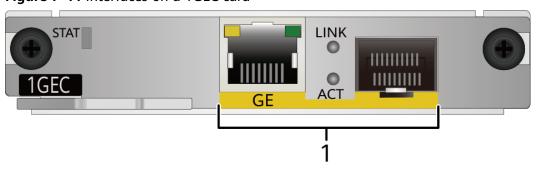


Table 7-105 Indicator description

Number	Indicator	Color	Description	
1 STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.		
	Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.		
		Off	Off: The software is not running or is being reset.	
2 and 3	GE electrical interface indicators: • 2: ACT indicator • 3: LINK indicator	nterface ndicators: 2: ACT	Blinking: Data is being transmitted or received.	
			Off: No data is being transmitted or received.	
		Green	Steady on: A link has been established.	
			Off: No link is established.	
4 and 5	4 and 5 GE optical interface indicators: • 5: ACT indicator • 4: LINK indicator	Yellow	Blinking: Data is being transmitted or received.	
			Off: No data is being transmitted or received.	
			Green	Steady on: A link has been established.
			Off: No link is established.	

Figure 7-44 shows the interfaces on a 1GEC card.

Figure 7-44 Interfaces on a 1GEC card



1. One GE combo interface consisting of one GE electrical interface and one GE optical interface	-
--	---

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-106** lists attributes of a GE electrical interface.

Table 7-106 GE electrical interface attributes

Attribute	Description		
Connector type	RJ45		
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable		

GE optical interface

A GE optical interface can work in FE mode and can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 7-107** lists attributes of a GE optical interface.

Table 7-107 GE optical interface attributes

Attribute	Description
Connector type	LC/PC

Attribute	Description
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 9.5 GE eSFP Optical Modules, and 9.4 FE SFP/eSFP Optical Modules.
Standards compliance	IEEE 802.3z

Technical Specifications

Table 7-108 lists the technical specifications of a 1GEC card.

Table 7-108 Technical specifications

Item	Specifications		
Card type	SIC		
Hot swap	Supported		
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 4 W Weight: 0.25 kg (0.55 lb) 		
Environment parameters	 Weight. 0.25 kg (0.35 tb) Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 		

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-109 provides 1GEC card ordering information.

Table 7-109 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XTR	AR0MSEG1C A00	1GEC	1-Port GE Combo WAN Interface Card

7.4.2 4GECS (4-Port GE Combo WAN Interface Card)

Card Overview

The 4GECS is a gigabit WAN access module. It provides four combo interfaces, which consist of four GE electrical interfaces and four GE optical interfaces on the panel. You can connect to the WAN through electrical or optical interfaces flexibly.

A 4GECS card can be installed in a WSIC slot of a router.

Figure 7-45 shows the appearance of a 4GECS card.

Figure 7-45 4GECS card appearance



Version Mapping

Table 7-110 lists the device models and software versions supporting the 4GECS.

Table 7-110 Version mapping

Card Name	Device Model
4GECS	AR6000 series
NOTE This card is supported in V200R005C10 and later versions.	AR6000-S series
When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are 1 Gbit/s and 2.5 Gbit/s, respectively, due to the backplane bandwidth restriction.	
When the maximum output power of the AR6140-9G-2AC or AR6140-S is 60 W, the device does not support the 4GECS.	
When the maximum output power of the AR6140-9G-2AC, AR6140K-9G-2AC, or AR6140-S is 70 W, the device supports the 4GECS.	

Functions and Features

Table 7-111 describes the functions and features of a 4GECS card.

Table 7-111 Functions and features

Function and Feature	Description	
Basic functions	The card provides four GE optical interfaces and four GE electrical interfaces for data access and switching.	
	You can connect to the WAN through optical or electrical interfaces flexibly.	
	The card provides 1000 Mbit/s access to the WAN to implement Layer 3 services.	
Layer 3 protocols	IPv4, IPv6, and MPLS.	
Clock synchronization	This function ensures data synchronization on the entire network and makes an Ethernet network more stable.	

Panel

Figure 7-46 shows the indicators on a 4GECS card, and **Table 7-112** describes the indicator states and meanings.

Figure 7-46 Indicators on a 4GECS card

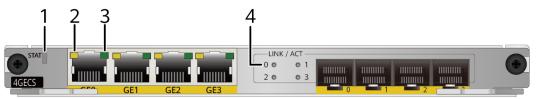


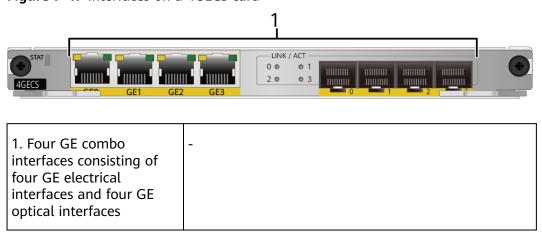
Table 7-112 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being
			powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

Number	Indicator	Color	Description
		Off	Off: The software is not running or is being reset.
2 and 3	GE electrical interface	Yellow	Blinking: Data is being transmitted or received.
	indicators: • 2: ACT indicator		Off: No data is being transmitted or received.
	• 3: LINK indicator	Green	Steady on: A link has been established.
			Off: No link is established.
4	One indicator for each GE	Green	Steady on: A link has been established.
	optical interface		Blinking: Data is being transmitted or received.
	NOTE One indicator shows the LINK and ACT states.		Off: No link is established or no data is being transmitted or received.

Figure 7-47 shows the interfaces on a 4GECS card.

Figure 7-47 Interfaces on a 4GECS card



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 7-113** lists attributes of a GE electrical interface.

Table 7-113 GE electrical interface attributes

Attribute	Description
Connector type	RJ45
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable

GE optical interface

A GE optical interface can work in FE mode and can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 7-114** lists attributes of a GE optical interface.

Table 7-114 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 9.5 GE eSFP Optical Modules, and 9.4 FE SFP/eSFP Optical Modules.
Standards compliance	IEEE 802.3z

Technical Specifications

Table 7-115 lists the technical specifications of a 4GECS card.

Table 7-115 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 17 W	
	Weight: 0.6 kg	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 to 5000 m (16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-116 provides 4GECS card ordering information.

Table 7-116 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022CPN	AR-4GECS-W	4GECS	4-Port GE Combo WAN Interface Card

7.4.3 2FE (2-Port-FE WAN Interface Card)

Card Overview

The 2FE is a high-speed Ethernet WAN access module and provides two FE electrical interfaces. It can connect to a WAN at the rate of 100 Mbit/s.

A 2FE card can be installed in a SIC slot of a router.

Figure 7-48 shows the appearance of a 2FE card.



Figure 7-48 2FE card appearance

Version Mapping

Table 7-117 lists the device models and software versions supporting the 2FE.

Table 7-117 Version mapping

Card Name	Device Model
2FE	AR6000 series
NOTE This card is supported in V200R001C00 and later versions.	AR6000-S series

Functions and Features

Table 7-118 describes the functions and features of a 2FE card.

Table 7-118 Functions and features

Function and Feature	Description
Two FE electrical interfaces	The 2FE can connect to a WAN at the rate of 100 Mbit/s to provide Layer 3 services.
	Two FE electrical interfaces can comprise an uplink interface at the line speed of 200 Mbit/s.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Panel

Figure 7-49 shows the indicators on a 2FE card, and **Table 7-119** describes the indicator states and meanings.

Figure 7-49 Indicators on a 2FE card

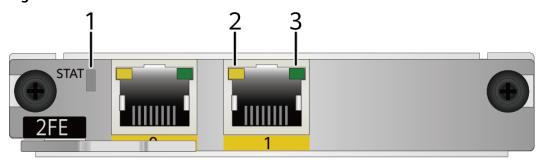
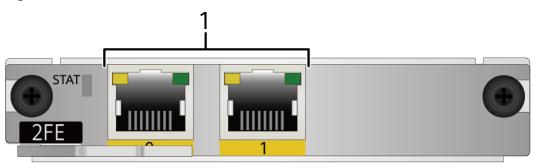


Table 7-119 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.
3	LINK	Green	Steady on: A link has been established.
			Off: No link is established.

Figure 7-50 shows the interfaces on a 2FE card.

Figure 7-50 Interfaces on a 2FE card



1. Two FE electrical interfaces

FE electrical interface

An FE electrical interface (10/100 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s or 100 Mbit/s. **Table 7-120** lists attributes of an FE electrical interface.

Table 7-120 FE electrical interface attributes

Attribute	Description	
Connector type	RJ45	
Interface attribute	MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network adapters are MDI interfaces. MDIX stands for medium dependent interface crossover, a version of MDI. MDIX interfaces are usually used on hubs or I AN switches.	
Standards compliance	 PoE-capable FE electrical interface: IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3af, and IEEE802.3at PoE-incapable FE electrical interface: IEEE802.3, IEEE802.3u, and IEEE802.3ab 	
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP	
Network protocol	IP	
Cable type	8.3.1 Ethernet Cable	

Technical Specifications

Table 7-121 lists the technical specifications of a 2FE card.

Table 7-121 Technical specifications

Item	Specifications	
Card type	SIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 4 W	
	Weight: 0.3 kg (0.66 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-122 provides 2FE card ordering information.

Table 7-122 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XTQ	AROMSEF2T A00	2FE	2-Port FE WAN Interface Card

7.4.4 2X10GL (2-Port 10GE Optical Ports Interface Card)

Card Overview

The 2X10GL is a high-speed WAN access module that provides two 10GE optical interfaces for high-speed uplink connection.

A 2X10GL card can be installed in a WSIC or XSIC slot of a router.

Figure 7-51 shows the appearance of a 2X10GL card.

Figure 7-51 2X10GL card appearance



Version Mapping

Table 7-123 lists the device models and software versions supporting the 2X10GL.

Table 7-123 Version mapping

Card Name	Device Model
2X10GL	AR6280
NOTE This card is supported in V200R007C00 and later versions. When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 10 Gbit/s, due to the backplane bandwidth restriction.	When a AR6280 router uses the SRU-100H or SRU-200H main control unit, this card can be installed in slot 8. When a AR6280 router uses the SRU-100HH, SRU-400H, or SRU-600H main control unit, this card can be installed in slots 7 and 8. AR6280K NOTE When a AR6280K router uses the SRU-400HK or SRU-600HK main control unit, this card can be installed in slots 7 and 8.
restriction.	AR6300
	NOTE
	 When a AR6300 router uses the SRU-100H or SRU-200H main control unit, this card can be installed in slot 10. When a AR6300 router uses the SRU-100HH, SRU-400H, or SRU-600H main control unit, this card can be installed
	in slots 8 and 10. AR6300K
	NOTE When a AR6300K router uses the SRU-400HK or SRU-600HK main control unit, this card can be installed in slots 8 and 10.
	AR6280-S
	NOTE When a AR6280-S router uses the SRU-100HH main control unit, this card can be installed in slots 7 and 8.
	AR6300-S
	NOTE When a AR6300-S router uses the SRU-400H main control unit, this card can be installed in slots 8 and 10.

Functions and Features

Table 7-124 describes the functions and features of a 2X10GL card.

Table 7-124 Functions and features

Function and Feature	Description
Two 10GE optical interfaces	The card provides 10G access to the WAN to implement Layer 3 services.
	The two 10GE optical interfaces provide 10 Gbit/s line-rate transmission to the upstream network.
Layer 3 protocols	IPv4, IPv6, and MPLS.

Panel

Figure 7-52 shows the indicators on a 2X10GL card, and **Table 7-125** describes the indicator states and meanings.

Figure 7-52 Indicators on a 2X10GL card



Table 7-125 Indicator description

Number	Indicator	Color	Description
0	LINK/ACT	Green	Steady on: A link has been established on 10GE/0.
			Blinking: Data is being transmitted or received on 10GE/0.
			Off: No link is established on 10GE/0.
1	LINK/ACT	Green	Steady on: A link has been established on 10GE/1.
			Blinking: Data is being transmitted or received on 10GE/1.
			Off: No link is established on 10GE/1.

Figure 7-53 shows the interfaces on a 2X10GL card.

Figure 7-53 Interfaces on a 2X10GL card



1. Two 10GE optical interfaces

10GE optical interface

The 10GE optical interfaces cannot work in GE mode and can only transmit and receive service traffic at 10 Gbit/s. **Table 7-126** lists attributes of a 10GE optical interface.

Table 7-126 10GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 9.8 10GE SFP+ Optical Modules.
Standards compliance	IEEE802.3ae

Technical Specifications

Table 7-127 lists the technical specifications of a 2X10GL card.

Table 7-127 Technical specifications

Item	Specifications	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 19 WWeight: 0.5 kg (1.1 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-128 provides 2X10GL card ordering information.

Table 7-128 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022STN	AR-2X10GL- W	2X10GL	2-Port 10GE Optical Ports Interface Card

7.4.5 4GEW-T (4-Port 1000BASE-RJ45-L3 Ethernet WAN Interface Card)

Card Overview

The 4GEW-T is a high-speed WAN access module and provides four GE electrical interfaces to connect to a WAN, which improves network reliability and increases bandwidth.

A 4GEW-T card can be installed in a WSIC slot of a router.

Figure 7-54 shows the appearance of a 4GEW-T card.

Figure 7-54 4GEW-T card appearance



Version Mapping

Table 7-129 lists the device models and software versions supporting the 4GEW-T.

Table 7-129 Version mapping

Card Name	Device Model
4GEW-T	AR6000 series
NOTE This card is supported in V200R002C01 and later versions.	AR6000-S series
When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	

Functions and Features

Table 7-130 describes the functions and features of a 4GEW-T card.

Table 7-130 Functions and features

Function and Feature	Description	
Four GE electrical interfaces	The four GE electrical interfaces can connect to a WAN, which improves network reliability and increases bandwidth.	
Layer 3 protocols	IPv4, IPv6, and MPLS.	

Panel

Figure 7-55 shows the indicators on a 4GEW-T card, and **Table 7-131** describes the indicator states and meanings.

Figure 7-55 Indicators on a 4GEW-T card

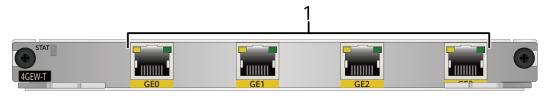


Table 7-131 Indicator description

Number	Indicator	Color	Description
1	1 STAT	T Green	Steady on: The router has been powered on, but the system software is not running.
			Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	and 3 GE electrical interface indicators: • 3: LINK indicator • 2: ACT indicator	Green	Steady on: A link has been established.
			Off: No link is established.
		Yellow	Blinking: Data is being transmitted or received.
		indicator	Off: No data is being transmitted or received.

Figure 7-56 shows the interfaces on a 4GEW-T card.

Figure 7-56 Interfaces on a 4GEW-T card



1. Four GE electrical interfaces

GE electrical interface

A GE electrical interface (10/100/1000 Mbit/s auto-sensing) transmits and receives Ethernet services at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. **Table 7-132** lists attributes of a GE electrical interface.

Table 7-132 GE electrical interface attributes

Attribute	Description	
Connector type	RJ45	
Interface attribute	 MDI/MDIX NOTE MDI stands for medium dependent interface, an Ethernet interface connection mode. Ethernet interfaces of most network 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	Ethernet Cable	

Technical Specifications

Table 7-133 lists the technical specifications of a 4GEW-T card.

Table 7-133 Technical specifications

Item	Specifications	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 13 WWeight: 0.3 kg (0.66 lb)	
Environment parameters	 Weight: 0.3 kg (0.66 lb) Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-134 provides 4GEW-T card ordering information.

Table 7-134 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021LCU	AR01WEG4T A	4GEW-T	4-port 1000BASE-RJ45-L3 Ethernet WAN interface card

7.4.6 4GEW-S (4-Port 1000BASE-SFP-L3 Ethernet WAN Interface Card)

Card Overview

The 4GEW-S is a high-speed WAN access module and provides four GE optical interfaces to connect to a WAN, which improves network reliability, increases bandwidth, and implements long-distance transmission.

A 4GEW-S card can be installed in a WSIC slot of a router.

Figure 7-57 shows the appearance of a 4GEW-S card.

Figure 7-57 4GEW-S card appearance



Version Mapping

Table 7-135 lists the device models and software versions supporting the 4GEW-S.

Table 7-135 Version mapping

Card Name	Device Model
4GEW-S	AR6000 series
NOTE This card is supported in V200R002C01 and later versions.	AR6000-S series
When this card is used on a router, the minimum bandwidth and maximum bandwidth supported by the card are both 1 Gbit/s, due to the backplane bandwidth restriction.	

Functions and Features

Table 7-136 describes the functions and features of a 4GEW-S card.

Table 7-136 Functions and features

Function and Feature	Description	
Four GE optical interfaces	The interfaces connect to an Ethernet WAN, which improves network reliability, increases bandwidth, and implements long-distance transmission.	
Layer 3 protocols	IPv4, IPv6, and MPLS.	

Panel

Figure 7-58 shows the indicators on a 4GEW-S card, and **Table 7-137** describes the indicator states and meanings.

Figure 7-58 Indicators on a 4GEW-S card

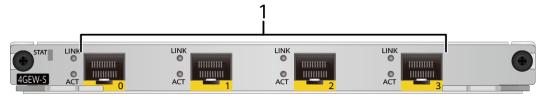


Table 7-137 Indicator description

Number	Indicator	Color	Description
1	1 STAT	Green	Steady on: The router has been powered on, but the system software is not running.
			Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	GE optical interface indicators: • 2: LINK indicator. • 3: ACT indicator.	Green	Steady on: A link has been established.
			Off: No link is established.
		• 3: ACT	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Figure 7-59 shows the interfaces on a 4GEW-S card.

Figure 7-59 Interfaces on a 4GEW-S card



1. Four GE optical interfaces

GE optical interface

A GE optical interface can transmit and receive service traffic at 100 Mbit/s or 1000 Mbit/s. **Table 7-138** lists attributes of a GE optical interface.

Table 7-138 GE optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 9.5 GE eSFP Optical Modules, 9.6 GE SFP Copper Modules, and 9.4 FE SFP/eSFP Optical Modules.
Standards compliance	IEEE 802.3z

Technical Specifications

Table 7-139 lists the technical specifications of a 4GEW-S card.

Table 7-139 Technical specifications

Item	Specifications	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 11 W	
	• Weight: 0.3 kg (0.66 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 to 5000 m (16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-140 provides 4GEW-S card ordering information.

Table 7-140 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021LXK	AR01WEG4S A	4GEW-S	4-Port 1000BASE-SFP-L3 Ethernet WAN interface card

7.5 E1/T1 Card

E1/T1 cards are classified into channelized and fractional channelized types. **Table 7-141** compares channelized and fractional channelized E1/T1 cards.

Table 7-141 E1/T1 card categories

Name Label (Silkscreen)	Card Category	Description
1E1/T1-M	Channelized E1/T1 card	One interface can be divided into 31 sub-interfaces. Each sub-interface corresponds to one sub-channel. The 31 sub-channels can be bound into multiple channels.
2E1/T1-M		
4E1/T1-M		
8E1/T1-M		
1E1/T1-F	Fractional channelized	One interface can be divided
2E1/T1-F	E1/T1 card	into 31 sub-interfaces. Each sub-interface corresponds to
4E1/T1-F		one sub-channel. Among the 31 sub-channels, a random
8E1/T1-F		number of sub-channels can be bound into one channel only once.

7.5.1 1E1/T1-M (1-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card)

Card Overview

1E1/T1-M is a data and voice processing module for a router and provides one CE1/CT1/PRI/VE1 interface for WAN connection, digital and analog voice transmission, and ISDN dialup.

A 1E1/T1-M card can be installed in a SIC slot of a router.

Figure 7-60 shows the appearance of a 1E1/T1-M card.



Figure 7-60 1E1/T1-M card appearance

Version Mapping

Table 7-142 lists the device models and software versions supporting the 1E1/T1-M.

Table 7-142 Version mapping

Card Name	Device Model
1E1/T1-M	AR1600 series
NOTE This card is supported in V200R001C00 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-143 describes the functions and features of a 1E1/T1-M card.

Table 7-143 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1/CE1 interface to complete data transmission.
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s.

Function and Feature	Description
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Flexible and easy deployment	A CE1/CT1/PRI/VE1 interface can be flexibly configured as a WAN interface, data interface, or voice interface, which simplifies networking.
Voice gateway	Works as a gateway to provide access to a PSTN or TDM PBX network, and supports a maximum of 30 call connections.
Investment protection	When working in VE1 mode, the interface can connect to a TDM PBX on an enterprise network. This protects customer investment and facilitates network expansion.

Panel

Figure 7-61 shows the indicators on a 1E1/T1-M card, and **Table 7-144** describes the indicator states and meanings.

Figure 7-61 Indicators on a 1E1/T1-M card

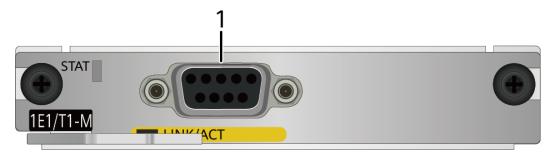


Table 7-144 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2 LINK/ACT	LINK/ACT	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 7-62 shows the interface on a 1E1/T1-M card.

Figure 7-62 Interface on a 1E1/T1-M card



1. One CE1/CT1/PRI/VE1 interface

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. **Table 7-145** lists attributes of a CE1 interface.

Table 7-145 CE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI, VE1
Cable type	8.7 E1/T1 Cable

CT1 interface (channelized)

A CT1 interface transmits voice, data, and image signals. **Table 7-146** lists attributes of a CT1 interface.

Table 7-146 CT1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s
Working mode	CT1, ISDN PRI, VT1
Cable type	8.7.3 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

Table 7-147 lists the technical specifications of a 1E1/T1-M card.

Table 7-147 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported

Item	Specification	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) 	
	Maximum power consumption: 6 W	
	Weight: 0.3 kg (0.66 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-148 provides 1E1/T1-M card ordering information.

Table 7-148 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YNU	AROMSDME1 A00	1E1/T1-M	1-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card

7.5.2 2E1/T1-M (2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card - SIC)

Card Overview

The 2E1/T1-M is a data and voice processing module for a router and provides two CE1/CT1/PRI/VE1 interfaces for WAN connection, WAN aggregation, digital and analog voice transmission, and ISDN dialup.

A 2E1/T1-M card can be installed in a SIC slot of a router.

Figure 7-63 shows the appearance of a 2E1/T1-M card.



Figure 7-63 2E1/T1-M card appearance

Version Mapping

Table 7-149 lists the device models and software versions supporting the 2E1/T1-M.

Table 7-149 Version mapping

Card Name	Device Model
2E1/T1-M	AR1600 series
NOTE This card is supported in V200R001C00 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-150 describes the functions and features of a 2E1/T1-M card.

Table 7-150 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1/CE1 interfaces to complete data transmission.
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s

Function and Feature	Description
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.
WAN aggregation	Aggregates E1 lines of multiple branches to the headquarters.
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Flexible and easy deployment	A CE1/CT1/PRI/VE1 interface can be flexibly configured as a WAN interface, data interface, or voice interface, which simplifies networking.
Voice gateway	Works as a gateway to provide access to a PSTN or TDM PBX network, and supports a maximum of 30 call connections.
Investment protection	When working in VE1 mode, the interfaces can connect to TDM PBXs on an enterprise network. This protects customer investment and facilitates network expansion.

Panel

Figure 7-64 shows the indicators on a 2E1/T1-M card, and **Table 7-151** describes the indicator states and meanings.

Figure 7-64 Indicators on a 2E1/T1-M card

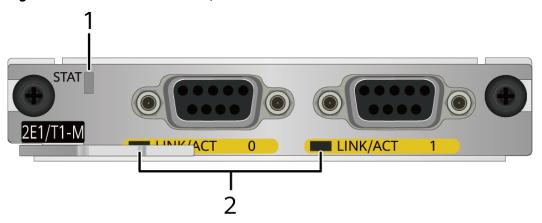
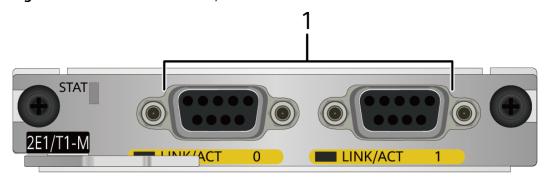


Table 7-151 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	2 LINK/ACT	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 7-65 shows the interfaces on a 2E1/T1-M card.

Figure 7-65 Interfaces on a 2E1/T1-M card



1. Two CE1/CT1/PRI/VE1 interfaces

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. **Table 7-152** lists attributes of a CE1 interface.

Table 7-152 CE1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI, VE1
Cable type	8.7 E1/T1 Cable

CT1 interface (channelized)

A CT1 interface transmits voice, data, and image signals. **Table 7-153** lists attributes of a CT1 interface.

Table 7-153 CT1 interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s
Working mode	CT1, ISDN PRI, VT1
Cable type	8.7.3 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

Table 7-154 lists the technical specifications of a 2E1/T1-M card.

Table 7-154 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	

Item	Specification	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) 	
	Maximum power consumption: 6 W	
	Weight: 0.3 kg (0.66 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-155 provides 2E1/T1-M card ordering information.

Table 7-155 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YNR	AROMSDME2 A00	2E1/T1-M	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card - SIC

7.5.3 4E1/T1-M (4-Port Channelized E1/PRI Multiflex Trunk Interface Card)

Card Overview

The 4E1/T1-M is a data and image signal processing module for a router and provides four CE1/PRI interfaces for WAN connection, WAN aggregation, and dialup.

A 4E1/T1-M card can be installed in a WSIC slot of a router.

Figure 7-66 shows the appearance of a 4E1/T1-M card.

Figure 7-66 4E1/T1-M card appearance



Version Mapping

Table 7-156 lists the device models and software versions supporting the 4E1/T1-M.

Table 7-156 Version mapping

Card Name	Device Model
4E1/T1-M	AR6000 series
NOTE This card is supported in V200R003C00 and later versions.	AR6000-S series

Functions and Features

Table 7-157 describes the functions and features of a 4E1/T1-M card.

Table 7-157 Functions and features

Function and Feature	Description	
Data transmission	Connects to a WAN through E1/CE1 interfaces to complete data transmission	
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s.	
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.	
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.	
WAN aggregation	Aggregates E1 lines of multiple branches to the headquarters.	
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.	
Flexible and easy deployment	A CE1/PRI interface can be flexibly configured as a WAN interface or data interface, which simplifies networking.	

Panel

Figure 7-67 shows the indicators on a 4E1/T1-M card, and **Table 7-158** describes the indicator states and meanings.

Figure 7-67 Indicators on a 4E1/T1-M card

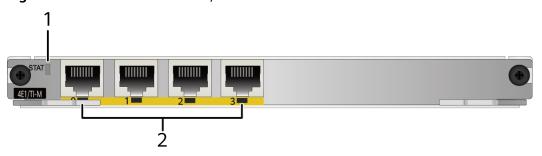


Table 7-158 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
One dual- color indicator for each CE1 interface	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.	
	meriaee	Amber	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 7-68 shows the interfaces on a 4E1/T1-M card.

Figure 7-68 Interfaces on a 4E1/T1-M card



1. Four CE1/PRI interfaces

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. **Table 7-159** lists attributes of a CE1 interface.

Table 7-159 CE1 interface attributes

Attribute	Description
Connector type	RJ48
Standards compliance	G.703
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI
Cable type	8.7 E1/T1 Cable

Technical Specifications

Table 7-160 lists the technical specifications of a 4E1/T1-M card.

Table 7-160 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 10 W	
	Weight: 0.6 kg (1.32 lb)	

Item	Specification
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing
	 Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-161 provides 4E1/T1-M card ordering information.

Table 7-161 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RCR	AR01WDCE4 A	4E1/T1-M	4-Port Channelized E1/PRI Multiflex Trunk Interface Card

7.5.4 8E1/T1-M (8-Port Channelized E1/PRI Multiflex Trunk Interface Card)

Card Overview

The 8E1/T1-M is a data and image signal processing module for a router and provides eight CE1/PRI interfaces for high-density WAN connection, WAN aggregation, and dialup.

An 8E1/T1-M card can be installed in a WSIC slot of a router.

Figure 7-69 shows the appearance of an 8E1/T1-M card.

Figure 7-69 8E1/T1-M card appearance



Version Mapping

Table 7-162 lists the device models and software versions supporting the 8E1/T1-M.

Table 7-162 Version mapping

Card Name	Device Model
8E1/T1-M	AR6000 series
NOTE This card is supported in V200R003C00 and later versions.	AR6000-S series

Functions and Features

Table 7-163 describes the functions and features of an 8E1/T1-M card.

Table 7-163 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1/CE1 interfaces to complete data transmission
	An E1 line supports up to 32 data channels and provides a total bandwidth of up to 2 Mbit/s.
	A channelized E1 line allows 31 timeslots to be flexibly bundled into multiple channels. The rate of each channel is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Multi-service transmission	Supports transmission of data, voice, and video services, without interference between these services.
WAN aggregation	Aggregates E1 lines of multiple branches to the headquarters.
ISDN dialup	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Flexible and easy deployment	A CE1/PRI interface can be flexibly configured as a WAN interface or data interface, which simplifies networking.

Panel

Figure 7-70 shows the indicators on an 8E1/T1-M card, and **Table 7-164** describes the indicator states and meanings.

Figure 7-70 Indicators on an 8E1/T1-M card

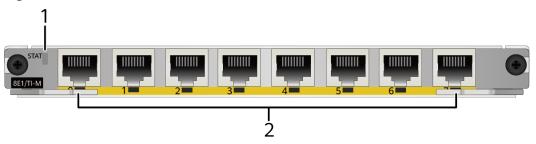
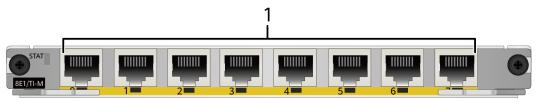


Table 7-164 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	One dual- color indicator for each CE1 interface	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
	interface	Amber	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 7-71 shows the interfaces on an 8E1/T1-M card.

Figure 7-71 Interfaces on an 8E1/T1-M card



1. Eight CE1/PRI interfaces

CE1 interface (channelized)

A CE1 interface transmits voice, data, and image signals. **Table 7-165** lists attributes of a CE1 interface.

Table 7-165 CE1 interface attributes

Attribute	Description
Connector type	RJ48
Standards compliance	G.703
Interface rate	2.048 Mbit/s
Working mode	E1, CE1, ISDN PRI
Cable type	8.7 E1/T1 Cable

Technical Specifications

Table 7-166 lists the technical specifications of an 8E1/T1-M card.

Table 7-166 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 12 W	
	Weight: 0.6 kg (1.32 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	• Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-167 provides 8E1/T1-M card ordering information.

Table 7-167 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021FXE	AR01WDCE8	8E1/T1-M	8-Port Channelized E1/PRI Multiflex Trunk Interface Card

7.5.5 1E1/T1-F (1-Port Fractional Channelized E1/T1 WAN Interface Card)

Card Overview

The 1E1/T1-F is a data and image signal processing module for a router and provides one E1/T1-F interface for WAN connection.

A 1E1/T1-F card can be installed in a SIC slot of a router.

Figure 7-72 shows the appearance of a 1E1/T1-F card.

Figure 7-72 1E1/T1-F card appearance



Version Mapping

Table 7-168 lists the device models and software versions supporting the 1E1/T1-F.

Table 7-168 Version mapping

Card Name	Device Model
1E1/T1-F	AR1600 series
NOTE This card is supported in V200R001C01 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-169 describes the functions and features of a 1E1/T1-F card.

Table 7-169 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1-F interface to complete data transmission.
	A fractional channelized E1 line allows 31 timeslots to be flexibly bundled, but only one bundled channel is supported. The interface rate is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Service communication	In unframed mode, an E1 line provides 2 Mbit/s bandwidth for service traffic transmission without timeslot division.
	In framed mode, an E1 line is divided into 32 timeslots. Multiple timeslots can be bundled into a low-speed E1 channel for service traffic transmission.
Cost-effective access service	Compared with a channelized E1/T1 interface card, a fractional channelized E1/T1 interface card provides the access service at lower cost.

Panel

Figure 7-73 shows the indicators on a 1E1/T1-F card, and **Table 7-170** describes the indicator states and meanings.

Figure 7-73 Indicators on a 1E1/T1-F card

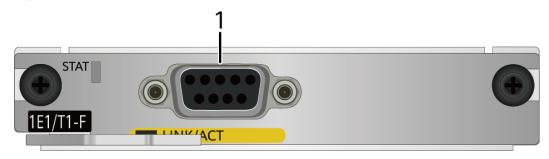


Table 7-170 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected

Figure 7-74 shows the interface on a 1E1/T1-F card.

Figure 7-74 Interface on a 1E1/T1-F card



1. One E1/T1-F interface

E1-F interface (fractional channelized)

An E1-F interface transmits data and image signals. **Table 7-171** lists attributes of an E1-F interface.

Table 7-171 E1-F interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	Fractional channelized E1
Cable type	8.7 E1/T1 Cable

T1-F interface (fractional channelized)

A T1-F interface transmits data and image signals. **Table 7-172** lists attributes of a T1-F interface.

Table 7-172 T1-F interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s
Working mode	Fractional channelized T1
Cable type	8.7.3 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

Table 7-173 lists the technical specifications of a 1E1/T1-F card.

Table 7-173 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported

Item	Specification	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 6 W	
	Weight: 0.3 kg (0.66 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-174 provides 1E1/T1-F card ordering information.

Table 7-174 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YNT	AROMSDE11 A00	1E1/T1-F	1-Port Fractional Channelized E1/T1 WAN Interface Card

7.5.6 2E1/T1-F (2-Port Fractional Channelized E1/T1 WAN Interface Card)

Card Overview

The 2E1/T1-F is a data and image signal processing module for a router and provides two E1/T1-F interfaces for WAN connection.

A 2E1/T1-F card can be installed in a SIC slot of a router.

Figure 7-75 shows the appearance of a 2E1/T1-F card.



Figure 7-75 2E1/T1-F card appearance

Version Mapping

Table 7-175 lists the device models and software versions supporting the 2E1/T1-E.

Table 7-175 Version mapping

Card Name	Device Model
2E1/T1-F	AR1600 series
NOTE This card is supported in V200R001C01 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-176 describes the functions and features of a 2E1/T1-F card.

Table 7-176 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1-F interfaces to complete data transmission.
	A fractional channelized E1 line allows 31 timeslots to be flexibly bundled, but only one bundled channel is supported. The interface rate is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.

Function and Feature	Description
Service communication	In unframed mode, an E1 line provides 2 Mbit/s bandwidth for service traffic transmission without timeslot division.
	 In framed mode, an E1 line is divided into 32 timeslots. Multiple timeslots can be bundled into a low-speed E1 channel for service traffic transmission.
Cost-effective access service	Compared with a channelized E1/T1 interface card, a fractional channelized E1/T1 interface card provides the access service at lower cost.

Panel

Figure 7-76 shows the indicators on a 2E1/T1-F card, and **Table 7-177** describes the indicator states and meanings.

Figure 7-76 Indicators on a 2E1/T1-F card

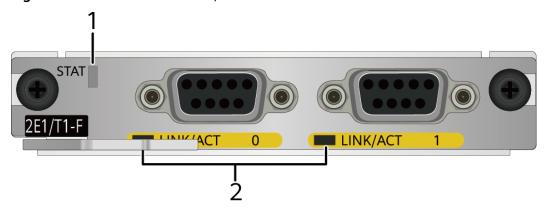


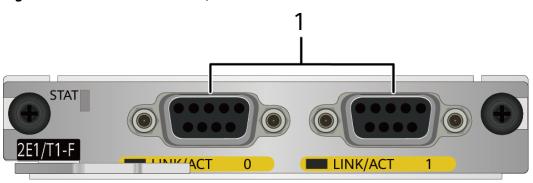
Table 7-177 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

Number	Indicator	Color	Description
		Off	The system software is not running or is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
		Amber	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 7-77 shows the interfaces on a 2E1/T1-F card.

Figure 7-77 Interfaces on a 2E1/T1-F card



1. Two E1/T1-F interfaces

E1-F interface (fractional channelized)

An E1-F interface transmits data and image signals. **Table 7-178** lists attributes of an E1-F interface.

Table 7-178 E1-F interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704

Attribute	Description	
Interface rate	2.048 Mbit/s	
Working mode	Fractional channelized E1	
Cable type	8.7 E1/T1 Cable	

T1-F interface (fractional channelized)

A T1-F interface transmits data and image signals. **Table 7-179** lists attributes of a T1-F interface.

Table 7-179 T1-F interface attributes

Attribute	Description
Connector type	DB9
Standards compliance	G.703, G.704
Interface rate	1.544 Mbit/s
Working mode	Fractional channelized T1
Cable type	8.7.3 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Technical Specifications

Table 7-180 lists the technical specifications of a 2E1/T1-F card.

Table 7-180 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 6 W Weight: 0.3 kg (0.66 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-181 provides 2E1/T1-F card ordering information.

Table 7-181 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020UDU	AR0MSDE12 A00	2E1/T1-F	2-Port Fractional Channelized E1/T1 WAN Interface Card

7.5.7 4E1/T1-F (4-Port Fractional Channelized E1 WAN Interface Card)

Card Overview

The 4E1/T1-F is a data and image signal processing module for a router and provides four E1-F interfaces for WAN connection.

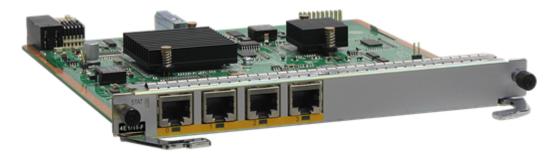
□ NOTE

This card does not support the T1-F interface mode.

A 4E1/T1-F card can be installed in a WSIC slot of a router.

Figure 7-78 shows the appearance of a 4E1/T1-F card.

Figure 7-78 4E1/T1-F card appearance



Version Mapping

Table 7-182 lists the device models and software versions supporting the 4E1/T1-E.

Table 7-182 Version mapping

Card Name	Device Model
4E1/T1-F	AR6000 series
NOTE This card is supported in V200R003C00 and later versions.	AR6000-S series

Functions and Features

Table 7-183 describes the functions and features of a 4E1/T1-F card.

Table 7-183 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1-F interfaces to complete data transmission.
	A fractional channelized E1 line allows 31 timeslots to be flexibly bundled, but only one bundled channel is supported. The interface rate is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Service communication	In unframed mode, an E1 line provides 2 Mbit/s bandwidth for service traffic transmission without timeslot division.
	In framed mode, an E1 line is divided into 32 timeslots. Multiple timeslots can be bundled into a low-speed E1 channel for service traffic transmission.
Cost-effective access service	Compared with a channelized E1/T1 interface card, a fractional channelized E1/T1 interface card provides the access service at lower cost.

Panel

Figure 7-79 shows the indicators on a 4E1/T1-F card, and **Table 7-184** describes the indicator states and meanings.

Figure 7-79 Indicators on a 4E1/T1-F card

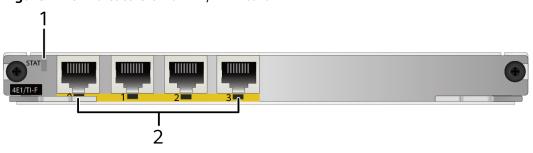
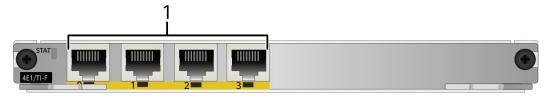


Table 7-184 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	One dual- color indicator for each E1-F interface	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
	meriace	Amber	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 7-80 shows the interfaces on a 4E1/T1-F card.

Figure 7-80 Interfaces on a 4E1/T1-F card



1. Four E1-F interfaces

E1-F interface (fractional channelized)

An E1-F interface transmits data and image signals. **Table 7-185** lists attributes of an E1-F interface.

Table 7-185 E1-F interface attributes

Attribute	Description
Connector type	RJ48
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	Fractional channelized E1
Cable type	8.7 E1/T1 Cable

Technical Specifications

Table 7-186 lists the technical specifications of a 4E1/T1-F card.

Table 7-186 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.) Maximum power consumption: 10 W Weight: 0.6 kg (1.32 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-187 provides 4E1/T1-F card ordering information.

Table 7-187 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RCS	AR01WDFE4 A	4E1/T1-F	4-Port Fractional Channelized E1 WAN Interface Card

7.5.8 8E1/T1-F (8-Port Fractional Channelized E1 WAN Interface Card)

Card Overview

The 8E1/T1-F is a data and image signal processing module for a router and provides eight E1/T1-F interfaces for high-density WAN connection.

This card does not support the T1-F interface mode.

An 8E1/T1-F card can be installed in a WSIC slot of a router.

Figure 7-81 shows the appearance of an 8E1/T1-F card.

Figure 7-81 8E1/T1-F card appearance



Version Mapping

Table 7-188 lists the device models and software versions supporting the 8E1/T1-

Table 7-188 Version mapping

Card Name	Device Model
8E1/T1-F	AR6000 series
NOTE This card is supported in V200R003C00 and later versions.	AR6000-S series

Functions and Features

Table 7-189 describes the functions and features of an 8E1/T1-F card.

Table 7-189 Functions and features

Function and Feature	Description
Data transmission	Connects to a WAN through E1-F interfaces to complete data transmission.
	A fractional channelized E1 line allows 31 timeslots to be flexibly bundled, but only one bundled channel is supported. The interface rate is 64 kbit/s multiplied by n, where n is the number of timeslots in the bundle and ranges from 1 to 31.
Service communication	In unframed mode, an E1 line provides 2 Mbit/s bandwidth for service traffic transmission without timeslot division.
	In framed mode, an E1 line is divided into 32 timeslots. Multiple timeslots can be bundled into a low-speed E1 channel for service traffic transmission.
Cost-effective access service	Compared with a channelized E1/T1 interface card, a fractional channelized E1/T1 interface card provides the access service at lower cost.
Pseudo wire emulation edge-to-edge (PWE3)	Allows users to smoothly connect to an IP network from their networks, without changing the original access methods.
	Connects networks that use different access methods to an IP network.

Panel

Figure 7-82 shows the indicators on an 8E1/T1-F card, and **Table 7-190** describes the indicator states and meanings.

Figure 7-82 Indicators on an 8E1/T1-F card

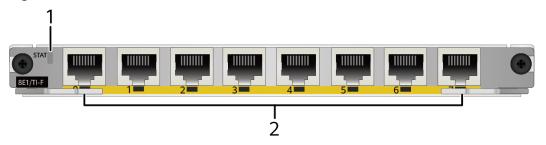
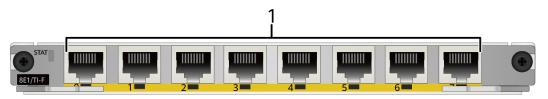


Table 7-190 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	One dual- color indicator for each E1-F interface	Green	Steady on: A link has been established on the interface. Off: No link is established on the interface.
	meriace	Amber	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.
		Off	The interface is not connected.

Figure 7-83 shows the interfaces on an 8E1/T1-F card.

Figure 7-83 Interfaces on an 8E1/T1-F card



1. Eight E1-F interfaces

E1-F interface (fractional channelized)

An E1-F interface transmits data and image signals. **Table 7-191** lists attributes of an E1-F interface.

Table 7-191 E1-F interface attributes

Attribute	Description
Connector type	RJ48
Standards compliance	G.703, G.704
Interface rate	2.048 Mbit/s
Working mode	Fractional channelized E1
Cable type	8.7 E1/T1 Cable

Technical Specifications

Table 7-192 lists the technical specifications of an 8E1/T1-F card.

Table 7-192 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.) Maximum power consumption: 12 W Weight: 0.6 kg (1.32 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-193 provides 8E1/T1-F card ordering information.

Table 7-193 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RCQ	AR01WDFE8 A	8E1/T1-F	8-Port Fractional Channelized E1 WAN Interface Card

7.5.9 4E1-IMA (4-Port-E1 ATM IMA Interface Card)

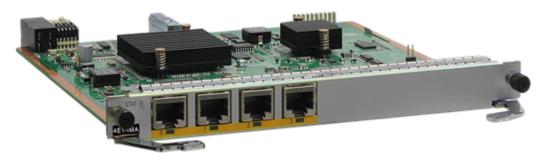
Card Overview

The 4E1-IMA is a WAN connection module. It uses inverse multiplexing over ATM (IMA) to bundle multiple E1 lines to form a high-bandwidth IMA group link. The IMA group link transmits multimedia services for enterprises.

A 4E1-IMA card can be installed in a WSIC slot of a router.

Figure 7-84 shows the appearance of a 4E1-IMA card.

Figure 7-84 4E1-IMA card appearance



Version Mapping

Table 7-194 lists the device models and software versions supporting the 4E1-IMA.

Table 7-194 Version mapping

Card Name	Device Model
4E1-IMA	AR6000 series
NOTE This card is supported in V200R003C00 and later versions.	AR6000-S series

Functions and Features

Table 7-195 describes the functions and features of a 4E1-IMA card.

Table 7-195 Functions and features

Function and Feature	Description
Basic functions	Uses IMA to transmit ATM cell streams at a high rate.
	Transmit end: Distributes ATM cell streams over multiple low-speed links.
	Receive end: Multiplexes the links to restore the cell streams.
Flexible bandwidth adjustment	Adds and deletes the multiplexed E1 links anytime, meeting various bandwidth requirements.
Low cost	Transmits ATM cell streams on multiple E1 lines at a high rate, preventing high expenses for network upgrade due to traffic burst.
ATM transmission advantages	Provides traffic management, fault tolerance capability, compatibility with traditional devices, and QoS.

Panel

Figure 7-85 shows the indicators on a 4E1-IMA card, and **Table 7-196** describes the indicator states and meanings.

Figure 7-85 Indicators on a 4E1-IMA card

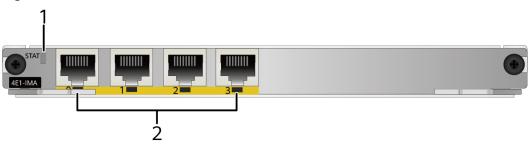


Table 7-196 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	E1-IMA interface indicator	Green	Steady on: A link has been established.
		Amber	Blinking: Data is being transmitted or received.
		Off	Off: There is no connection.

Figure 7-86 shows the interfaces on a 4E1-IMA card.

Figure 7-86 Interfaces on a 4E1-IMA card



1. Four E1-IMA interfaces

E1-IMA interface

An E1-IMA interface is used to transmit ATM cells at a high rate. **Table 7-197** lists attributes of an E1-IMA interface.

Table 7-197 E1-IMA interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-G.703, ITU-G.704
Interface rate	2.048 Mbit/s
Working mode	ATM E1 independent modeIMA bundling mode
Protocols	PPPoA, PPPoEoA, IPoA, IPoEoA

Attribute	Description
Service provided	CBR/VBR-RT/VBR-NRT/UBR
Function	AAL5
Cable type	8.7 E1/T1 Cable

Technical Specifications

Table 7-198 lists the technical specifications of a 4E1-IMA card.

Table 7-198 Technical specifications

Item	Specifications	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 10 WWeight: 0.6 kg (1.33 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-199 provides 4E1-IMA card ordering information.

Table 7-199 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RCT	AR01WAE14 A	4E1-IMA	4-port E1 Inverse Multiplexing for ATM Interface Card

7.6 E3/T3 Card

7.6.1 1E3/CE3/T3/CT3 (1-Port Channelized/Unchannelized E3/T3 WAN Interface Card)

Card Overview

The 1E3/CE3/T3/CT3 is a high-speed WAN access module. This card provides an unchannelized E3 interface, with a transmitter and a receiver to provide high-speed data transmission.

Ⅲ NOTE

Currently, the 1E3/CE3/T3/CT3 card provides only an unchannelized E3 interface. The card can provide CE3/T3/CT3 interface in later software releases after the software is upgraded.

A 1E3/CE3/T3/CT3 card can be installed in a WSIC slot of a router.

Figure 7-87 shows the appearance of a 1E3/CE3/T3/CT3 card.

Figure 7-87 1E3/CE3/T3/CT3 card appearance



Version Mapping

Table 7-200 lists the device models and software versions supporting the 1E3/CE3/T3/CT3.

Table 7-200 Version mapping

Card Name	Device Model
1E3/CE3/T3/CT3	AR6000 series
NOTE This card is supported in V200R005C00 and later versions.	AR6000-S series

Functions and Features

Table 7-201 describes the functions and features of a 1E3/CE3/T3/CT3 card.

Table 7-201 Functions and features

Function and Feature	Specification
Data transmission	The E3 interface connects to a WAN to complete data transmission.
	The E3 interface provides a maximum bandwidth of 34.368 Mbit/s.
Protocol	Supports FR, PPP, and HDLC.
	Supports the G.751 frame format.

Panel

Figure 7-88 shows the indicators on a 1E3/CE3/T3/CT3 card, and **Table 7-202** describes the indicator states and meanings.

Figure 7-88 Indicators on a 1E3/CE3/T3/CT3 card

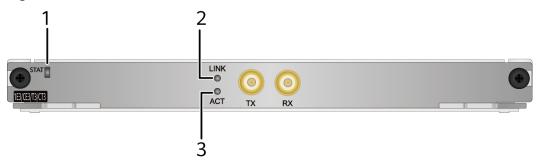


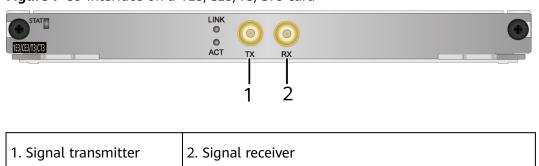
Table 7-202 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system software is running normally.
			Fast blinking: The card is loading the system software or is resetting.
		Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.

Number	Indicator	Color	Description
		Off	The software is not running or the card is resetting.
2	LINK	Green	Steady on: A link has been established on the interface.
			Off: No link is established on the interface.
3	ACT	Yellow	Blinking: The interface is transmitting and receiving data.
			Off: The interface is not transmitting or receiving data.

Figure 7-89 shows the interface on a 1E3/CE3/T3/CT3 card.

Figure 7-89 Interface on a 1E3/CE3/T3/CT3 card



E3/T3 interface

An E3/T3 interface transmits data and image signals. **Table 7-203** describes the E3/T3 interface attributes.

Table 7-203 E3/T3 interface attributes

Attribute	Specification
Connector type	SMB
Standards compliance	G.703, G.704, G.751, G.823
Interface speed	34.368 Mbit/s
Working mode	E3
Services provided	E3 leased line
Cable type	8.8.1 E3/T3 Cable

Technical Specifications

Table 7-204 lists the technical specifications of a 1E3/CE3/T3/CT3 card.

Table 7-204 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)
	Maximum power consumption: 13 WWeight: 0.6 kg (1.32 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-205 provides 1E3/CE3/T3/CT3 card ordering information.

Table 7-205 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021QFT	AR-1E3T3M- W	1E3/CE3/T3/ CT3	1-Port Channelized/ Unchannelized E3/T3 WAN Interface Card

7.7 Synchronous/Asynchronous Card

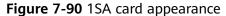
7.7.1 1SA (1-Port Synchronous/Asynchronous WAN Interface Card)

Card Overview

The 1SA is an enhanced high-speed synchronous/asynchronous serial interface module. It can work in synchronous or asynchronous mode, and often uses the synchronous mode to connect to a WAN.

A 1SA card can be installed in a SIC slot of a router.

Figure 7-90 shows the appearance of a 1SA card.





Version Mapping

Table 7-206 lists the device models and software versions supporting the 1SA.

Table 7-206 Version mapping

Card Name	Device Model
1SA	AR1600 series
NOTE This card is supported in V200R001C00 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-207 describes the functions and features of a 1SA card.

Table 7-207 Functions and features

Function and Feature	Description
Synchronous mode	Uses a synchronous serial interface to connect to a WAN.
	A synchronous serial interface can function as a DCE or DTE and supports multiple physical layer protocols, such as V.24, V.35, and X.21. It does not support the X. 21 DCE mode.
	The maximum rate of V.24 is 64 kbit/s, and the maximum rate of V.35 is 2.048 Mbit/s.
	Supports link layer protocols PPP, FR, and HDLC.
	Supports the IP protocol.
Asynchronous mode	An asynchronous serial interface supports the RS232 protocol and provides a maximum transmission rate of 115.2 kbit/s.
	An asynchronous serial interface works in protocol or flow mode.
	Supports the PPP and IP protocols in protocol mode.
	Does not support the PPP or IP protocol in flow mode.

Panel

Figure 7-91 shows the indicators on a 1SA card, and **Table 7-208** describes the indicator states and meanings.

Figure 7-91 Indicators on a 1SA card

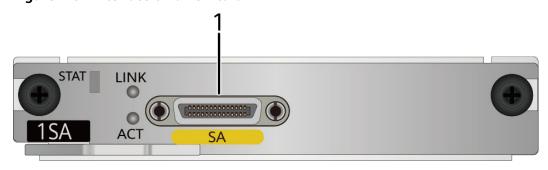


Table 7-208 Indicator description

Numbe r	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being
			powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2 and 3 SA interface indicators: • 2: LINK	Green	LINK indicator steady on: A link has been established on the interface.	
	indicator, green • 3: ACT indicator, yellow)r, 	LINK indicator off: No link is established on the interface.
		tor, 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.

Figure 7-92 shows the interface on a 1SA card.

Figure 7-92 Interface on a 1SA card



1. One SA interface

SA interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. **Table 7-209** lists attributes of a SA interface.

Table 7-209 SA interface attributes

Attribute	Description		
	Synchronous S	erial Interface	Asynchronous Serial Interface
Connector type	DB28		
Standards compliance and working mode	V.24 DTEV.24 DCE	 V.35 DTE V.35 DCE X.21 DTE RS449 DTE RS449 DCE RS530 DTE RS530 DCE 	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Services provided	DDN leased line Terminal access		Modem dial-upBackup
			Asynchronous leased lineTerminal access
Cable type	8.9 SA Cable		

Technical Specifications

Table 7-210 lists the technical specifications of a 1SA card.

Table 7-210 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported

Item	Specification	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 6 W	
	Weight: 0.3 kg (0.66 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-211 provides 1SA card ordering information.

Table 7-211 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YNB	AROMSDSA1 A00	1SA	1-Port Sync/Async Serial Port Interface Card

7.7.2 2SA (2-Port Synchronous/Asynchronous WAN Interface Card)

Card Overview

The 2SA is an enhanced high-speed synchronous/asynchronous serial interface module. It can work in synchronous or asynchronous mode, and often uses the synchronous mode to connect to a WAN.

A 2SA card can be installed in a SIC slot of a router.

Figure 7-93 shows the appearance of a 2SA card.



Figure 7-93 2SA card appearance

Version Mapping

Table 7-212 lists the device models and software versions supporting the 2SA.

Table 7-212 Version mapping

Card Name	Device Model
2SA	AR1600 series
NOTE This card is supported in V200R001C01 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-213 describes the functions and features of a 2SA card.

Table 7-213 Functions and features

Function and Feature	Description
Synchronous mode	Uses a synchronous serial interface to connect to a WAN.
	A synchronous serial interface can function as a DCE or DTE and supports multiple physical layer protocols, such as V.24, V.35, and X.21. It does not support the X. 21 DCE mode.
	The maximum rate of V.24 is 64 kbit/s, and the maximum rate of V.35 is 2.048 Mbit/s.

Function and Feature	Description	
	Supports link layer protocols PPP, FR, and HDLC.	
	Supports the IP protocol.	
Asynchronous mode	An asynchronous serial interface supports the RS232 protocol and provides a maximum transmission rate of 115.2 kbit/s.	
	An asynchronous serial interface works in protocol or flow mode.	
	Supports the PPP and IP protocols in protocol mode.	
	Does not support the PPP or IP protocol in flow mode.	

Panel

Figure 7-94 shows the indicators on a 2SA card, and **Table 7-214** describes the indicator states and meanings.

Figure 7-94 Indicators on an 2SA card

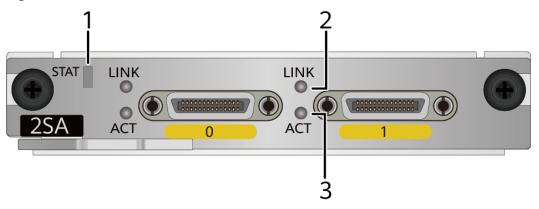


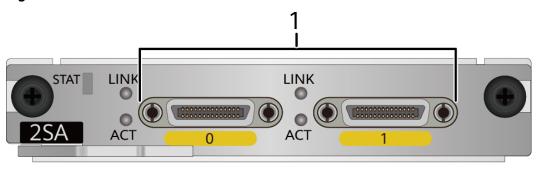
Table 7-214 Indicator description

Numbe r	Indicator	Color	Description
1	1 STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

Numbe r	Indicator	Color	Description
		Off	The system software is not running or is resetting.
2 and 3	2 and 3 SA interface indicators: 2: LINK indicator, green 3: ACT indicator, yellow	Green	LINK indicator steady on: A link has been established on the interface.
			LINK indicator off: No link is established on the interface.
		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.

Figure 7-95 shows the interfaces on a 2SA card.

Figure 7-95 Interfaces on a 2SA card



1. Two SA interfaces

SA interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. **Table 7-215** lists attributes of a SA interface.

Table 7-215 SA interface attributes

Attribute	Description		
	Synchronous Serial Interface		Asynchronous Serial Interface
Connector type	DB28		
Standards compliance and working mode	V.24 DTEV.24 DCE	 V.35 DTE V.35 DCE X.21 DTE RS449 DTE RS449 DCE RS530 DTE RS530 DCE 	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	2048000	115200
Services provided	DDN leased line		Modem dial-upBackup
	Terminal access		Asynchronous leased lineTerminal access
Cable type	8.9 SA Cable		

Technical Specifications

Table 7-216 lists the technical specifications of a 2SA card.

Table 7-216 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 7 W	
	• Weight: 0.3 kg (0.66 lb)	

Item	Specification
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)
parameters	Operating relative humidity: 5% to 95%, noncondensing
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-217 provides 2SA card ordering information.

Table 7-217 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020SAY	AR0MSDSA2 A00	2SA	2-Port Sync/Async Serial Port Interface Card

7.7.3 8SA (8-Port Synchronous/Asynchronous WAN Interface Card)

Card Overview

The 8SA card is an enhanced high-speed synchronous/asynchronous serial interface module. It can work in synchronous or asynchronous mode, and often uses the synchronous mode to connect to a WAN.

An 8SA card can be installed in a WSIC slot of a router.

Figure 7-96 shows the appearance of an 8SA card.

Figure 7-96 8SA card appearance



Version Mapping

Table 7-218 lists the device models and software versions supporting the 8SA.

Table 7-218 Version mapping

Card Name	Device Model
8SA	AR6000 series
NOTE This card is supported in V200R005C10 and later versions.	AR6000-S series
When the maximum output power of the AR6140-9G-2AC or AR6140-S is 60 W, the device does not support the 8SA.	
When the maximum output power of the AR6140-9G-2AC, AR6140K-9G-2AC, or AR6140-S is 70 W, only one 8SA can be installed on the device.	

Functions and Features

Table 7-219 describes the functions and features of an 8SA card.

Table 7-219 Functions and features

Function and Feature	Description	
Synchronous mode	Uses a synchronous serial interface to connect to a WAN.	
	A synchronous serial interface can function as a DCE or DTE. It supports multiple physical layer protocols, such as V.24, V.35, X.21, RS449, and RS530.	
	Automatically identifies the rate of received signals.	
	The maximum rate of V.24 is 64 kbit/s and the maximum rate of V.35/X.21/RS449/RS530 is 8.192 Mbit/s.	
	Supports link layer protocols PPP, FR, and HDLC.	
	Use IP as the network layer protocol.	
	Support pseudo wire emulation edge-to-edge (PWE3).	
Asynchronous mode	Support the RS232 protocol and provide a maximum transmission rate of 230.4 kbit/s.	
	Works in protocol or flow mode.	

Function and Feature	Description
	Supports the PPP and IP protocols in protocol mode.
	In flow mode, the interfaces do not support link layer protocols or IP.
	Supports PWE3.

Panel

Figure 7-97 shows the indicators on an 8SA card, and **Table 7-220** describes the indicator states and meanings.

Figure 7-97 Indicators on an 8SA card

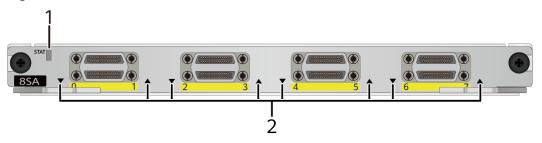


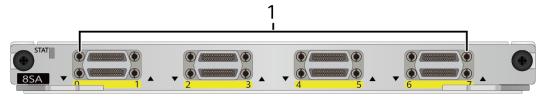
Table 7-220 Indicator description

Numbe r	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	One double- color indicator for each SA interface	Green	Steady on: A link has been established. Off: No link is established.
	meriace	Amber	Blinking: Data is being transmitted or received. Off: No data is being transmitted or received.

Numbe r	Indicator	Color	Description
	Down arrowhead: interfaces in the lower row Up arrowhead: interfaces in the upper row	Off	Off: There is no connection.

Figure 7-98 shows the interfaces on an 8SA card.

Figure 7-98 Interfaces on an 8SA card



1. Eight SA interfaces

Synchronous/Asynchronous serial (SA) interface

When working in synchronous mode, the SA interfaces implement interworking between enterprise branches and the headquarters over PPP links. When working in asynchronous mode, the SA interfaces are used to log in to other devices from the local device through the redirection function. **Table 7-221** describes the SA interface attributes.

Table 7-221 Attributes of SA serial interfaces

Attribute	Description		
	Synchronous Serial Interface	Asynchronous Serial Interface	
Connector type	DB28		

Attribute	Description		
	Synchronous S	erial Interface	Asynchronous Serial Interface
Standards compliance and working mode	V.24 DTEV.24 DCE	 V.35 DTE V.35 DCE X.21 DTE X.21 DCE RS449 DTE RS449 DCE RS530 DTE RS530 DCE 	RS232
Minimum baud rate (bit/s)	1200	1200	600
Maximum baud rate (bit/s)	64000	8192000	230400
Services provided			Modem dial-up Backup
	Terminal access	5	Asynchronous leased lineTerminal access
Cable type	8.9 SA Cable		

Technical Specifications

Table 7-222 lists the technical specifications of an 8SA card.

Table 7-222 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	• Maximum power consumption: 27 W	
	• Weight: 0.6 kg (1.33 lb)	

Item	Specification	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 to 5000 m (16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-223 provides 8SA card ordering information.

Table 7-223 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022CPM	AR-8SA-W	8SA	8-port synchronous/asynchronous WAN interface card

7.7.4 8AS (8-Port-Asynchronous WAN Interface Card)

Card Overview

The 8AS is a high-speed asynchronous serial interface module and working in protocol or flow mode. It can connect to the PSTN through a modem or function as a serial port server to implement remote management for terminals.

An 8AS card can be installed in a WSIC slot of a router.

Figure 7-99 shows the appearance of an 8AS card.

Figure 7-99 8AS card appearance



Version Mapping

Table 7-224 lists the device models and software versions supporting the 8AS.

Table 7-224 Version mapping

Card Name	Device Model
8AS	AR6000 series
NOTE This card is supported in V200R001C01 and later versions.	AR6000-S series

Functions and Features

Table 7-225 describes the functions and features of an 8AS card.

Table 7-225 Functions and features

Function and Feature	Description	
Asynchronous serial interface	Connects to the PSTN through a modem or functions as a serial port server to implement remote management for terminals.	
Basic functions	Functions as a dialup access server for small- and medium- sized ISPs when asynchronous serial interfaces are used for dialup.	
	Supports redirection to other devices when the asynchronous serial interface functions as a serial port server.	
Interface rate	Supports a maximum of 115.2 kbit/s transmission rate for each asynchronous serial interface.	
Protocols supported	 Supports the PPP and IP protocols in protocol mode. Does not support the PPP or IP protocol in flow mode. 	

Panel

Figure 7-100 shows the indicators on an 8AS card, and **Table 7-226** describes the indicator states and meanings.

Figure 7-100 Indicators on an 8AS card

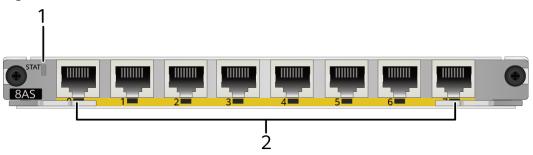
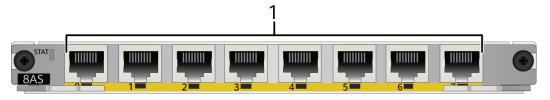


Table 7-226 Indicator description

Number	Indicator	Color	Description
1 STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.	
	Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.	
		Off	Off: The software is not running or is being reset.
2 LINK (interface status indicator)	(interface	Green	Steady on: A link has been established.
		Off: No link is established.	

Figure 7-101 shows the interfaces on an 8AS card.

Figure 7-101 Interfaces on an 8AS card



1. Eight asynchronous serial interfaces (RJ45)

Asynchronous serial interface

An asynchronous serial interface is one of the most commonly used WAN interface. It can be used to establish an asynchronous leased line or is used for

modem dial-up, data backup, or terminal access. **Table 7-227** lists attributes of the asynchronous serial interface.

Table 7-227 Attributes of the asynchronous serial interface

Attribute	Description	
Connector type	RJ45	
Standards compliance and working mode	RS232	
Minimum baud rate	600 bit/s	
Maximum baud rate	115.2 kbit/s	
Function	Modem dial-upBackupAsynchronous leased lineTerminal access	
Cable type	8.10.1 8AS Cable	

Technical Specifications

Table 7-228 describes the technical specifications of an 8AS card.

Table 7-228 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 6 W	
	Weight: 0.6 kg (1.33 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing 	
'		
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 to 5000 m (16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-229 provides 8AS card ordering information.

Table 7-229 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XBH	AROMWDAS 8A01	8AS	8-Port Async Serial Port Interface Card

7.8 3G/LTE Card

7.8.1 3G-HSPA+7 (3G WCDMA HSPA+7 Interface Card)

Card Overview

The 3G-HSPA+7 is a 3G access card. It can function as the primary or backup link of an enterprise to connect to the Internet and transmit voice, video, and data services.

A 3G-HSPA+7 card can be installed in a SIC slot of a router.

Figure 7-102 shows the appearance of a 3G-HSPA+7 card.



Figure 7-102 3G-HSPA+7 card appearance

Version Mapping

Table 7-230 lists the device models and software versions supporting the 3G-HSPA+7.

Table 7-230 Version mapping

Card Name	Device Model
3G-HSPA+7	AR1600 series
NOTE This card is supported in V200R002C01 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-231 describes the functions and features of a 3G-HSPA+7 card.

Table 7-231 Functions and features

Function and Feature	Description		
Basic functions	Functions as the primary or backup link of an enterprise to connect to the Internet and transmit enterprise communication services.		
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.		
Good 3G experience	Implements on-demand dialup and provides wireless QoS.		
	Automatically scans different 3G frequency bands.		
	Transmits voice services in PS/CS domains.		
	Uses advanced wireless technologies and provides super high-speed 3G wireless experience.		
Flexible wireless	Flexibly switches between 2G and 3G.		
standards	Supports HSPA+, WCDMA, EDGE, GPRS, and GSM.		
	Provides wireless solutions on LTE migration for carriers and enterprises.		

Panel

Figure 7-103 shows the indicators on a 3G-HSPA+7 card, and **Table 7-232** describes the indicator states and meanings.

Figure 7-103 Indicators on a 3G-HSPA+7 card

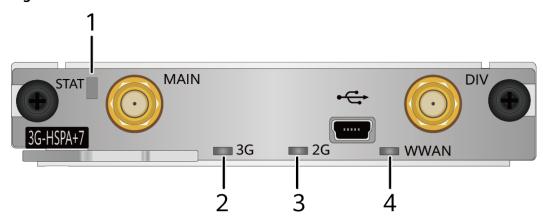
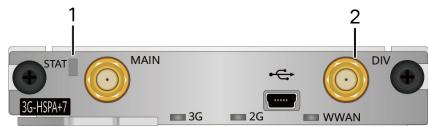


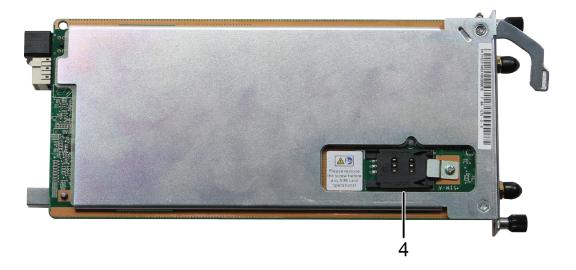
Table 7-232 Indicator description

Number	Indicator	Color	Description
1 STAT	Green	Steady on: The router has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.	
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	3G	Green	Steady on: The 3G signal strength is high. Slow blinking: The 3G signals strength is low. Fast blinking: The 3G signals
			strength is medium. Off: No 3G signal is available.
3	2G	Green	Steady on: The 2G signal strength is high. Slow blinking: The 2G signals strength is low. Fast blinking: The 2G signals strength is medium. Off: No 2G signal is available.
4	WWAN	Green	Steady on: The 3G/2G connection is being established or is active. Blinking: Data is being transmitted or received over the 3G/2G connection. Off: The 3G/2G connection has not been established or is inactive.

Figure 7-104 shows the interfaces on a 3G-HSPA+7 card.

Figure 7-104 Interfaces on a 3G-HSPA+7 card





1. One primary 3G antenna interface	2. One secondary 3G antenna interface	3. One Mini USB interface	4. One SIM card slot
	interrace		The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact. Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device.

3G-HSPA+7 antenna interface

3G-HSPA+7 antenna interfaces of a router include a MAIN interface (for the primary antenna) and a DIV interface (for the secondary antenna). The primary

and secondary antennas work together. The primary antenna transmits and receives 3G signals, and the secondary antenna helps improve the quality of received 3G signals. **Table 7-233** lists attributes of a 3G-HSPA+7 antenna interface.

Table 7-233 3G-HSPA+7 antenna interface attributes

Attribute	Description
Connector type	SMA-K (screw threads outside and a hole inside)
Standards compliance and frequency bands supported	 WCDMA: 2100/1900/900/850 (MHz) GSM: 850/900/1800/1900 (MHz)
Rate	HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
	WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 Mbit/s
	WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s
	EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s
Cable type	8.14.2 3G Antenna

Mini USB interface

The Mini USB interface is used to debug a 3G card. **Table 7-234** lists attributes of the Mini USB interface.

Table 7-234 Attributes of the Mini USB interface

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

Technical Specifications

Table 7-235 lists the technical specifications of a 3G-HSPA+7 card.

Table 7-235 Technical specifications

Item	Specifications
Card type	SIC
Hot swap	Supported
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 8 W Weight: 0.2 kg (0.44 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-236 provides 3G-HSPA+7 card ordering information.

Table 7-236 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310JVX	AR01SDGW1 A	3G-HSPA+7	3G HSPA+7 Interface Module

7.8.2 1LTE-L (WCDMA LTE Interface Card)

Card Overview

The 1LTE-L is a high-speed wireless WAN access module that connects to an LTE network to provide high-speed wireless data transmission for an enterprise.

A 1LTE-L card can be installed in a SIC slot of a router.

Figure 7-105 shows the appearance of a 1LTE-L card.



Figure 7-105 1LTE-L card appearance

Version Mapping

Table 7-237 lists the device models and software versions supporting the 1LTE-L.

Table 7-237 Version mapping

Card Name	Device Model
1LTE-L	AR1600 series
NOTE This card is supported in V200R005C00 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-238 describes the functions and features of a 1LTE-L card.

Table 7-238 Functions and features

Function and Feature	Description	
Basic function	Dials up to an LTE network to provide high-speed data transmission.	
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.	
High bandwidth	Supports LTE FDD and provides up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate.	

Function and Feature	Description
Excellent 4G experience	Implements on-demand dialup and provides Provides end-to-end QoS
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless standards	Maintains compatibility with 3G services.
	Supports LTE FDD, DC-HSPA+, HSPA+, WCDMA, EDGE, GPRS, and GSM.
	Provides 4G wireless access solution for carriers and enterprises.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.

Figure 7-106 shows the indicators on a 1LTE-L card, and **Table 7-239** describes the indicator states and meanings.

Figure 7-106 Indicators on a 1LTE-L card

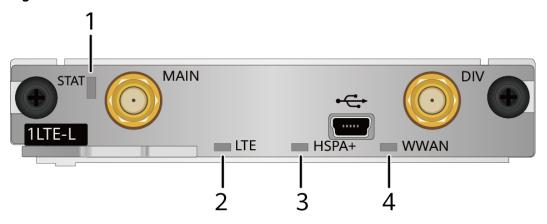


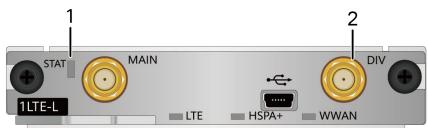
Table 7-239 Indicator description

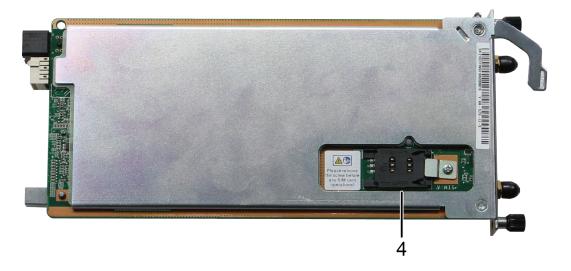
Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	HSPA+	Green	Steady on: The HSPA+ signal strength is high. Fast blinking: The HSPA+ signal strength is medium. Slow blinking: The HSPA+ signal strength is low. Off: No HSPA+ signal is available.
4	WWAN	Green	Steady on: An LTE or HSPA+ link has been established and is active. Blinking: Data is being transmitted over the LTE or HSPA+ link. Off: The LTE or HSPA+ link is not established or is inactive.

Figure 7-107 shows the interfaces on a 1LTE-L card.

Figure 7-107 Interfaces on a 1LTE-L card





1. Primary LTE antenna interface	2. Secondary LTE antenna interface	3. Mini USB interface	4. One SIM card slot
			NOTE
			 The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact.
			 Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device.

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 only receives LTE signals to help improve the downlink rate. **Table 7-240** lists attributes of an LTE antenna interface.

Table 7-240 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 WCDMA: Bands 1/2/5/8 GSM: 850/900/1800/1900 (MHz) 	
Rate	LTE FDD: uplink rate of 50 Mbit/s and downlink rate of 100 Mbit/s	
	 DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s 	
	 HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s 	
	 WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s 	
	 WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s 	
	 EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s 	
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s 	
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s	
Cable type	LTE Indoor Remote Antenna (27012152) LTE Whip Antenna	

Mini USB interface

The Mini USB interface on an LTE card is used to commission the LTE module. **Table 7-241** lists attributes of a Mini USB interface.

Table 7-241 Mini USB interface attributes

Attribute	Description
Connector type	Mini USB-B-angle
Standards compliance	USB2.0
Working mode	Device

Technical Specifications

Table 7-242 lists the technical specifications of a 1LTE-L card.

Table 7-242 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)
	Maximum power consumption: 8 WWeight: 0.2 kg (0.44 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-243 provides 1LTE-L card ordering information.

Table 7-243 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310QBB	AR-1LTE-L-S	1LTE-L	WCDMA LTE Interface Card

7.8.3 1CLTE4-CN (FDD/WCDMA/TD-SCDMA Interface Card - MIC)

Card Overview

The 1CLTE4-CN card is a high-speed wireless WAN access module that connects to an LTE network to provide high-speed wireless data transmission for an enterprise.

A 1CLTE4-CN card can be installed in the MIC slot of a router.

Figure 7-108 shows the appearance of a 1CLTE4-CN card.

DIV

10LTE4-CN

Figure 7-108 1CLTE4-CN card appearance

Version Mapping

Table 7-244 lists the device models and software versions supporting a 1CLTE4-CN card.

Table 7-244 Version mapping

Card Name	Device Model
1CLTE4-CN	AR651
NOTE	AR651K
This card is supported in V300R003C10 and later	AR651-X8
versions.	AR651W
	AR651W-X4
	AR651U-A4
	AR657W

Functions and Features

Table 7-245 describes the functions and features of a 1CLTE4-CN card.

Table 7-245 Functions and features

Function and Feature	Description	
Basic function	Dials up to an LTE network to provide high-speed data transmission.	
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.	
High bandwidth	Supports frequency division duplex (FDD) LTE and provides up to 50 Mbit/s uplink rate and 150 Mbit/s downlink rate.	

Function and Feature	Description
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless	Maintains compatibility with 3G services.
standards	Supports LTE FDD, LTE TDD, DC-HSPA+, HSPA+, WCDMA, EDGE, GPRS, and GSM.
	Provides a 4G wireless access solution for carriers and enterprises.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed in the card. NOTE
	 The double-card single-standby is supported, and SIM1 is the default master card.
	 If only one SIM card needs to be installed, install it in slot SIM1. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot.
	The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact.
	 Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device.

Indicators of the 1CLTE4-CN card are located on the front panel of a router, and the silkscreen is WWAN and RSSI. **Table 7-246** describes the indicator states and meanings.

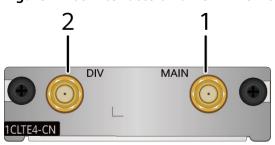
Table 7-246 Indicator description

Indicator	Color	Description
WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.

Indicator	Color	Description
RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
		Fast blinking: The 4G/3G/2G signal strength is medium.
		Slow blinking: The 4G/3G/2G signal strength is low.
		Off: No 4G/3G/2G signal is available.

Figure 7-109 shows the interfaces on a 1CLTE4-CN card.

Figure 7-109 Interfaces on a 1CLTE4-CN card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface
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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 only receives LTE signals to help improve the downlink rate. Table 7-247 lists attributes of an LTE antenna interface.

Table 7-247 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, and 8 LTE TDD: bands 38, 39, 40, and 41 WCDMA: bands 1, 5, 8, and 9 GSM: 900/1800 (MHz) 	

Attribute	Description
Rate	 LTE FDD: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s
	 LTE TDD: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s
	 DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s
	 HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
	 WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
	WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s
	EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s

Technical Specifications

Table 7-248 lists technical specifications of a 1CLTE4-CN card.

Table 7-248 Technical specifications

Item	Specification	
Card type	MIC	
Hot swap	Not supported	
Physical specifications	• Dimensions (H x W x D): 18.70 mm x 67.86 mm x 87.55 mm (0.74 in. x 2.67 in. x 3.45 in.)	
	Maximum power consumption: 3.6 WWeight: 0.25 kg (0.55 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-249 provides 1CLTE4-CN card ordering information.

Table 7-249 Ordering information

Part Number	Model	Name Label (Silkscreen)	Specification
02312HCB	MIC-1CLTE4- CN	1CLTE4-CN	MIC-1CLTE4-CN, FDD/ WCDMA/TD-SCDMA interface card

7.8.4 1ELTE6-EA Card (WCDMA/LTE FDD/LTE TDD CAT6 Interface Card-MIC)

Card Overview

The 1ELTE6-EA card is a high-speed wireless WAN access module that connects to an LTE network to provide high-speed wireless data transmission for an enterprise.

A 1ELTE6-EA card can be installed in the MIC slot of a router.

Figure 7-110 shows the appearance of a 1ELTE6-EA card.

Figure 7-110 1ELTE6-EA card appearance



Version Mapping

Table 7-250 lists the device models and software versions supporting a 1ELTE6-EA card.

Table 7-250 Version mapping

Card Name	Device Model
1ELTE6-EA	AR651
NOTE	AR651-X8
This card is supported in V300R003C10 and later	AR651W
versions.	AR651W-X4
	AR651U-A4
	AR657W

Functions and Features

Table 7-251 describes the functions and features of a 1ELTE6-EA card.

Table 7-251 Functions and features

Function and Feature	Description
Basic function	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	Supports LTE FDD CAT6 and provides up to 50 Mbit/s uplink rate and 300 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless	Maintains compatibility with 3G services.
standards	Supports LTE FDD, LTE TDD, DC-HSPA+, HSPA+, and WCDMA.
	Provides a 4G wireless access solution for carriers and enterprises.

Function and Feature	Description	
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed in the card. NOTE	
	 The double-card single-standby is supported, and SIM1 is the default master card. 	
	 If only one SIM card needs to be installed, install it in slot SIM1. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot. 	
	 The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact. 	
	 Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device. 	

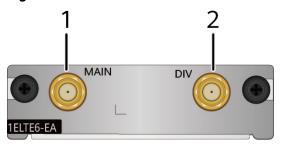
Indicators of the 1ELTE6-EA card are located on the front panel of a router, and the silkscreen is WWAN and RSSI. **Table 7-252** describes the indicator states and meanings.

Table 7-252 Indicator description

The second secon			
Indicator	Color	Description	
WWAN	Green	Steady on: A 4G/3G connection has been established or is active.	
		Blinking: Data is being transmitted or received over the 4G/3G connection.	
		Off: The 4G/3G connection has not been established or is inactive.	
RSSI	Green	Steady on: The 4G/3G signal strength is high.	
		Fast blinking: The 4G/3G signal strength is medium.	
		Slow blinking: The 4G/3G signal strength is low.	
		Off: No 4G/3G signal is available.	

Figure 7-111 shows the interfaces on a 1ELTE6-EA card.

Figure 7-111 Interfaces on a 1ELTE6-EA card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface
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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 only receives LTE signals to help improve the downlink rate. Table 7-253 lists attributes of an LTE antenna interface.

Table 7-253 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: B1/B3/B5/B7/B8/B20/B28/B32 LTE TDD: B38/B40/B41 2×CA:

Attribute	Description
Rate	 LTE FDD: uplink rate of 50 Mbit/s and downlink rate of 300 Mbit/s
	 LTE TDD: uplink rate of 28 Mbit/s and downlink rate of 223 Mbit/s
	 DC-HSDPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s
	 HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
	 WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
	 WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s
Cable type	LTE Whip Antenna

Technical Specifications

Table 7-254 lists technical specifications of a 1ELTE6-EA card.

Table 7-254 Technical specifications

Item	Specification
Card type	MIC
Hot swap	Not supported
Physical specifications	 Dimensions (H x W x D): 18.70 mm x 67.86 mm x 87.55 mm (0.74 in. x 2.67 in. x 3.45 in.) Maximum power consumption: 4 W Weight: 0.25 kg (0.55 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-255 provides 1ELTE6-EA card ordering information.

Table 7-255 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312HCC	MIC-1ELTE6- EA	1ELTE6-EA	WCDMA/LTE FDD/LTE TDD CAT6 interface card

7.8.5 1LTE4-EA (FDD/WCDMA/HSPA+ Interface Card - MIC)

Card Overview

The 1LTE4-EA is a high-speed wireless WAN access module that connects to an LTE network to provide high-speed wireless data transmission for an enterprise.

A 1LTE4-EA card can be installed in the MIC slot of a router.

Figure 7-112 shows the appearance of a 1LTE4-EA card.

Figure 7-112 1LTE4-EA card appearance



Version Mapping

Table 7-256 lists the device models and software versions supporting a 1LTE4-EA card.

Table 7-256 Version mapping

Card Name	Device Model
1LTE4-EA	AR651
NOTE	AR651-X8
This card is supported in V300R003C00 and later	AR651W
versions.	AR651W-X4
	AR651U-A4
	AR657W

Function and Feature

Table 7-257 describes functions and features of a 1LTE4-EA card.

Table 7-257 Functions and features

Function and Feature	Description
Basic function	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	Supports frequency division duplex (FDD) LTE and provides up to 50 Mbit/s uplink rate and 150 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless	Maintains compatibility with 3G services.
standards	Supports LTE FDD, DC-HSPA+, HSPA+, WCDMA, EDGE, GPRS, and GSM.
	Provides a 4G wireless access solution for carriers and enterprises.
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed in the card. NOTE
	 The double-card single-standby is supported, and SIM1 is the default master card.
	If only one SIM card needs to be installed, install it in slot SIM1. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot.
	The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact.
	Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device.

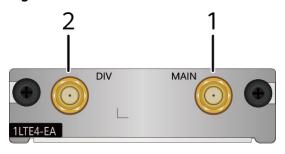
Indicators of the 1LTE4-EA card are located on the front panel of a router, and the silkscreen is WWAN and RSSI. **Table 7-258** describes the indicator states and meanings.

Table 7-258 Indicator description

Indicator	Color	Description
WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
		Fast blinking: The 4G/3G/2G signal strength is medium.
		Slow blinking: The 4G/3G/2G signal strength is low.
		Off: No 4G/3G/2G signal is available.

Figure 7-113 shows interfaces on a 1LTE4-EA card.

Figure 7-113 Interfaces on a 1LTE4-EA card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface
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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 only receives LTE signals to help improve the downlink rate. Table 7-259 lists attributes of an LTE antenna interface.

Table 7-259 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 1/2/3/4/5/7/8/20 WCDMA: Band 1/2/5/8 GSM: 850/900/1800/1900 (MHz)
Rate	LTE FDD: 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
	 HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
	WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
	 WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s
	EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s
Cable type	LTE Indoor Remote Antenna (27012152)

Technical Specifications

Table 7-260 lists technical specifications of a 1LTE4-EA card.

Table 7-260 Technical specifications

Item	Specification	
Card type	MIC	
Hot swap	Not supported	
Physical specifications	• Dimensions (H x W x D): 18.70 mm x 67.86 mm x 87.55 mm (0.74 in. x 2.67 in. x 3.45 in.)	
	Maximum power consumption: 3.6 W	
	Weight: 0.25 kg (0.55 lb)	

Item	Specification
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)
parameters	Operating relative humidity: 5% to 95%, noncondensing
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)
	• Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-261 provides 1LTE4-EA card ordering information.

Table 7-261 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312ATX	MIC-1LTE4- EA	1LTE4-EA	FDD/WCDMA/HSPA+ Interface Card

7.8.6 1LTE4 (FDD/WCDMA/HSPA+ Interface Card - MIC)

Card Overview

The 1LTE4 is a high-speed wireless WAN access module that connects to an LTE network to provide high-speed wireless data transmission for an enterprise.

A 1LTE4 card can be installed in the MIC slot of a router.

Figure 7-114 shows the appearance of a 1LTE4 card.

Figure 7-114 1LTE4 card appearance



Version Mapping

Table 7-262 lists the device models and software versions supporting a 1LTE4 card.

Table 7-262 Version mapping

Card Name	Device Model
1LTE4	AR651
NOTE	AR651W
This card is supported in V300R019C10 and later	AR651U-A4
versions.	AR657W

Function and Feature

Table 7-263 describes functions and features of a 1LTE4 card.

Table 7-263 Functions and features

Function and Feature	Description
Basic function	Dials up to an LTE network to provide high-speed data transmission.
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.
High bandwidth	Supports frequency division duplex (FDD) LTE and provides up to 50 Mbit/s uplink rate and 150 Mbit/s downlink rate.
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.
	Automatically scans different 4G frequency bands.
	Delivers fast 4G access service using industry-leading wireless technologies.
Flexible wireless standards	Maintains compatibility with 3G services.
	Supports LTE FDD, DC-HSPA+, HSPA+, WCDMA, EDGE, GPRS, and GSM.
	Provides a 4G wireless access solution for carriers and enterprises.

Function and Feature	Description	
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed in the card. NOTE	
	 The double-card single-standby is supported, and SIM1 is the default master card. 	
	 If only one SIM card needs to be installed, install it in slot SIM1. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot. 	
	The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact.	
	 Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device. 	

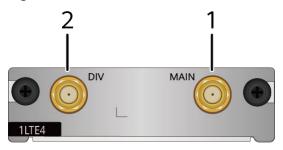
Indicators of the 1LTE4 card are located on the front panel of a router, and the silkscreen is WWAN and RSSI. **Table 7-264** describes the indicator states and meanings.

Table 7-264 Indicator description

Indicator	Color	Description
WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.
RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.
		Fast blinking: The 4G/3G/2G signal strength is medium.
		Slow blinking: The 4G/3G/2G signal strength is low.
		Off: No 4G/3G/2G signal is available.

Figure 7-115 shows interfaces on a 1LTE4 card.

Figure 7-115 Interfaces on a 1LTE4 card



1. Primary LTE antenna interface 2. Secondary LTE antenna interface

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 only receives LTE signals to help improve the downlink rate. Table 7-265 lists attributes of an LTE antenna interface.

Table 7-265 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 1/2/3/4/5/7/8/20 WCDMA: Band 1/2/5/8 GSM: 850/900/1800/1900 (MHz)
Rate	 LTE FDD: 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
	HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s
	WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s
	WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s
	EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s
Cable type	LTE Indoor Remote Antenna (27012152)

Technical Specifications

Table 7-266 lists technical specifications of a 1LTE4 card.

Table 7-266 Technical specifications

Item	Specification	
Card type	MIC	
Hot swap	Not supported	
Physical specifications	• Dimensions (H x W x D): 18.70 mm x 67.86 mm x 87.55 mm (0.74 in. x 2.67 in. x 3.45 in.)	
	Maximum power consumption: 3.6 WWeight: 0.25 kg (0.55 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-267 provides 1LTE4 card ordering information.

Table 7-267 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02313BBJ	MIC-1LTE4	1LTE4	FDD/WCDMA/HSPA+ Interface Card

7.8.7 1LTE6-EA (WCDMA LTE CAT6 Interface Card-MIC)

Card Overview

The 1LTE6-EA card is a high-speed wireless WAN access module that connects to an LTE network to provide high-speed wireless data transmission for an enterprise.

A 1LTE6-EA card can be installed in the MIC slot of a router.

Figure 7-116 shows the appearance of a 1LTE6-EA card.

MAIN DIV

Figure 7-116 1LTE6-EA card appearance

Version Mapping

Table 7-268 lists the device models and software versions supporting a 1LTE6-EA card.

Table 7-268 Version mapping

Card Name	Device Model
1LTE6-EA	AR651
NOTE	AR651-X8
This card is supported in V300R003C00 and later	AR651W
versions	AR651W-X4
	AR651U-A4
	AR657W

Functions and Features

Table 7-269 describes functions and features of a 1LTE6-EA card.

Table 7-269 Functions and features

Function and Feature	Description	
Basic functions	Dials up to an LTE network to provide high-speed data transmission.	
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.	
High bandwidth	Supports frequency division duplex (FDD) LTE and provides up to 50 Mbit/s uplink rate and 300 Mbit/s downlink rate.	
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.	

Function and Feature	Description		
	Automatically scans different 4G frequency bands.		
	Delivers fast 4G access service using industry-leading wireless technologies.		
Flexible wireless	Maintains compatibility with 3G services.		
standards	Conforms to LTE FDD, LTE TDD, DC-HSPA+, HSPA+, WCDMA, EDGE, GPRS, and GSM.		
	Provides a 4G wireless access solution for carriers and enterprises.		
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed in the card.		
	NOTE		
	The double-card single-standby is supported, and SIM1 is the default master card.		
	If only one SIM card needs to be installed, install it in slot SIM1. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot.		
	The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact.		
	Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device.		

Indicators of the 1LTE6-EA card are located on the front panel of a router, and the silkscreen is WWAN and RSSI. **Table 7-270** describes the indicator states and meanings.

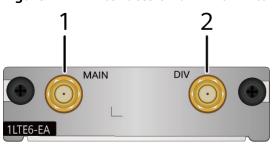
Table 7-270 Indicator description

Indicator	Color	Description
WWAN	Green	Steady on: A 4G/3G/2G connection has been established or 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.

Indicator	Color	Description	
RSSI	Green	Steady on: The 4G/3G/2G signal strength is high.	
		Fast blinking: The 4G/3G/2G signal strength is medium.	
		Slow blinking: The 4G/3G/2G signal strength is low.	
		Off: No 4G/3G/2G signal is available.	

Figure 7-117 shows the interfaces on a 1LTE6-EA card.

Figure 7-117 Interfaces on a 1LTE6-EA card



1. Primary LTE antenna interface	2. Secondary LTE antenna interface
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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 only receives LTE signals to help improve the downlink rate. Table 7-271 lists attributes of an LTE antenna interface.

Table 7-271 LTE antenna interface attributes

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

Attribute	Description	
Standards	• LTE FDD: Band 1/3/7/8/20/28	
compliance and	LTE TDD: Band 38	
frequency bands supported	WCDMA: Band 1/8	
зарропец	• GSM: 900/1800 (MHz)	
	• CA:	
	– Band 1+3/8	
	- Band 3+3/7/8/20/28/38	
	– Band 7+7/20/28	
Rate	LTE FDD Cat6: uplink rate of 50 Mbit/s and downlink rate of 300 Mbit/s	
	 LTE FDD Cat4: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s 	
	 LTE TDD: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s 	
	 DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s 	
	 HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21 Mbit/s 	
	WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s	
	WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s	
	EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s	
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s 	
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s	
Cable type	LTE Indoor Remote Antenna (27012152)	

Technical Specifications

Table 7-272 lists technical specifications of a 1LTE6-EA card.

Table 7-272 Technical specifications

Item	Specification	
Card type	MIC	
Hot swap	Not supported	

Item	Specification		
Physical specifications	• Dimensions (H x W x D): 18.70 mm x 67.86 mm x 87.55 mm (0.74 in. x 2.67 in. x 3.45 in.)		
	Maximum power consumption: 4 W		
	• Weight: 0.25 kg (0.55 lb)		
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)		
parameters	Operating relative humidity: 5% to 95%, noncondensing		
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)		
	• Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)		

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-273 provides 1LTE6-EA card ordering information.

Table 7-273 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312BSE	MIC-1LTE6- EA	1LTE6-EA	MIC-1LTE6-EA, FDD/TDD/HSPA+/ WCDMA Cat6 interface card
02313CYE	MIC-1LTE6- EA	1LTE6-EA	MIC-1LTE6-EA, FDD/TDD/HSPA+/ WCDMA Cat6 interface card, with remote antenna

7.8.8 1ELTE-L-S (TDD/FDD/HSPA+ Interface Card)

Card Overview

The 1ELTE-L-S is a high-speed wireless WAN access module. It provides high-speed wireless data transmission, enabling enterprise users to connect to all types of wireless networks.

A 1ELTE-L-S card can be installed in a SIC slot of a router.

Figure 7-118 shows the appearance of a 1ELTE-L-S card.

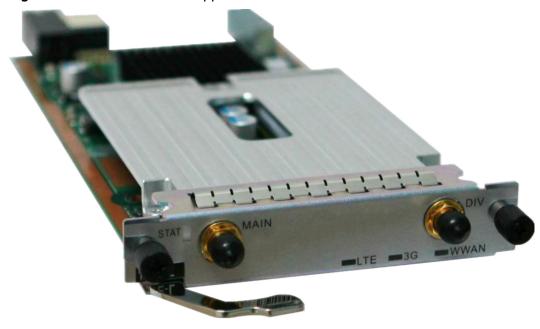


Figure 7-118 1ELTE-L-S card appearance

Version Mapping

Table 7-274 lists the device models and software versions supporting the 1ELTE-L-S.

Table 7-274 Version mapping

Card Name	Device Model
1ELTE-L-S	AR6000 series
NOTE This card is supported in V300R019C10 and later versions.	

Functions and Features

Table 7-275 describes the functions and features of a 1ELTE-L-S card.

Table 7-275 Functions and features

Function and Feature	Description	
Basic functions	Dials up to an LTE network to provide high-speed data transmission.	
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.	

Function and Feature	Description	
High bandwidth	Supports LTE FDD and provides up to 50 Mbit/s uplink rate and 150 Mbit/s downlink rate.	
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.	
	Automatically scans different 4G frequency bands.	
	Delivers fast 4G access service using industry-leading wireless technologies.	
Flexible wireless standards	Maintains compatibility with 3G services.	
	Supports the LTE FDD, LTE TDD, DC-HSPA+, WCDMA, EDGE, GPRS, and GSM standards.	
	Provides wireless access solutions for carriers and enterprises, enabling users to connect to all types of wireless networks.	
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.	

Figure 7-119 shows the indicators on a 1ELTE-L-S card, and **Table 7-276** describes the indicator states and meanings.

Figure 7-119 Indicators on a 1ELTE-L-S card

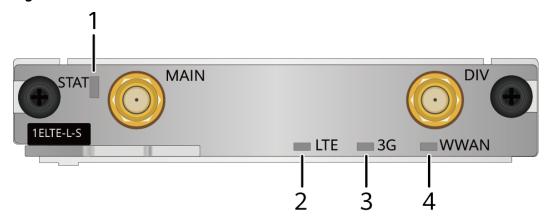


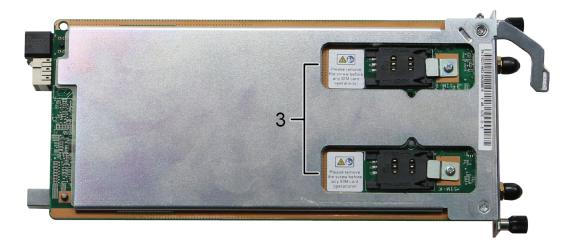
Table 7-276 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Figure 7-120 shows the interfaces on a 1ELTE-L-S card.

STAT DIV DIV

Figure 7-120 Interfaces on a 1ELTE-L-S card



1. Primary LTE antenna interface

2. Secondary LTE antenna interface

3. Two SIM card slots

NOTE

- The double-card singlestandby is supported, and SIM-A is the default master card.
- If only one SIM card needs to be installed, install it in slot SIM-A. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot.
- The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact.
- Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device.

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 only receives LTE signals to help improve the downlink rate. Table 7-277 lists attributes of an LTE antenna interface.

Table 7-277 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 1/3/5/7/8/20 LTE TDD: bands 38/40/41 WCDMA: bands 1/5/8 GSM: 900/1800 (MHz) 	
Rate	 LTE FDD: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s LTE TDD: uplink rate of 30 Mbit/s and downlink rate of 130 Mbit/s DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s EDGE: uplink rate of 118 kbit/s and downlink rate of 237 kbit/s GPRS: uplink rate of 85.6 kbit/s and downlink rate of 107 kbit/s GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s 	
Cable type	8.14.3 LTE Whip Antenna	

Technical Specifications

Table 7-278 lists the technical specifications of a 1ELTE-L-S card.

Table 7-278 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported

Item	Specification	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 9 W	
	Weight: 0.35 kg (0.77 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	• Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-279 provides 1ELTE-L-S card ordering information.

Table 7-279 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02312WWT	AR-1ELTE-L-S	1ELTE-L-S	TDD/FDD/HSPA+ interface card

7.8.9 1LTE-Lo (FDD/HSPA+ Interface Card)

Card Overview

The 1LTE-Lo is a high-speed wireless WAN access module. It provides high-speed wireless data transmission, enabling enterprise users to connect to LTE networks.

A 1LTE-Lo card can be installed in a SIC slot of a router.

Figure 7-121 shows the appearance of a 1LTE-Lo card.

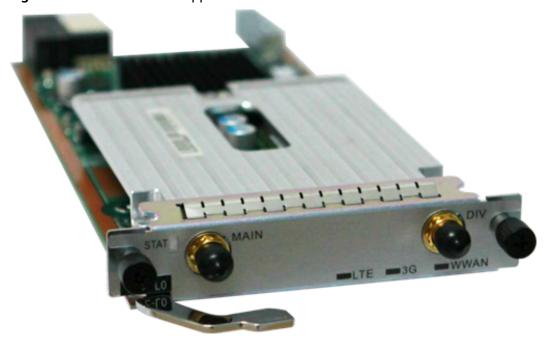


Figure 7-121 1LTE-Lo card appearance

Table 7-280 lists the device models and software versions supporting the 1LTE-Lo.

Table 7-280 Version mapping

Card Name	Device Model
1LTE-Lc	AR1600 series
NOTE This card is supported in V200R008C20 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-281 describes the functions and features of a 1LTE-Lo card.

Table 7-281 Functions and features

Function and Feature	Description
Basic functions	Dials up to an LTE network to provide high-speed data transmission.

Function and Feature	Description	
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.	
High bandwidth	Supports LTE FDD and provides up to 50 Mbit/s uplink rate and 150 Mbit/s downlink rate.	
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.	
	Automatically scans different 4G frequency bands.	
	Delivers fast 4G access service using industry-leading wireless technologies.	
Flexible wireless	Maintains compatibility with 3G services.	
standards	Supports the LTE FDD, HSPA+, DC-HSPA+, WCDMA, EDGE, GPRS, and GSM standards.	
	Provides 4G wireless access solutions for carriers and enterprises.	
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.	

Panel

Figure 7-122 shows the indicators on a 1LTE-Lo card, and **Table 7-282** describes the indicator states and meanings.

Figure 7-122 Indicators on a 1LTE-Lo card

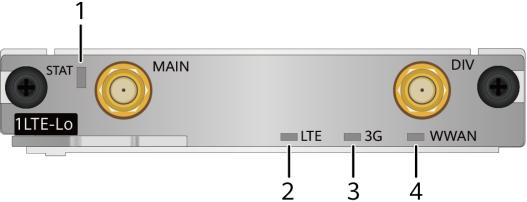


Table 7-282 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Figure 7-123 shows the interfaces on a 1LTE-Lo card.

1 2 DIV DIV

Figure 7-123 Interfaces on a 1LTE-Lo card



1. Primary	LTE	antenna
interface		

2. Secondary LTE antenna interface

3. Two SIM card slots

NOTE

- The double-card singlestandby is supported, and SIM-A is the default master card.
- If only one SIM card needs to be installed, install it in slot SIM-A. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot.
- The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact.
- Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device.

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 only receives LTE signals to help improve the downlink rate. Table 7-283 lists attributes of an LTE antenna interface.

Table 7-283 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 1/2/3/5/7/8/20/28 WCDMA: bands 1/2/5/8 GSM: 1900/1800/900/850 (MHz) 	
Rate	 LTE FDD: 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	
	 HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s 	
	WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s	
	 WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s 	
	EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s	
	 GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s 	
	GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s	
Cable type	LTE whip antenna	

Technical Specifications

Table 7-284 lists the technical specifications of a 1LTE-Lo card.

Table 7-284 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported

Item	Specification	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 9 W	
	Weight: 0.3 kg (0.66 lb)	
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	• Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-285 provides 1LTE-Lo card ordering information.

Table 7-285 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311NSY	AR-1LTE-Lo- S	1LTE-Lo	FDD/HSPA+ interface card

7.8.10 1LTE-Lc (TDD/FDD/TD-SCDMA/HSPA+ Interface Card)

Card Overview

The 1LTE-Lc is a high-speed wireless WAN access module. It provides high-speed wireless data transmission, enabling enterprise users to connect to LTE networks.

A 1LTE-Lc card can be installed in a SIC slot of a router.

Figure 7-124 shows the appearance of a 1LTE-Lc card.



Figure 7-124 1LTE-Lc card appearance

Table 7-286 lists the device models and software versions supporting the 1LTE-Lc.

Table 7-286 Version mapping

Card Name	Device Model
1LTE-Lc	AR1600 series
NOTE This card is supported in V200R008C20 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-287 describes the functions and features of a 1LTE-Lc card.

Table 7-287 Functions and features

Function and Feature	Description	
Basic functions	Dials up to an LTE network to provide high-speed data transmission.	
	Provides a backup link for a WAN link, to improve communication reliability between an enterprise's headquarters and branch networks.	

Function and Feature	Description	
High bandwidth	Supports LTE FDD and provides up to 50 Mbit/s uplink rate and 150 Mbit/s downlink rate.	
Excellent 4G experience	Implements on-demand dialup and provides end-to-end QoS.	
	Automatically scans different 4G frequency bands.	
	Delivers fast 4G access service using industry-leading wireless technologies.	
Flexible wireless	Maintains compatibility with 3G services.	
standards	Supports the LTE FDD, LTE TDD, DC-HSPA+, HSPA+, WCDMA, TD-HSPA+, TD-SCDMA, EDGE, GPRS, and GSM standards.	
	Provides 4G wireless access solutions for carriers and enterprises.	
Rapid deployment	Allows users to connect to an LTE network as soon as a SIM card is installed on the card.	

Panel

Figure 7-125 shows the indicators on a 1LTE-Lc card, and **Table 7-288** describes the indicator states and meanings.

Figure 7-125 Indicators on a 1LTE-Lc card

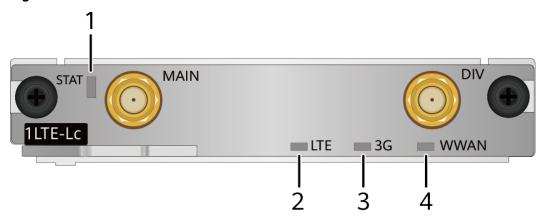


Table 7-288 Indicator description

Number	Indicator	Color	Description
1 STA	STAT	Green	Steady on: The system has been powered on, but the system software is not running. Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	LTE	Green	Steady on: The LTE signal strength is high. Fast blinking: The LTE signal strength is medium. Slow blinking: The LTE signal strength is low. Off: No LTE signal is available.
3	3G	Green	Steady on: The 3G signal strength is high. Fast blinking: The 3G signal strength is medium. Slow blinking: The 3G signal strength is low. Off: No 3G signal is available.
4	WWAN	Green	Steady on: An LTE/3G link has been set up and is active. Blinking: Data is being transmitted or received over the LTE/3G link. Off: The LTE/3G link has not been set up or is inactive.

Figure 7-126 shows the interfaces on a 1LTE-Lc card.

Figure 7-126 Interfaces on a 1LTE-Lc card

1. Primary LTE antenna interface

2. Secondary LTE antenna interface

3. Two SIM card slots

NOTE

- The double-card singlestandby is supported, and SIM-A is the default master card.
- If only one SIM card needs to be installed, install it in slot SIM-A. When installing a SIM card, ensure that the notch direction of the SIM card is consistent with that of the SIM card slot.
- The standard SIM card is supported. It is not recommended to use the card cover to prevent poor SIM card contact.
- Hot-swap SIM card is not supported. After replugging the SIM card, you need to restart the RF module or restart the device.

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 only receives LTE signals to help improve the downlink rate. Table 7-289 lists attributes of an LTE antenna interface.

Table 7-289 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, and 8 LTE TDD: bands 38, 39, 40, and 41 WCDMA: bands 1, 8, and 9 TD-SCDMA: bands 34 and 39 GSM: 900/1800 (MHz)
Rate	 LTE FDD: uplink rate of 50 Mbit/s and downlink rate of 150 Mbit/s LTE TDD: uplink rate of 10 Mbit/s and downlink rate of 112 Mbit/s DC-HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 42 Mbit/s HSPA+: uplink rate of 5.76 Mbit/s and downlink rate of 21.6 Mbit/s WCDMA PS: uplink rate of 384 kbit/s and downlink rate of 384 kbit/s WCDMA CS: uplink rate of 64 kbit/s and downlink rate of 64 kbit/s TD-HSPA+: uplink rate of 2.2 Mbit/s and downlink rate of 4.2 Mbit/s TD-SCDMA PS: uplink rate of 384 kbit/s and downlink rate of 2.8 Mbit/s EDGE: uplink rate of 236.8 kbit/s and downlink rate of 236.8 kbit/s GPRS: uplink rate of 85.6 kbit/s and downlink rate of 85.6 kbit/s GSM: uplink rate of 9.6 kbit/s and downlink rate of 14.4 kbit/s
Cable type	LTE whip antenna

Technical Specifications

Table 7-290 lists the technical specifications of a 1LTE-Lc card.

Table 7-290 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 8 W Weight: 0.3 kg (0.66 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-291 provides 1LTE-Lc card ordering information.

Table 7-291 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310VQS	AR-1LTE-Lc-S	1LTE-Lc	TDD/FDD/TD-SCDMA/HSPA+ interface card

7.9 5G Card

7.9.1 5G-100 (5G Interface Card)

Card Overview

The 5G-100 is a high-speed wireless WAN access module. It provides high-speed wireless data transmission, enabling enterprise users to connect to all types of wireless networks.

A 5G-100 card can be installed in a SIC slot of a router.

Figure 7-127 shows the appearance of a 5G-100 card.

Figure 7-127 5G-100 card appearance

Table 7-292 lists the device models and software versions supporting the 5G-100.

Table 7-292 Version mapping

Card Name	Device Model
5G-100	AR6000 series
NOTE This card is supported in V300R019C11 and later versions.	AR6000-S series

Functions and Features

Table 7-293 describes the functions and features of a 5G-100 card.

Table 7-293 Functions and features

Function and Feature	Description
Basic functions	Dials up to a 5G/4G/3G network to provide high- speed data transmission.
	Typically, this link functions as a backup WAN link to improve communication reliability between an enterprise's headquarters and branch networks.

Function and Feature	Description
5G NR	 3GPP Rel-15 256-QAM in both the upstream and downstream
	 directions N1/N3/N28/N41/N77/N78/N79/N80: 4x4 MIMO in the downstream direction; 2x2 MIMO in the upstream direction
	SCS: 15 kHz or 30 kHz
	Architecture: standalone (SA) or non-standalone (NSA)
	– SA: Option 2
	– NSA: Option 3, Option 3a, Option 3x
LTE	 Non-CA Cat 19 LTE FDD and LTE TDD Radio frequency bandwidth: 1.4/3/5/10/15/20 MHz Uplink: QPSK, 16QAM, and 64QAM Downlink: QPSK, 16-QAM, 64-QAM, and 256-QAM Downlink: 4x4 MIMO
UMTS	3GPP R8 DC-HSDPA, HSDPA, HSDPA, HSPA+, and WCDMA QPSK and 16-QAM
Excellent 5G experience	 Implements on-demand dialup and provides end-to-end QoS. Automatically scans different 5G frequency bands. Delivers fast 5G access services using industry-leading wireless technologies.
Flexible wireless standards	 Maintains compatibility with 4G and 3G services. Provides wireless access solutions for carriers and enterprises, enabling users to connect to all types of wireless networks.
Rapid deployment	Allows users to connect to a 5G/4G/3G network after a SIM card is installed.

Panel

Figure 7-128 shows the indicators on a 5G-100 card, and **Table 7-294** describes the indicator states and meanings.

STAT ANTO ANT1 ANT2 ANT3

5G-100

1 2 3 4 5

Figure 7-128 Indicators on a 5G-100 card

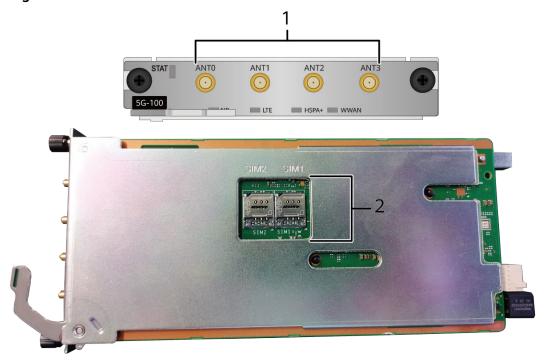
Table 7-294 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The system has been powered on, but the system software is not running.
			Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The system software is not running or is resetting.
2	NR	Green	Steady on: The 5G signal strength is high. Fast blinking: The 5G signal
			strength is medium.
			Slow blinking: The 5G signal strength is low.
			Off: No 5G signal is available.
3	LTE	Green	Steady on: The LTE signal strength is high.
			Fast blinking: The LTE signal strength is medium.
			Slow blinking: The LTE signal strength is low.
			Off: No LTE signal is available.

Number	Indicator	Color	Description
4	HSPA+	Green	Steady on: The 3G signal strength is high.
			Fast blinking: The 3G signal strength is medium.
			Slow blinking: The 3G signal strength is low.
			Off: No 3G signal is available.
5	WWAN	Green	Steady on: A 5G/LTE/3G link has been set up and is active.
			Blinking: Data is being transmitted or received over the 5G/LTE/3G link.
			Off: The 5G/LTE/3G link has not been set up or is inactive.

Figure 7-129 shows the interfaces on a 5G-100 card.

Figure 7-129 Interfaces on a 5G-100 card



1. Antenna interface (ATN0-ATN3)	2. SIM card slots (SIM1-SIM2)
	NOTICE
	Micro-SIM cards are supported. To ensure proper contact, do not use a SIM card adapter.
	 The 5G-100 card does not support hot swapping of SIM cards. After removing and inserting a SIM card, restart the RF module or the 5G-100 card.
	Ensure that the SIM card slot is locked after the SIM card is removed or installed.
	NOTE
	The card supports dual-card single- standby, and the SIM card in slot SIM1 is the master SIM card by default.
	If only one SIM card needs to be installed, install it in slot SIM1.

Antenna interface

An antenna interface connects to a 5G antenna to receive and transmit 5G/4G/3G data. Table 7-295 lists attributes of an antenna interface.

Table 7-295 Antenna interface attributes

Attribute	Description		
Connector type	SMB-J		
Standards compliance and frequency bands supported	 5G NR: N1/N3/N28/N41/N77/N78/N79/N80 LTE FDD: bands 1/3/5/7/8/20/28 LTE TDD: bands 34/38/39/40/41 WCDMA: bands 1/5/8 		
Rate	 5G SA: uplink rate of 230 Mbit/s and downlink rate of 900 Mbit/s 5G NSA: uplink rate of 115 Mbit/s and downlink rate of 900 Mbit/s 		
Cable type	8.14.5 5G Remote Antenna		

Technical Specifications

Table 7-296 lists the technical specifications of a 5G-100 card.

Table 7-296 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 21.3 mm x 100.1 mm x 233.6 mm (0.84 in. x 3.94 in. x 9.20 in.) Maximum power consumption: 9 W Weight: 0.37 kg (0.82 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-297 provides 5G-100 card ordering information.

Table 7-297 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03027PYP	SIC-5G-100	5G-100	5G interface card

7.10 E&M Card

7.10.1 6E&M (6-Port E&M (RJ45) Trunk Interface Card)

Card Overview

The 6E&M provides six E&M interfaces and is used for analog trunk access in small and medium-sized enterprises or enterprise branches, providing low-speed data switching and audio transmission.

A 6E&M card can be installed in a WSIC slot of a router.

Figure 7-130 shows the appearance of a 6E&M card.

Figure 7-130 6E&M card appearance



Table 7-298 lists the device models and software versions supporting the 6E&M.

Table 7-298 Version mapping

Card Name	Device Model
6E&M	AR6000 series
NOTE This card is supported in V200R005C20 and later versions.	AR6000-S series

Functions and Features

Table 7-299 describes the functions and features of a 6E&M card.

Table 7-299 Functions and features

Function and Feature	Description		
Basic functions	Provides the E&M trunk function.		
	Provides six interfaces to receive and process 64 kbit/s signals.		
	Supports E&M signaling of Bell1, Bell2, Bell3, Bell4, and Bell5.		
Alarm and performance	Provides abundant alarms and performance logs for system maintenance and fault location.		

Panel

Figure 7-131 shows the indicators on a 6E&M card, and **Table 7-300** describes the indicator states and meanings.

Figure 7-131 Indicators on a 6E&M card

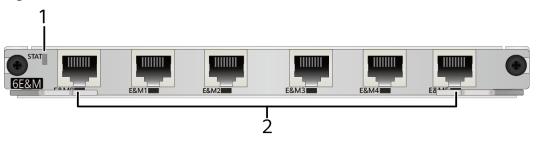
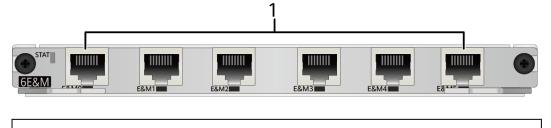


Table 7-300 Indicator description

Numbe r	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The software is not running or the card is resetting.
2	E&M interface indicator	Green	Steady on: The line on the interface is occupied.
			Blinking: The line is being established on the interface.
			Off: The line on the interface is idle.

Figure 7-132 shows the interfaces on a 6E&M card.

Figure 7-132 Interfaces on a 6E&M card



1. Six E&M interfaces

E&M interface

An E&M interface sends and receives E&M signals. It can be connected to a PBX to provide audio transmission functions. **Table 7-301** describes the attributes of an E&M interface.

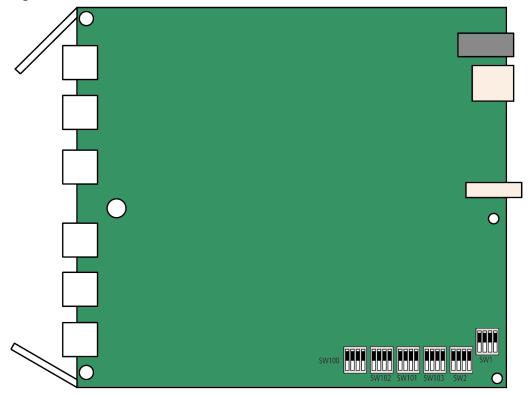
Table 7-301 Attributes of an E&M interface

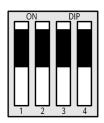
Attribute	Description
Connector type	RJ45
Standards compliance	G.712
Interface rate	64 kbit/s
Protocols	 Routing mode: Bell 1, Bell 2, Bell 3, Bell 4, and Bell 5 PBX mode: Bell 5
Interface frequency	201 Hz to 3513 Hz
Cable type	8.13.1 E&M Trunk Cable

DIP Switch Usage Instructions

Interfaces on a 6E&M card can work normally only after you turn the corresponding dual in-line package switches (DIP switches) to 2-wire or 4-wire mode. Figure 7-133 shows the DIP switches on a 6E&M card.

Figure 7-133 DIP switches





Switched up: 1 (close to ON DIP)

Switched down: 0 (close to 1 2 3 4)

□ NOTE

- Use tweezers to operate the DIP switches.
- On a DIP switch, the position close to **ON DIP** (top) represents **1**, and the position close to **1 2 3 4** (bottom) represents **0**.

After you turn the DIP switch of an E&M interface to 2-wire or 4-wire mode, the E&M interface can work normally. **Table 7-302** describes the DIP switches on a 6E&M card.

Table 7-302 Description of DIP switches

Interface Number	DI P S wi tc h	Lines	Description	Factory Setting
E&M0	S W 10 1	• 1001: 2-wire mode • 0110:	• 2-wire mode: bars 1 and 4 are in the ON	4-wire mode
E&M1	S W 10 0	4-wire mode	position; bars 2 and 3 are in the OFF position.	
E&M2	S W 10 2		• 4-wire mode: bars 1 and 4 are in the OFF	
E&M3	S W 10 3		position; bars 2 and 3 are in the ON position.	
E&M4	S W 1			
E&M5	S W 2			

Technical Specifications

Table 7-303 lists the technical specifications of a 6E&M card.

Table 7-303 Technical specifications

Item	Specifications	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 201 mm x 223.5 mm x 19.82 m (7.91 in. x 8.80 in. x 0.78 in)	
	Maximum power consumption: 9 W	
	Weight: 0.6 kg (1.32 lb)	

Item	Specifications
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)
parameters	Operating relative humidity: 5% to 95%, noncondensing
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)
	• Operating altitude: 0 to 5000 m (16404.2 ft.)

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-304 provides 6E&M card ordering information.

Table 7-304 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022CPR	AR-6EM-W	6E&M	6-port E&M-RJ45 trunk interface card

7.11 POS/CPOS Card

7.11.1 1CPOS-155M-W (1-Port Channelized POS Interface Card)

Card Overview

The 1CPOS-155M-W is a WAN aggregation card. An enterprise branch connects to the SDH through an E1 line, and the enterprise headquarters connects to the E1 line through the 1CPOS. By doing this, the enterprise headquarters and branch are connected through a WAN.

A 1CPOS-155M-W card can be installed in a WSIC slot of a router.

Figure 7-134 shows the appearance of a 1CPOS-155M-W card.

Figure 7-134 1CPOS-155M-W card appearance



Table 7-305 lists the device models and software versions supporting the 1CPOS-155M-W.

Table 7-305 Version mapping

Card Name	Device Model
1CPOS-155M-W	AR6140-16G4XG
NOTE	AR6140-9G-2AC
This card is supported in V200R003C00 and later	AR6140K-9G-2AC
versions.	AR6280
	AR6300
	AR6280K
	AR6300K
	AR6140-S
	AR6140H-S
	AR6280-S
	AR6300-S

Functions and Features

Table 7-306 describes the functions and features of a 1CPOS-155M-W card.

Table 7-306 Functions and features

Function and Feature	Description	
One channelized POS	Supports 63 E1 channels or 84 T1 channels.	
interface	Provides a bandwidth of up to 155 Mbit/s.	
Basic functions	Connects to the SDH to transmit services on multiple E1/T1 lines of branches.	
	Flexibly selects the bandwidth by bundling E1 channels and reduces enterprise operation costs.	
Working mode	Works in channelized or non-channelized E1/T1 mode.	
Protocols	Complies with SDH or synchronous optical network (SONET).	
	Supports HDLC, PPP and FR and a maximum of 1024 HDLC channels.	

Panel

Figure 7-135 shows the indicators on a 1CPOS-155M-W card, and **Table 7-307** describes the indicator states and meanings.

Figure 7-135 Indicators on a 1CPOS-155M-W card



Table 7-307 Indicator description

Number	Indicator	Color	Description
1 STAT	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: A link has been established.
			Off: No link is established.
3	ACT	Yellow	Blinking: Data is being transmitted or received.
			Off: No data is being transmitted or received.

Figure 7-136 shows the interfaces on a 1CPOS-155M-W card.

Figure 7-136 Interfaces on a 1CPOS-155M-W card



1. One Channelized POS interface

Channelized POS interface

A channelized POS interface transmits optical signals at a rate higher than 155 Mbit/s. **Table 7-308** lists attributes of the channelized POS interface.

Table 7-308 Attributes of the channelized POS interface

Attribute	Specification
Connector type	LC/PC
Optical interface attributes	The optical interface attributes depend on the optical modules used. For details, see 9.4.1 SFP-FE-SX-MM1310, 9.4.2 eSFP-FE-LX-SM1310, and 9.4.3 S-SFP-FE-LH40-SM1310.
Standards compliance	ITUT G.707 SONET OC-3 ITUT G.707 SDH STM-1
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

Table 7-309 lists the technical specifications of a 1CPOS-155M-W card.

Table 7-309 Technical specifications

Item	Specifications	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 14 W	
	Weight: 0.3 kg (0.66 lb)	

Item	Specifications
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)
parameters	Operating relative humidity: 5% to 95%, noncondensing
	• Storage temperature: -40°C to +70°C (–40°F to +158°F)
	• Operating altitude: 0 to 4000 m (13123.2 ft.)

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-310 provides 1CPOS-155M-W card ordering information.

Table 7-310 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021WWY	AR-1CSTM1-	1CPOS-155	1-Port 155M Channelized POS
	W	M-W	Optical Interface Card (WSIC)

7.11.2 1STM1 (1-Port 155M Packet over SDH/SONET Optical Interface Card)

Card Overview

The 1STM1 is a high-speed MAN and WAN access module that provides 155 Mbit/s connection to a synchronous digital hierarchy (SDH) network. A 1STM1 card can be installed in a WSIC slot of a router.

Figure 7-137 shows the appearance of a 1STM1 card.

Figure 7-137 1STM1 card appearance



Table 7-311 lists the device models and software versions supporting the 1STM1.

Table 7-311 Version mapping

Card Name	Device Model
1STM1	AR6140-16G4XG
NOTE	AR6140-9G-2AC
This card is supported in V200R003C00 and later versions.	AR6140K-9G-2AC
When the maximum output power of the	AR6280
AR6140-9G-2AC or AR6140-S is 60 W, the device does not support the 1STM1.	AR6300
When the maximum output power of the	AR6280K
AR6140-9G-2AC, AR6140K-9G-2AC, or	AR6300K
AR6140-S is 70 W, the device supports the 1STM1.	AR6140-S
	AR6140H-S
	AR6280-S
	AR6300-S

Functions and Features

Table 7-312 describes the functions and features of a 1STM1 card.

Table 7-312 Functions and features

Function and Feature	Description
Basic function	Provides 155 Mbit/s bandwidth for SDH network access.
	Provides high-speed connection to an SDH network to complete efficient, secure IP data transmission between enterprise headquarters and branches.
Protocols	Complies with SDH or synchronous optical network (SONET).
	Supports link-layer protocols HDLC, PPP, and FR.

Panel

Figure 7-138 shows the indicators on a 1STM1 card, and **Table 7-313** describes the indicator states and meanings.

Figure 7-138 Indicators on a 1STM1 card



Table 7-313 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
			Steady on: The card has been powered on but the software is not running.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Orange	Steady on: The card is resent in the chassis.
2 and 3 SFP interface indicators: • 2: LINK indicator • 3: ACT indicator	Green	LINK indicator steady on: A link has been established on the interface.	
	• 3: ACT		LINK indicator off: No link is established on the interface.
	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.	

Figure 7-139 shows the interface on a 1STM1 card.

Figure 7-139 Interface on a 1STM1 card



1. One POS optical interface

POS optical interface

A Packet over SONET/SDH (POS) optical interface provides reliable a high-speed point-to-point IP data connection. **Table 7-314** lists attributes of a POS optical interface.

Table 7-314 POS optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical attributes	Depending on the optical module used. For details, see 9.4.1 SFP-FE-SX-MM1310, 9.4.2 eSFP-FE-LX-SM1310, and 9.4.3 S-SFP-FE-LH40-SM1310.
Standards compliance	STM-1/STM-4
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

Table 7-315 lists the technical specifications of a 1STM1 card.

Table 7-315 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 15 W	
	Weight: 0.6 kg (1.32 lb)	

Item	Specification	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	• Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-316 provides 1STM1 card ordering information.

Table 7-316 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021RJW	AR-1STM1- W	1STM1	1-Port 155M Packet over SDH/ Sonet Optical Interface Card

7.11.3 4STM1 (4-Port 155M Packet over SDH/SONET Optical Interface Card)

Card Overview

The 4STM1 is a high-speed WAN access module. Normally, a 4STM1 card provides 155 Mbit/s bandwidth on all the four interfaces for connection to a synchronous digital hierarchy (SDH) network. You can set the bandwidth on interface 0 to 622 Mbit/s by disabling interfaces 1-3. 4STM1 cards are often used for MAN or WAN connection.

A 4STM1 card can be installed in a WSIC slot of a router.

Figure 7-140 shows the appearance of a 4STM1 card.

Figure 7-140 4STM1 card appearance



Table 7-317 lists the device models and software versions supporting the 4STM1.

Table 7-317 Version mapping

Card Name	Device Model
4STM1	AR6140-16G4XG
NOTE	AR6140-9G-2AC
This card is supported in V200R005C20, V200R006C10, and later versions.	AR6140K-9G-2AC
When the maximum output power of the	AR6280
AR6140-9G-2AC or AR6140-S is 60 W, the device does not support the 4STM1.	AR6300
When the maximum output power of the	AR6280K
AR6140-9G-2AC, AR6140K-9G-2AC, or	AR6300K
AR6140-S is 70 W, the device supports the 4STM1.	AR6140-S
	AR6140H-S
	AR6280-S
	AR6300-S

Functions and Features

Table 7-318 describes the functions and features of a 4STM1 card.

Table 7-318 Functions and features

Function and Feature	Description
Basic functions	Provides high-speed connection to an SDH network to complete high-efficient, secure IP data transmission between enterprise branches.
	Supports transmission rates of 155 Mbit/s and 622 Mbit/s for you to select flexibly.
	NOTE You can set the rate of interface 0 to 622 Mbit/s by disabling interfaces 1 to 3.
Protocol	Conforms to synchronous digital hierarchy (SDH) or synchronous optical network (SONET) standards.

Function and Feature	Description	
	Supports link layer protocols High- Level Data Link Control (HDLC), Point- to-Point Protocol (PPP), and Frame Relay (FR).	

Panel

Figure 7-141 shows the indicators on a 4STM1 card, and **Table 7-319** describes the indicator states and meanings.

Figure 7-141 Indicators on a 4STM1 card



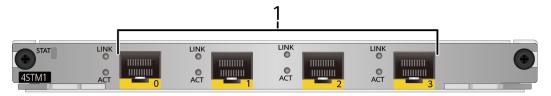
Table 7-319 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
			Steady on: The card has been powered on, but the software is not running.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Orange	The card has been properly installed and detected by the system.
	SFP interface indicators: • 2: LINK indicator • 3: ACT indicator	Green	LINK indicator steady on: A link has been established.
			LINK indicator off: No link is established.

Number	Indicator	Color	Description
		-	ACT indicator blinking: Data is being transmitted or received.
			ACT indicator off: No data is being transmitted or received.

Figure 7-142 shows the interfaces on a 4STM1 card.

Figure 7-142 Interfaces on a 4STM1 card



1. Four 155M POS optical interfaces

NOTE

You can set the rate of interface 0 to 622 Mbit/s by disabling interfaces 1 to 3.

POS optical interface

A Packet over SONET/SDH (POS) optical interface provides reliable a high-speed point-to-point IP data connection. **Table 7-320** lists attributes of a POS optical interface.

Table 7-320 POS optical interface attributes

Attribute	Description
Connector type	LC/PC
Optical attributes	Depending on the optical module used. For details, see 9.4.1 SFP-FE-SX-MM1310, 9.4.2 eSFP-FE-LX-SM1310, and 9.4.3 S-SFP-FE-LH40-SM1310.
Standards compliance	STM-1/STM-4
Frame format	SDH/SONET
Network protocol	IP

Technical Specifications

Table 7-321 lists the technical specifications of a 4STM1 card.

Table 7-321 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.) Maximum power consumption: 16 W Weight: 0.6 kg (1.32 lb)
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-322 provides 4STM1 card ordering information.

Table 7-322 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03022STP	AR-4STM1- W	4STM1	4-Port 155M Packet over SDH/ SONET Optical Interface Card

7.12 ISDN S/T WAN Card

7.12.1 1BST (1-Port-ISDN S/T WAN Interface Card)

Card Overview

The 1BST is an ISDN access module that connects the enterprise headquarters and branches over the ISDN.

A 1BST card can be installed in a SIC slot of a router.

Figure 7-143 shows the appearance of a 1BST card.



Figure 7-143 1BST card appearance

Version Mapping

Table 7-323 lists the device models and software versions supporting the 1BST.

Table 7-323 Version mapping

Card Name	Device Model
1BST	AR6000 series
NOTE This card is supported in V200R001C01 and later versions.	AR6000-S series
When the maximum output power of the AR6140-9G-2AC or AR6140-S is 60 W, the device does not support the 1BST.	
When the maximum output power of the AR6140-9G-2AC, AR6140K-9G-2AC, or AR6140-S is 70 W, the device supports the 1BST.	

Functions and Features

Table 7-324 describes the functions and features of a 1BST card.

Table 7-324 Functions and features

Function and Feature	Description
	Connects to the ISDN through a Network Termination 1 (NT1) device.

Function and Feature	Description	
	Provides 64 kbit/s or 128 kbit/s connections.	
Basic functions	Provides the TE mode to transmit data services.	
	Allows you to connect to the ISDN through the BRI leased line or dialup, protecting investments.	
Protocols supported	Supports PPP, FR, and IP.	

Figure 7-144 shows the indicators on a 1BST card, and **Table 7-325** describes the indicator states and meanings.

Figure 7-144 Indicators on a 1BST card

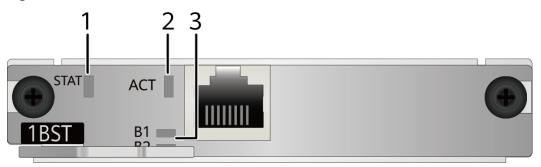


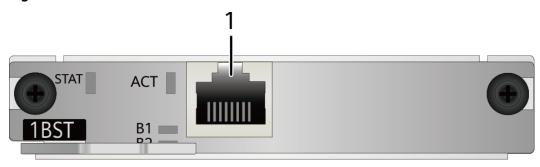
Table 7-325 Indicator description

Number	Indicator	Color	Description
1 STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.	
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
	Off	Off: The software is not running or is being reset.	
2 ACT (interface status indicator)	(interface	Green	Steady on: The ISDN channel has been activated.
		Off: The ISDN channel is inactive.	

Number	Indicator	Color	Description
3	B1/B2	Green	Blinking: The B1/B2 channel is used.
			Off: The B1/B2 channel is idle.

Figure 7-145 shows the interfaces on a 1BST card.

Figure 7-145 Interfaces on a 1BST card



1. One ISDN S/T interface

ISDN S/T interface

The ISDN S/T interface connects to the ISDN to transmit data services. **Table 7-326** lists attributes of the ISDN S/T interface.

Table 7-326 Attributes of the ISDN S/T interface

Attribute	Description	
Connector type	RJ45	
Standards compliance	ITU-T I.430, Q.921, Q.931	
Transmission rate	192 kbit/s	
Bandwidth	0 to 100 MHz	
Cable type	8.12.1 Standard ISDN S/T Cable	

Technical Specifications

Table 7-327 lists the technical specifications of a 1BST card.

Table 7-327 Technical specifications

Item	Specifications	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 8 W Weight: 0.3 kg (0.66 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-328 provides 1BST card ordering information.

Table 7-328 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020YKE	AR0MSDS1X A00	1BST	1-Port ISDN S/T WAN Interface Card

7.13 Voice Card

7.13.1 2BST (2-Port ISDN S/T Voice Interface Card)

Card Overview

The 2BST is a voice service module for a router and can connect to an Integrated Services Digital Network (ISDN) network to enable voice communication between enterprise users and external ISDN users.

A 2BST card can be installed in a SIC slot of a router.

Figure 7-146 shows the appearance of a 2BST card.

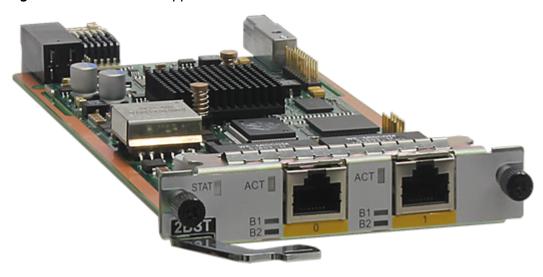


Figure 7-146 2BST card appearance

Version Mapping

Table 7-329 lists the device models and software versions supporting the 2BST.

Table 7-329 Version mapping

Card Name	Device Model
2BST	AR6280 (SRU-200H)
NOTE This card is supported in V200R001C01 and later versions.	AR6300 (SRU-200H)

Functions and Features

Table 7-330 describes the functions and features of a 2BST card.

Table 7-330 Functions and features

Function and Feature	Description	
Basic function	Works in network termination (NT) mode to support voice services.	
	Connects to an ISDN network.	
Branch Exchange for Survivable Telephony (BEST)	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.	

Function and Feature	Description	
Link backup	Uses an ISDN network as a backup of the VoIP network to ensure reliable voice communication.	
Smooth upgrade to VoIP	An enterprise can implement the VoIP function on its IP network by simply deploying 2BST cards. Use of the 2BST cards protects previous investment of the enterprise and enables a convenient network upgrade.	
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.	
Diagnosis	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.	

Figure 7-147 shows the indicators on a 2BST card, and **Table 7-331** describes the indicator states and meanings.

Figure 7-147 Indicators on a 2BST card

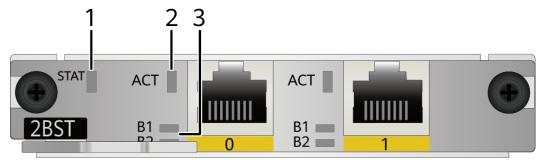


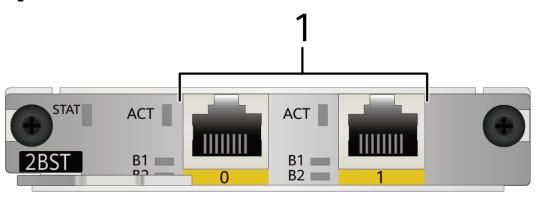
Table 7-331 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.

Number	Indicator	Color	Description
		Off	The system software is not running or is resetting.
2 ACT (interface status indicator)	Green	Steady on: The ISDN channel is active.	
		Off: The ISDN channel is inactive.	
3 B1/B2	Green	Blinking: The ISDN B1/B2 channel is being occupied.	
		Off: The ISDN B1/B2 channel is idle.	

Figure 7-148 shows the interfaces on a 2BST card.

Figure 7-148 Interfaces on a 2BST card



1. Two ISDN S/T interfaces

ISDN S/T interface

An ISDN S/T interface can connect to an integrated services digital network (ISDN) to provide voice services. **Table 7-332** lists attributes of an ISDN S/T interface.

Table 7-332 ISDN S/T interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T I.430 Q.921 Q.931
Rate	192 kbit/s

Attribute	Description	
Bandwidth	0 MHz to 100 MHz	
Cable type	8.12 ISDN Cable	

Technical Specifications

Table 7-333 lists the technical specifications of a 2BST card.

Table 7-333 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 16 W Weight: 0.3 kg (0.66 lb) 	
Environment parameters	 Weight: 0.3 kg (0.66 lb) Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-334 provides 2BST card ordering information.

Table 7-334 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310FVM	AROMSVS2X A00	2BST	2-Port ISDN S/T Voice Interface Module

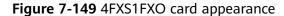
7.13.2 4FXS1FXO (4-Port FXS + 1-Port FXO Voice Interface Card)

Card Overview

The 4FXS1FXO is a voice access module. It provides four FXS interfaces and one FXO interface that can connect to the PSTN and traditional telephone devices such as TDM PBXs, analog phones, and fax machines to transmit internal and external voice services.

A 4FXS1FXO card can be installed in a SIC slot of a router.

Figure 7-149 shows the appearance of a 4FXS1FXO card.





As shown in **Figure 7-150**, enterprise users use FXS interfaces to transmit voice services. The FXO interface is used to transmit voice services exchanged between enterprise users and external users.

FXS interfaces connect to analog phones, fax machines, and branch IP PBX to transmit voice services exchanged between enterprise branch users and between the enterprise headquarters and branch.

The FXO interface connects to the PSTN. The link of the FXO interface can function as the branch egress and best-effort link of the VoIP network to transmit voice services exchanged between enterprise users and external users and to implement link backup.

Power outage survival and BEST:

- Power outage survival: When the router (IP PBX) is powered off, all IP phones are unavailable. In this case, power outage survival is enabled. Then the router connects the FXO line to the first FXS interface to ensure nonstop service communication.
- BEST: When a fault occurs on the WAN-side IP network, BEST configured on the router ensures voice communication.

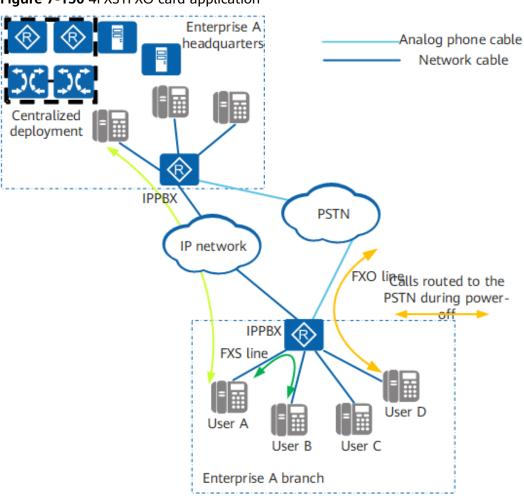


Figure 7-150 4FXS1FXO card application

Version Mapping

Table 7-335 lists the device models and software versions supporting the 4FXS1FXO.

Table 7-335 Version mapping

Card Name	Device Model
4FXS1FXO	AR6120-VW
NOTE This card is supported in V200R001C00 and later versions.	AR6280 (SRU-200H) AR6300 (SRU-200H)

Functions and Features

Table 7-336 describes the functions and features of a 4FXS1FXO card.

Table 7-336 Functions and features

Function and Feature	Description	
Basic functions	Connects to common analog phones, IP phones, fax machines, and TDM PBXs.	
	Connects to the PSTN.	
Power outage survival	Implements power outage survival and ensures nonstop service transmission when the enterprise egress transmission channel becomes faulty.	
BEST	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.	
Link backup	Uses a PSTN network as a backup of the IP network to ensure reliable voice communication.	
Smooth upgrade to VoIP	Implements the VoIP function on an enterprise's IP network by simply deploying 4FXS1FXO cards. This protects investments and facilitates expansion.	
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.	
Extensive specialized services	Provides specialized services such as call center, secretary, wake-up, blacklist and whitelist, three-party conference, and ONLY. These services make daily work more convenient, secure, and efficient.	
Diagnosis and maintenance	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.	

Figure 7-151 shows the indicators on a 4FXS1FXO card, and **Table 7-337** describes the indicator states and meanings.

1

AFXS1FXO

2

3

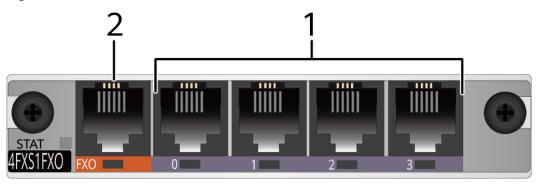
Figure 7-151 Indicators on a 4FXS1FXO card

Table 7-337 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	2 ACT (FXO interface status indicator)	Green	Steady on: The FXO channel is being occupied by a call.
			Off: The FXO channel is idle.
3 ACT (FXS interfaces status indicator)	interfaces	Green	Steady on: The FXS channel is being occupied by a call.
		Off: The FXS channel is idle.	

Figure 7-152 shows the interfaces on a 4FXS1FXO card.

Figure 7-152 Interfaces on a 4FXS1FXO card



1. Four FXS interfaces	2. One FXO interface
(RJ11)	(RJ11)

FXS interface (RJ11)

An FXS interface is a simulated subscriber line interface and provides access to analog phones and fax machines. **Table 7-338** lists attributes of the FXS interface.

Table 7-338 Attributes of the FXS (RJ11) interface

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for FXS interfaces ITU K.20 for protection against overcurrent and overvoltage
Dialing mode	DTMF in accordance with GB3378Pulse dialing
Bandwidth	300 Hz to 3400 Hz
Cable type	8.6.3 Universal Telephone Cable

FXO interface (RJ11)

An FXO interface is a loop trunk interface that can connect to the PSTN. **Table 7-339** lists attributes of the FXO interface.

Table 7-339 Attributes of the FXO (RJ11) interface

Attribute	Description
Connector type	RJ11

Attribute	Description
Standards compliance	ITU Q.552 for FXO interfaces ITU K.20 for protection against overcurrent and overvoltage
Dialing mode	DTMF in accordance with GB3378
Bandwidth	300 Hz to 3400 Hz
Cable type	8.6.3 Universal Telephone Cable

Technical Specifications

Table 7-340 lists the technical specifications of a 4FXS1FXO card.

Table 7-340 Technical specifications

Item	Specifications	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 13 W Weight: 0.3 kg (0.66 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-341 provides 4FXS1FXO card ordering information.

Table 7-341 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020RMY	AR0MSVA4B 1A0	4FXS1FXO	4-Port FXS and 1-Port FXO Voice Interface Card

7.13.3 4FXS (4-Port FXS Voice Interface Card)

Card Overview

The 4FXS is a voice service module for a router and provides 4 FXS channels. Using 4FXS cards, an enterprise can connect analog voice terminals to its network.

A 4FXS card can be installed in a SIC slot of a router.

Figure 7-153 shows the appearance of a 4FXS card.

Figure 7-153 4FXS card appearance



Version Mapping

Table 7-342 lists the device models and software versions supporting the 4FXS.

Table 7-342 Version mapping

Card Name	Device Model
4FXS NOTE This card is supported in V300R019C11 and later versions.	AR6000 series (All models in this series except the AR6120, AR6120-VW, AR6280 (SRU-100H/SRU-200H), and AR6300 (SRU-100H/SRU-200H)) AR6000-S series (All models in this series except the AR6120-S)

Functions and Features

Table 7-343 describes the functions and features of a 4FXS card.

Table 7-343 Functions and features

Function and Feature	Description
Basic functions	Provides 4 FXS channels for analog voice terminals, delivering high-density voice services for an enterprise.

Function and Feature	Description
BEST	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.
Smooth upgrade to VoIP	Implements the VoIP function on an enterprise's IP network by simply deploying 4FXS cards. This protects investments and facilitates expansion.
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.
Extensive specialized services	Provides specialized services such as call center, secretary, wake-up, blacklist and whitelist, and ONLY. These services make daily work more convenient, secure, and efficient.
Diagnosis and maintenance	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.

Figure 7-154 shows the indicators on a 4FXS card, and **Table 7-344** describes the indicator states and meanings.

Figure 7-154 Indicators on a 4FXS card

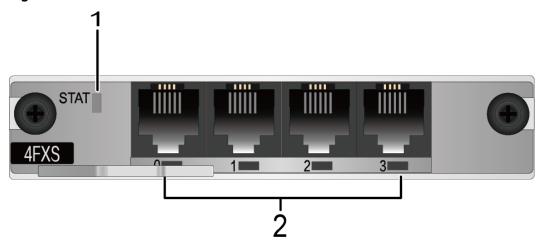
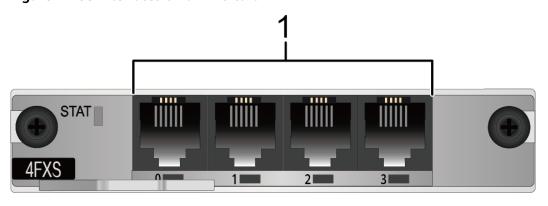


Table 7-344 Indicator description

Number	Indicator	Color	Description
1 STAT	STAT	T Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 ACT (interface status indicator)	(interface	Green	Steady on: The FXS channel is being occupied by a call.
		Off: The FXS channel is idle.	

Figure 7-155 shows the interfaces on a 4FXS card.

Figure 7-155 Interfaces on a 4FXS card



1. Four FXS interfaces (RJ11)

FXS interface (RJ11)

A foreign exchange station (FXS) interface is an analog subscriber line interface and can connect to an analog phone or fax machine. **Table 7-345** lists attributes of an FXS interface.

Table 7-345 FXS interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU Q.512 for the FXS interface
Dialing mode	DTMF in accordance with GB3378
Bandwidth	300 Hz to 3400 Hz
Cable type	Universal Telephone Cable

Technical Specifications

Table 7-346 lists the technical specifications of a 4FXS card.

Table 7-346 Technical specifications

Item	Specifications	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 21.3 mm x 100.1 mm x 233.6 mm (0.84 in. x 3.94 in. x 9.20 in.) 	
	Maximum power consumption: 9 WWeight: 0.28 kg (0.62 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-347 provides 4FXS card ordering information.

Table 7-347 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
50010490	SIC-4FXS	4FXS	4-Port FXS Voice Interface Card

7.13.4 16FXS (16-Port FXS Voice Interface Card)

Card Overview

The 16FXS is a voice service module for a router and provides 16 FXS channels. Using 16FXS cards, an enterprise can connect a large number of analog voice terminals to its network.

A 16FXS card can be installed in a WSIC slot of a router.

Figure 7-156 shows the appearance of a 16FXS card.

Figure 7-156 16FXS card appearance



Version Mapping

Table 7-348 lists the device models and software versions supporting the 16FXS.

Table 7-348 Version mapping

Card Name	Device Model
16FXS	AR6120-VW
NOTE This card is supported in V200R002C02 and later versions.	AR6280 (SRU-200H) AR6300 (SRU-200H)

Functions and Features

Table 7-349 describes the functions and features of a 16FXS card.

Table 7-349 Functions and features

Function and Feature	Description
Basic function	Provides 16 FXS channels for analog voice terminals, delivering high-density voice services for an enterprise.
Branch Exchange for Survivable Telephony (BEST)	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.
Smooth upgrade to VoIP	An enterprise can implement the VoIP function on its IP network by simply deploying 16FXS cards. Use of the 16FXS cards protects previous investment of the enterprise and enables a convenient network upgrade.
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.
Extensive specialized services	Provides specialized services such as call center, secretary, wakeup, blacklist and whitelist, three-party conference, and one number link you (ONLY). These services make daily work more convenient, secure, and efficient.
Diagnosis	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.

Figure 7-157 shows the indicators on a 16FXS card, and **Table 7-350** describes the indicator states and meanings.

Figure 7-157 Indicators on a 16FXS card



Table 7-350 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.

Figure 7-158 shows the interface on a 16FXS card.

Figure 7-158 Interface on a 16FXS card



1. One 16FXS interface

16FXS interface

A 16FXS interface is a simulated subscriber line interface and provides 16 ATO loop trunk channels for analog phones, fax machines, and telephone exchanges. **Table 7-351** lists attributes of a 16FXS interface.

Table 7-351 16FXS interface attributes

Attribute	Description	
Connector type	DB68	
Standards compliance	IEEE 1284C Interface as a 36 contact connector	
Dialing mode	Dual-tone multifrequency system (DTMF) in accordance with GB3378	
Bandwidth	300 Hz to 3400 Hz	
Cable type	8.6.2 16FXS Cable	

Technical Specifications

Table 7-352 lists the technical specifications of a 16FXS card.

Table 7-352 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 23 W	
	Weight: 0.6 kg (1.32 lb)	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	• Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-353 provides 16FXS card ordering information.

Table 7-353 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021QSU	AR01WVADX A	16FXS	16-Port FXS Voice Interface Card

7.13.5 32FXS (32-Port FXS Voice Interface Card)

Card Overview

The 32FXS is a voice service module for a router and provides 32 FXS channels. Using 32FXS cards, an enterprise can connect a large number of analog voice terminals to its network.

A 32FXS card can be installed in a WSIC slot of a router.

Figure 7-159 shows the appearance of a 32FXS card.

Figure 7-159 32FXS card appearance



Version Mapping

Table 7-354 lists the device models and software versions supporting the 32FXS.

Table 7-354 Version mapping

Card Name	Device Model
32FXS	AR6280 (SRU-200H)
NOTE This card is supported in V200R002C02 and later versions.	AR6300 (SRU-200H)

Functions and Features

Table 7-355 describes the functions and features of a 32FXS card.

Table 7-355 Functions and features

Function and Feature	Description	
Basic function	Provides 32 FXS channels for analog voice terminals, delivering high-density voice services for an enterprise.	
Branch Exchange for Survivable Telephony (BEST)	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.	

Function and Feature	Description	
Smooth upgrade to VoIP	An enterprise can implement the VoIP function on its IP network by simply deploying 32FXS cards. Use of the 32FXS cards protects previous investment of the enterprise and enables a convenient network upgrade.	
Cost reduction	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.	
Extensive specialized services	Provides specialized services such as call center, secretary, wakeup, blacklist and whitelist, three-party conference, and one number link you (ONLY). These services make daily work more convenient, secure, and efficient.	
Diagnosis	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.	

Figure 7-160 shows the indicators on a 32FXS card, and **Table 7-356** describes the indicator states and meanings.

Figure 7-160 Indicators on a 32FXS card



Table 7-356 Indicator description

Number	Indicator	Color	Description
1	STAT		Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
	Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.	
	Off	The system software is not running or is resetting.	

Figure 7-161 shows the interface on a 32FXS card.

Figure 7-161 Interface on a 32FXS card



1. One 32FXS interface

32FXS interface

A 32FXS interface is a simulated subscriber line interface and provides 32 ATO loop trunk channels for analog phones, fax machines, and telephone exchanges. **Table 7-357** lists attributes of a 32FXS interface.

Table 7-357 32FXS interface attributes

Attribute	Description	
Connector type	DB68	
Standards compliance	IEEE 1284C Interface as a 36 contact connector	
Dialing mode	Dual-tone multifrequency system (DTMF) in accordance with GB3378	
Bandwidth	300 Hz to 3400 Hz	
Cable type	8.6.1 32FXS Cable	

Technical Specifications

Table 7-358 lists the technical specifications of a 32FXS card.

Table 7-358 Technical specifications

Item	Specification
Card type	WSIC
Hot swap	Supported

Item	Specification	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.)	
	Maximum power consumption: 38 W	
	Weight: 0.6 kg (1.32 lb)	
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	• Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-359 provides 32FXS card ordering information.

Table 7-359 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XJT	AR01WVAHX A	32FXS	32-Port FXS Voice Interface Card

7.13.6 4FXO (4-Port FXO Voice Interface Card)

Card Overview

The 4FXO is a voice access module. It provides four FXO interfaces to connect to the PSTN to transmit voice services.

A 4FXO card can be installed in a SIC slot of a router.

Figure 7-162 shows the appearance of a 4FXO card.



Figure 7-162 4FXO card appearance

Version Mapping

Table 7-360 lists the device models and software versions supporting the 4FXO.

Table 7-360 Version mapping

Device Model		
AR6120-VW		
AR6280 (SRU-200H) AR6300 (SRU-200H)		

Functions and Features

Table 7-361 describes the functions and features of a 4FXO card.

Table 7-361 Functions and features

Function and Feature	Description	
Basic functions	Provides multiple interfaces to connect to traditional PBXs, protecting investments.	
	Provides multiple interfaces to connect to the PSTN	
BEST	Ensures normal local voice communication in an enterprise if a WAN network failure occurs.	
Link backup	Uses a PSTN network as a backup of the IP network to ensure reliable voice communication.	

Function and Feature	Description	
Smooth upgrade to VoIP	Implements the VoIP function on an enterprise's IP network by simply deploying 4FXO cards. This protects investments and facilitates expansion.	
Low cost	Provides the VoIP function that allows users to make toll calls at a cost similar to local calls, significantly reducing communication fees.	
Extensive specialized services	Provides specialized services such as call center, secretary, wake-up, blacklist and whitelist, three-party conference, and ONLY. These services make daily work more convenient, secure, and efficient.	
Diagnosis and maintenance	Provides comprehensive diagnosis functions, including signal tracing, simulation, diagnostic testing, and remote collection of packet header information.	

Figure 7-163 shows the indicators on a 4FXO card, and **Table 7-362** describes the indicator states and meanings.

Figure 7-163 Indicators on a 4FXO card

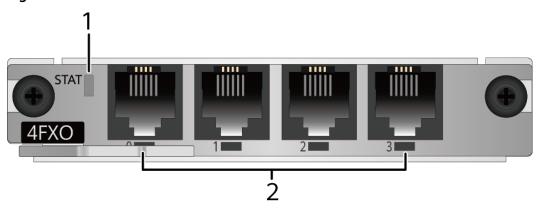


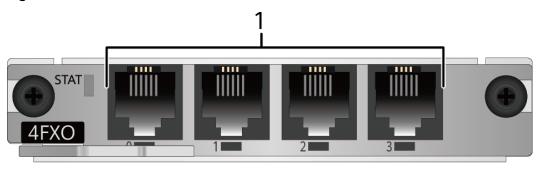
Table 7-362 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
	Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.	
		Off	Off: The software is not running or is being reset.
2	ACT (interface	Green	Steady on: The FXO channel is being occupied by a call.
status indicator)		Off: The FXO channel is idle.	

Figure 7-164 shows the interfaces on a 4FXO card.

Figure 7-164 Interfaces on a 4FXO card



1. Four FXO interfaces (RJ11)

FXO interface (RJ11)

An FXO interface is a loop trunk interface that can connect to the PSTN. **Table 7-363** lists attributes of the FXO interface.

Table 7-363 Attributes of the FXO (RJ11) interface

Attribute	Description	
Connector type	RJ11	
Standards compliance	ITU Q.552 for FXO interfaces ITU K.20 for protection against overcurrent and overvoltage	
Dialing mode	DTMF in accordance with GB3378	
Bandwidth	300 Hz to 3400 Hz	

Attribute	Description	
Cable type	8.6.3 Universal Telephone Cable	

Technical Specifications

Table 7-364 lists the technical specifications of a 4FXO card.

Table 7-364 Technical specifications

Item	Specifications	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 7 W Weight: 0.1 kg (0.22 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-365 provides 4FXO card ordering information.

Table 7-365 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020XJU	AR01SVB4XA	4FXO	4-Port FXO Voice Interface Card

7.13.7 1VE1 (1-Port Voice E1 Interface Card)

Card Overview

The 1VE1 is a voice processing module. It provides a VE1 interface and high-density analog voice service.

A 1VE1 card can be installed in a SIC slot of a router.

Figure 7-165 shows the appearance of a 1VE1 card.

Figure 7-165 1VE1 card appearance



Version Mapping

Table 7-366 lists the device models and software versions supporting the 1VE1.

Table 7-366 Version mapping

Card Name	Device Model
1VE1	AR6120-VW
NOTE This card is supported in V200R005C00 and later versions.	AR6280 (SRU-200H) AR6300 (SRU-200H)

Functions and Features

Table 7-367 describes the functions and features of a 1VE1 card.

Table 7-367 Functions and features

Function and Feature	Description	
Data transmission	The VE1 interface connects to a WAN to complete voice data transmission.	

Function and Feature	Description
ISDN dial-up access	Transmits various services, such as voice, high-speed fax, video call, intelligent telegraph, and teletext, at a rate of up to 2 Mbit/s.
Voice gateway	Works as a gateway to provide high-density access to a PSTN or TDM network, and supports a maximum of 30 call connections on a VE1 line.
Investment protection	1VE1 cards can connect to TDM PBX devices on an enterprise network. The use of 1VE1 cards protects customers' investment and facilitates network expansion.

Figure 7-166 shows the indicators on a 1VE1 card, and **Table 7-368** describes the indicator states and meanings.

Figure 7-166 Indicators on a 1VE1 card



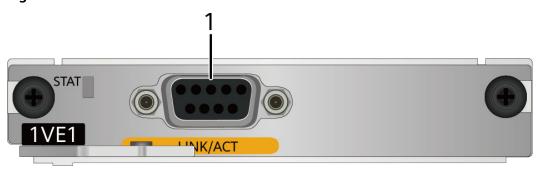
Table 7-368 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system software is running normally.
			Fast blinking: The card is loading the system software or is resetting.
	Red	Steady on: A fault that affects services has occurred. The fault cannot be rectified automatically and needs to be rectified manually.	

Number	Indicator	Color	Description
		Off	The software is not running or the card is resetting.
2	LINK/ACT	Green	Steady on: A link has been established on the interface.
	Yellow	Blinking: The interface is transmitting and receiving data.	
		Off	No link is established on the interface.

Figure 7-167 shows the interfaces on a 1VE1 card.

Figure 7-167 Interfaces on a 1VE1 card



1. One VE1 interface

VE1 interface

A VE1 interface uses to transmit voice signals. **Table 7-369** describes the VE1 interface attributes.

Table 7-369 VE1 interface attributes

Attribute	Description	
Connector type	DB9	
Standards compliance	G.703, G.704	
Interface speed	2.048 Mbit/s	
Working mode	VE1	

Attribute	Description	
Services provided	·	
	Terminal access	
Cable	8.7 E1/T1 Cable	

Technical Specifications

Table 7-370 lists the technical specifications of a 1VE1 card.

Table 7-370 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 6 W Weight: 0.3 kg (0.66 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-371 provides 1VE1 card ordering information.

Table 7-371 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03021WYL	AR-1VE1-S	1VE1	1-Port Voice E1 Interface Card

7.14 xDSL Card

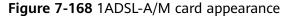
7.14.1 1ADSL-A/M (1-Port ADSL2+ ANNEX A/M WAN Interface Card)

Card Overview

The 1ADSL-A/M is a WAN connection module that provides the ADSL service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 1ADSL-A/M card can be installed in a SIC slot of a router.

Figure 7-168 shows the appearance of a 1ADSL-A/M card.





Version Mapping

Table 7-372 lists the device models and software versions supporting the 1ADSL-A/M.

Table 7-372 Version mapping

Card Name	Device Model
1ADSL-A/M	AR1600 series
NOTE This card is supported in V200R001C00 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-373 lists the functions and features of a 1ADSL-A/M card.

Table 7-373 Functions and features

Function and Feature	Description
Basic functions	Dials up to the Internet to provide high-speed data communication and video on demand (VoD) services.
	Provides asymmetrical uplink and downlink rates (up to 3 Mbit/s uplink rate and 24 Mbit/s downlink rate).
Compatibility with PSTN	The Internet access and voice services share the same telephone cable.
	Users can connect to the Internet and make a call over a telephone cable at the same time, with a high Internet access rate and good voice communication quality.
Easy installation	Users can connect to the Internet by simply connecting a telephone cable to a modem.
Quick fault identification	The ADSL channel can be manually activated or deactivated for fault location.
Standards compliance	G.992.1, G.992.3, G.992.5, T1.413

Panel

Figure 7-169 shows the indicators on a 1ADSL-A/M card, and **Table 7-374** describes the indicator states and meanings.

Figure 7-169 Indicators on a 1ADSL-A/M card

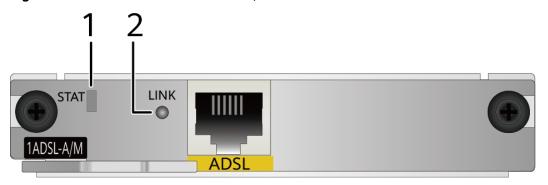


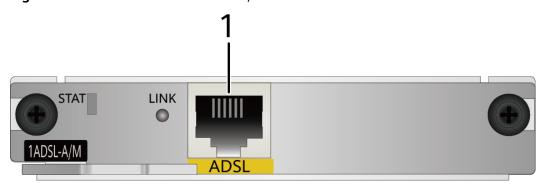
Table 7-374 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	2 LINK	Green	Steady on: The ADSL channel has been activated.
			Off: The ADSL channel has not been activated.
			Fast blinking: The ADSL channel is being activated.

Figure 7-170 shows the interface on a 1ADSL-A/M card.

Figure 7-170 Interface on a 1ADSL-A/M card



1. One ADSL-A/M interface

ADSL-A/M interface

An ADSL-A/M interface transmits service data from a LAN to an upstream device at a high speed. **Table 7-375** lists attributes of an ADSL-A/M interface.

Table 7-375 ADSL-A/M interface attributes

Attribute	Description
Connector type	RJ11

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

Technical Specifications

Table 7-376 lists the technical specifications of a 1ADSL-A/M card.

Table 7-376 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 6 WWeight: 0.3 kg (0.66 lb)	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-377 provides 1ADSL-A/M card ordering information.

Table 7-377 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310GAX	AROMSLA1X A01	1ADSL-A/M	1-Port ADSL2+ ANNEX A/M WAN Interface Module

7.14.2 1ADSL-B/J (1-Port ADSL2+ ANNEX B/J WAN Interface Card)

Card Overview

The 1ADSL-B/J is a WAN connection module that provides the ADSL service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 1ADSL-B/J card can be installed in a SIC slot of a router.

Figure 7-171 shows the appearance of a 1ADSL-B/J card.

Figure 7-171 1ADSL-B/J card appearance



Version Mapping

Table 7-378 lists the device models and software versions supporting the 1ADSL-B/J.

Table 7-378 Version mapping

Card Name	Device Model
1ADSL-B/J	AR1600 series
NOTE This card is supported in V200R005C00 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-379 lists the functions and features of a 1ADSL-B/J card.

Table 7-379 Functions and features

Function and Feature	Description
Basic function	Dials up to the Internet to provide high-speed data communication and VoD services.
	Provides asymmetrical uplink and downlink rates (up to 3 Mbit/s uplink rate and 24 Mbit/s downlink rate).
Compatibility with PSTN	The Internet access and voice services share the same telephone cable.
	Users can connect to the Internet and make a call over a telephone cable at the same time, with a high Internet access rate and good voice communication quality.
Easy installation	Users can connect to the Internet by simply connecting a telephone cable to a modem.
Quick fault identification	The ADSL channel can be manually activated or deactivated for fault location.
Standards compliance	G.992.1, G.992.3, G.992.5, T1.413

Panel

Figure 7-172 shows the indicators on a 1ADSL-B/J card, and **Table 7-380** describes the indicator states and meanings.

Figure 7-172 Indicators on a 1ADSL-B/J card

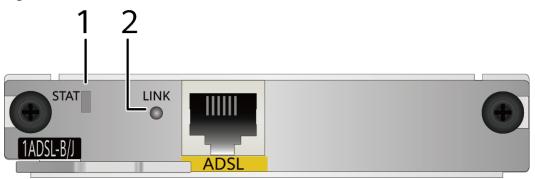
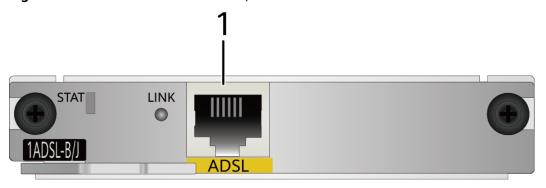


Table 7-380 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK	Green	Steady on: The ADSL channel has been activated.
			Off: The ADSL channel has not been activated.
			Fast blinking: The ADSL channel is being activated.

Figure 7-173 shows the interface on a 1ADSL-B/J card.

Figure 7-173 Interface on a 1ADSL-B/J card



1. One ADSL-B/J interface

ADSL-B/J Interface

An ADSL-B/J interface transmits service data from a LAN to an upstream device at a high speed. **Table 7-381** lists attributes of an ADSL-B/J interface.

Table 7-381 ADSL-B/J interface attributes

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

Technical Specifications

Table 7-382 lists the technical specifications of a 1ADSL-B/J card.

Table 7-382 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 6 W	
	Weight: 0.3 kg (0.66 lb)	

Item	Specification	
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-383 provides 1ADSL-B/J card ordering information.

Table 7-383 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310GBA	NA	1ADSL-B/J	1-Port ADSL2+ ANNEX B/J WAN Interface Card

7.14.3 4G.SHDSL (1-Port 4 Pair G.SHDSL WAN Interface Card)

Card Overview

The 4G.SHDSL is a WAN connection module that provides the symmetrical highspeed digital subscriber line (SHDSL) service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 4G.SHDSL card can be installed in a SIC slot of a router.

Figure 7-174 shows the appearance of a 4G.SHDSL card.

Figure 7-174 4G.SHDSL card appearance



Version Mapping

Table 7-384 lists the device models and software versions supporting the 4G.SHDSL.

Table 7-384 Version mapping

Card Name	Device Model
4G.SHDSL	AR6000 series
NOTE This card is supported in V200R001C00 and later versions.	AR6000-S
When the maximum output power of the AR6140-9G-2AC or AR6140-S is 60 W, the device does not support the 4G.SHDSL.	
When the maximum output power of the AR6140-9G-2AC, AR6140K-9G-2AC, or AR6140-S is 70 W, the device supports the 4G.SHDSL.	

Functions and Features

Table 7-385 describes the functions and features of a 4G.SHDSL card.

Table 7-385 Functions and features

Function and Feature	Description		
Basic function	Dials up to the Internet to provide high-speed data communication and VoD services.		
Symmetrical uplink and downlink rates	Provides the same uplink and downlink rates and supports interface binding for bandwidth expansion.		
Good compatibility	Maintains compatibility with DSL and other transmission technologies. This extends the transmission distance.		
High-speed transmission	Provides various rates to meet diverse user requirements.		
Long transmission distance and high anti- interference capability	Supports a longer transmission distance at the same rate in comparison with other DSL technologies.		

Function and Feature	Description
High performance and wide variety of services	Provides comprehensive solutions for networks of small- and medium-scale enterprises and branch networks of large-scale enterprises, meeting diverse requirements of enterprises, such as security, VPN, and service extension. G.SHDSL also provides service providers with integrated communication services, including voice and video conferencing.

Panel

Figure 7-175 shows the indicators on a 4G.SHDSL card, and **Table 7-386** describes the indicator states and meanings.

Figure 7-175 Indicators on a 4G.SHDSL card

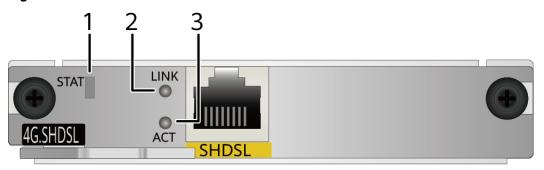


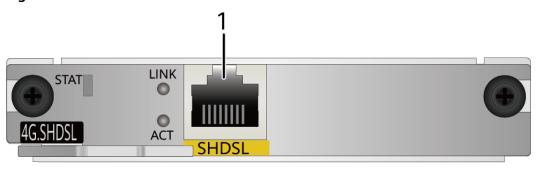
Table 7-386 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2 LI	LINK	Green	Steady on: All the four DSL channels are active.
			Off: All the four DSL channels are inactive.

Number	Indicator	Color	Description
			• Stays on for 0.25s and blinks three times in the next 0.75s: One DSL channel is active.
			 Stays on for 0.5s and blinks twice in the next 0.5s: Two DSL channels are active.
			• Stays on for 0.75s and blinks once in the next 0.25s: Three DSL channels are active.
3	ACT	Yellow	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.

Figure 7-176 shows the interface on a 4G.SHDSL card.

Figure 7-176 Interface on a 4G.SHDSL card



1. One G.SHDSL interface

G.SHDSL interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. **Table 7-387** lists attributes of a G.SHDSL interface.

Table 7-387 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45

Attribute	Description
Standards compliance	ITU-T G.991.2
Rate	15.296Mbps/pair (In PTM transmission mode, the binding type is set to EFM)
Cable type	8.11.1 G.SHDSL Cable or 8.3.1 Ethernet Cable

Technical Specifications

Table 7-388 lists the technical specifications of a 4G.SHDSL card.

Table 7-388 Technical specifications

Item	Specification	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 9 W Weight: 0.3 kg (0.66 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-389 provides 4G.SHDSL card ordering information.

Table 7-389 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310DRN	AR0MSLS1X A00	4G.SHDSL	1-Port 4 Pair G.SHDSL WAN Interface Module

7.14.4 1GBIS4W (1-Port 4 Pair G.SHDSL WAN Interface Card - WSIC)

Card Overview

A 1GBIS4W card is a WAN connection module that provides the SHDSL service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 1GBIS4W card can be installed in a WSIC slot of a router.

Figure 7-177 shows the appearance of a 1GBIS4W card.

Figure 7-177 1GBIS4W card appearance



Version Mapping

Table 7-390 lists the device models and software versions supporting the 1GBIS4W.

Table 7-390 Version mapping

Card Name	Device Model
1GBIS4W	AR6000 series
NOTE This card is supported in V200R006C10 and later versions.	AR6000-S series

Functions and Features

Table 7-391 describes the functions and features of a 1GBIS4W card.

Table 7-391 Functions and features

Function and Feature	Description
	Dials up to the Internet to provide high-speed data communication and VoD services.

Function and Feature	Description
Symmetrical uplink and downlink rates	Provides the same uplink and downlink rates and supports interface binding for bandwidth expansion.
Good compatibility	Maintains compatibility with DSL and other transmission technologies. This extends the transmission distance.
High-speed transmission	Provides various rates to meet diverse user requirements.
Long transmission distance and high anti- interference capability	Supports a longer transmission distance at the same rate in comparison with other DSL technologies.
High performance and wide variety of services	Provides comprehensive solutions for networks of small- and medium-scale enterprises and branch networks of large-scale enterprises, meeting diverse requirements of enterprises, such as security, VPN, and service extension. G.SHDSL also provides service providers with integrated communication services, including voice and video conferencing.

Panel

Figure 7-178 shows the indicators on a 1GBIS4W card, and **Table 7-392** describes the indicator states and meanings.

Figure 7-178 Indicators on a 1GBIS4W card



Table 7-392 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINK	Green	Steady on: All the four DSL channels are active.
			Off: All the four DSL channels are inactive.
			Stays on for 0.25s and blinks three times in the next 0.75s: One DSL channel is active.
			 Stays on for 0.5s and blinks twice in the next 0.5s: Two DSL channels are active.
			• Stays on for 0.75s and blinks once in the next 0.25s: Three DSL channels are active.
3	ACT	Yellow	Blinking: Data is being transmitted or received on the interface.
			Off: No data is being transmitted or received on the interface.

Figure 7-179 shows the interface on a 1GBIS4W card.

Figure 7-179 Interface on a 1GBIS4W card



1. One G.SHDSL interface

G.SHDSL interface

A G.SHDSL interface transmits service data from a LAN to an upstream device at a high speed over a symmetric digital subscriber line. **Table 7-393** lists attributes of a G.SHDSL interface.

Table 7-393 G.SHDSL interface attributes

Attribute	Description
Connector type	RJ45
Standards compliance	ITU-T G.991.2
Rate	15.296Mbps/pair (In PTM transmission mode, the binding type is set to EFM)
Cable type	8.11.1 G.SHDSL Cable or 8.3.1 Ethernet Cable

Technical Specifications

Table 7-394 lists the technical specifications of a 1GBIS4W card.

Table 7-394 Technical specifications

Item	Specification	
Card type	WSIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 201 mm x 223.5 mm (0.78 in. x 7.91 in. x 8.80 in.) Maximum power consumption: 8 W Weight: 0.35 kg (0.77 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-395 provides 1GBIS4W card ordering information.

Table 7-395 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311DVX	AR-1GBIS4W -W	1GBIS4W	1-Port 4 Pair G.SHDSL WAN Interface Card - WSIC

7.14.5 VDSL2 (1-Port VDSL2 over POTS WAN Interface Card)

Card Overview

A VDSL2 card is a WAN connection module that provides the SHDSL services for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A VDSL2 card can be installed in a SIC slot of a router.

Figure 7-180 shows the appearance of a VDSL2 card.

Figure 7-180 VDSL2 card appearance



Version Mapping

Table 7-396 lists the device models and software versions supporting the VDSL2.

Table 7-396 Version mapping

Card Name	Device Model
VDSL2	AR1600 series
NOTE This card is supported in V200R002C01 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-397 describes the functions and features of a VDSL2 card.

Table 7-397 Functions and features

Function and Feature	Description
Basic functions	Dials up to the Internet to provide high-speed data communication and VoD services.
Flexible transmission modes	Provides both asymmetrical and symmetrical transmission.
Fast transmission rate	Provides asymmetrical uplink and downlink rates (up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate).
	Provides 10 Mbit/s uplink and downlink rates within a transmission distance of 1 km.
Good transmission quality	Provides good transmission quality and supports HD video conference, VoD, and BTV.
Low cost	Transmits signals over a copper twisted pair without deploying new lines or reconstructing the existing network.
Enhanced compatibility	Supports both traditional voice services and ISDN services. VDSL2 can use the same phone line with the existing phone line and ISDN.
Standards compliance	Works in VDSL2 mode that complies with ITU-T G. 993.2 and supports profile 17a defined in G.993.2.
	Rolls back to ADSL2+ mode that complies with G. 992.5.
Dying gasp	Sends a trap to the DSLAM upon a power failure.

Panel

Figure 7-181 shows the indicators on a VDSL2 card, and **Table 7-398** describes the indicator states and meanings.

Figure 7-181 Indicators on a VDSL2 card

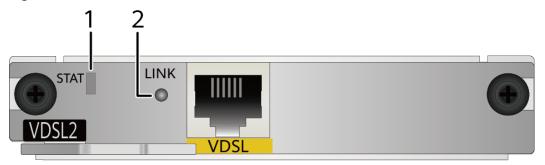
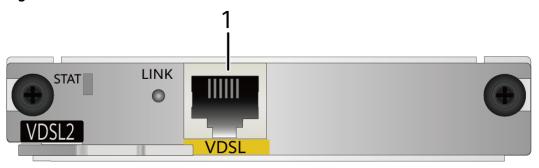


Table 7-398 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running.
			Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: The VDSL2 channel has been activated.
			Off: The VDSL2 channel has not been activated.
			Fast blinking: The VDSL2 channel is being activated.

Figure 7-182 shows the interface on a VDSL2 card.

Figure 7-182 Interfaces on a VDSL2 card



1. One VDSL2 interface

VDSL2 interface

A VDSL2 interface transmits service data from a LAN to an upstream device at a high speed through twisted cables. **Table 7-399** lists attributes of a VDSL2 interface.

Table 7-399 VDSL2 interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	ITU-T 993.2 ITU-T 992.5 ITU-T 992.3 ITU-T 992.1 G.DMT
Interface rate	 ADSL2+ full rate mode (ITU-T 992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s VDSL2 mode (ITU-T 993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ADSL2 full rate mode (ITU-T 992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ADSL full rate mode (992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	8.6.3 Universal Telephone Cable

Technical Specifications

Table 7-400 lists the technical specifications of a VDSL2 card.

Table 7-400 Technical specifications

Item	Specifications	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 11 W Weight: 0.2 kg (0.44 lb) 	
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-401 provides VDSL2 card ordering information.

Table 7-401 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02310JLJ	AR01SLV1XA	VDSL2	1-Port VDSL2 over POTS WAN Interface card

7.14.6 2VDSL2 (2-Port VDSL2 over POTS with Bonding WAN Interface Card)

Card Overview

A 2VDSL2 card is a WAN connection module that provides the SHDSL service for enterprises, transmitting video, voice, and data services at a high speed over the Internet.

A 2VDSL2 card can be installed in a SIC slot of a router.

Figure 7-183 shows the appearance of a 2VDSL2 card.



Figure 7-183 2VDSL2 card appearance

Version Mapping

Table 7-402 lists the device models and software versions supporting the 2VDSL2.

Table 7-402 Version mapping

Card Name	Device Model
2VDSL2	AR1600 series
NOTE This card is supported in V200R008C20 and later versions.	AR6000 series AR6000-S series

Functions and Features

Table 7-403 describes the functions and features of a 2VDSL2 card.

Table 7-403 Functions and features

Function and Feature	Description	
Basic functions	Dials up to the Internet to provide high-speed data communication and VoD services.	
Flexible transmission modes	Supports both asymmetrical transmission and symmetrical transmission.	
Faster speed	Provides asymmetrical uplink and downlink rates (up to 50 Mbit/s uplink rate and 100 Mbit/s downlink rate).	
	Provides over 10 Mbit/s of symmetrical uplink and downlink rates within a transmission distance of 1 km.	

Function and Feature	Description
Link binding and unbinding	 By default, the two VDSL2 lines are bound to improve bandwidth. If the remote device requires a low-speed link, the links can be unbound.
High transmission quality	Provides good transmission quality and supports HD video conference, VoD, and BTV.
Cost effectiveness	Transmits signals over a copper twisted pair without deploying new lines or reconstructing the existing network.
Good compatibility	Supports both traditional voice services and ISDN services. 2VDSL2 share transmission lines with traditional telephony and ISDN networks.
Standards compliance	Works in VDSL2 mode that complies with ITU-T G. 993.2 and supports profile 17a defined in G.993.2.
	Supports rollback to ADSL2+ mode that complies with G.992.5.
Dying gasp	Sends a trap to the DSLAM upon a power failure.

Panel

Figure 7-184 shows the indicators on a 2VDSL2 card, and **Table 7-404** describes the indicator states and meanings.

Figure 7-184 Indicators on a 2VDSL2 card

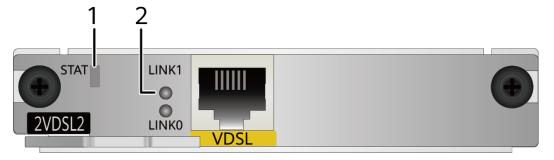
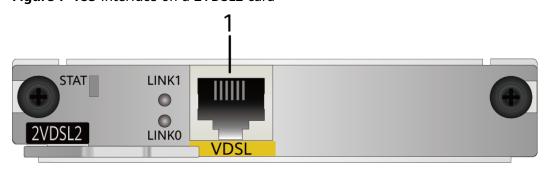


Table 7-404 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The card has been powered on, but the system software is not running.
			Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	The system software is not running or is resetting.
2	LINKO/LINK1	Green	Steady on: VDSL2 channel 0/1 is active.
			Off: VDSL2 channel 0/1 is inactive.
			Fast blinking: VDSL2 channel 0/1 is being activated.

Figure 7-185 shows the interface on a 2VDSL2 card.

Figure 7-185 Interface on a 2VDSL2 card



1. One 2VDSL2 interface

VDSL2 interface

A VDSL2 interface transmits service data from a LAN to an upstream device at a high speed. **Table 7-405** lists attributes of a VDSL2 interface.

Table 7-405 VDSL2 interface attributes

Attribute	Description
Connector type	RJ11
Standards compliance	 ITUT-993.2 ITU-T 992.3 ITU-T 992.5 ITU-T 992.1 G.DMT ANSI T1.413 Issue 2
Rate	 ADSL2+ full rate mode (ITU-T 992.5): downlink rate of 24 Mbit/s and uplink rate of 1 Mbit/s VDSL2 mode (ITU-T 993.2): downlink rate of 100 Mbit/s and uplink rate of 50 Mbit/s ADSL2 full rate mode (ITU-T 992.3): downlink rate of 12 Mbit/s and uplink rate of 1 Mbit/s ADSL full rate mode (992.1 G.DMT): downlink rate of 8 Mbit/s and uplink rate of 1 Mbit/s
Cable type	8.16.1 2VDSL2 Cable

Technical Specifications

Table 7-406 lists the technical specifications of a 2VDSL2 card.

Table 7-406 Technical specifications

Tuble 7 100 recimient specimentions			
Item	Specification		
Card type	SIC		
Hot swap	Supported		
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)		
	Maximum power consumption: 8 WWeight: 0.2 kg (0.44 lb)		
Environment parameters	 Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.) 		

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-407 provides 2VDSL2 card ordering information.

Table 7-407 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311MKM	AR-2VDSL2- S	2VDSL2	2-port VDSL2 over POTS with bonding WAN interface card

7.14.7 1V35B-AM (1-Port VDSL2 WAN Interface Card)

Card Overview

A 1V35B-AM card is a WAN connection module that provides the SHDSL services for enterprises, transmitting video, audio, and data services at a high speed over the Internet.

A 1V35B-AM card can be installed in a SIC slot of a router.

Figure 7-186 shows the appearance of a 1V35B-AM card.

Figure 7-186 1V35B-AM card appearance



Version Mapping

Table 7-408 lists the device models and software versions supporting the 1V35B-AM.

Table 7-408 Version mapping

Card Name	Device Model
1V35B-AM	AR6000 series
NOTE This card is supported in V300R019C11 and later versions.	AR6000-S series

Functions and Features

Table 7-409 describes the functions and features of a 1V35B-AM card.

Table 7-409 Functions and features

Function and Feature	Description	
Basic functions	Dials up to the Internet to provide high-speed data communication and VoD services.	
Flexible transmission modes	Provides both asymmetrical and symmetrical transmission.	
Fast transmission rate	Provides asymmetrical uplink and downlink rates (up to 40 Mbit/s uplink rate and 350 Mbit/s downlink rate).	
	Provides 10 Mbit/s uplink and downlink rates within a transmission distance of 1 km.	
Good transmission quality	Provides good transmission quality and supports HD video conference, VoD, and BTV.	
Low cost	Transmits signals over a copper twisted pair without deploying new lines or reconstructing the existing network.	
Enhanced compatibility	Supports both traditional voice services and ISDN services. 1V35B-AM can use the same phone line with the existing phone line and ISDN.	
Standards compliance	Supports VDSL 35B profile.	
	Rolls back to ADSL2+ (G.992.5) compliance.	
Dying gasp	Sends a trap to the DSLAM upon a power failure.	

Panel

Figure 7-187 shows the indicators on a 1V35B-AM card, and **Table 7-410** describes the indicator states and meanings.

Figure 7-187 Indicators on a 1V35B-AM card

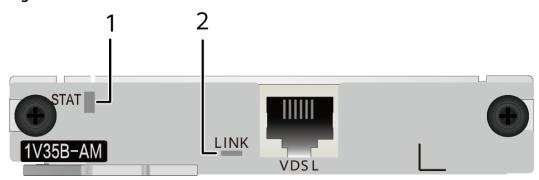
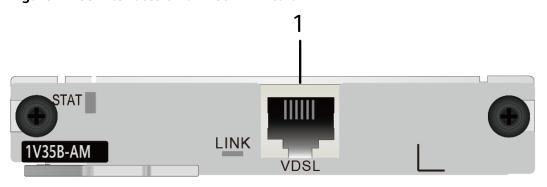


Table 7-410 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Steady on: The router has been powered on, but the system software is not running.
			Slow blinking: The system is running properly.
			Fast blinking: The system is being powered on or restarting.
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2	LINK	Green	Steady on: The xDSL channel has been activated.
			Off: The xDSL channel has not been activated.
			Fast blinking: The xDSL channel is being activated.

Figure 7-188 shows the interface on a 1V35B-AM card.

Figure 7-188 Interfaces on a 1V35B-AM card



1. One VDSL interface

VDSL interface

■ NOTE

Only the VDSL over POTS is supported.

A very-high-speed digital subscriber line (VDSL) interface transmits service data from a LAN to an upstream device at a high speed. **Table 7-411** lists attributes of a VDSL interface.

Table 7-411 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	 ANSI T1.413 Issue 2 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 VDSL2 35B mode (ITU-T G.993.2): downlink rate of 350 Mbit/s and uplink rate of 40 Mbit/s 		
Cable type	Universal Telephone Cable		

Technical Specifications

Table 7-412 lists the technical specifications of a 1V35B-AM card.

Table 7-412 Technical specifications

Item	Specifications	
Card type	SIC	
Hot swap	Supported	
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)	
	Maximum power consumption: 4 W	
	• Weight: 0.31 kg (0.68 lb)	

Item	Specifications	
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)	
parameters	Operating relative humidity: 5% to 95%, noncondensing	
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)	
	• Operating altitude: 0 to 5000 m (16404.2 ft.)	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-413 provides 1V35B-AM card ordering information.

Table 7-413 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
50010491	SIC-1V35B- AM	1V35B-AM	1-Port VDSL2 WAN Interface Card

7.15 xPON Card

7.15.1 1PON (1-Port GPON/EPON Dual-Mode Interface Card)

Card Overview

□ NOTE

- 1 port: There are two ports on the 1PON card, one of which is the backup port.
 Therefore, the 1PON card is also called the 1PON.
- One router can have only one PON installed. Excess PON cards cannot be powered on.

The 1PON is a WAN connection module that uses the point-to-multipoint optical access technology to transmit video, voice, and data services at a high speed over the Internet.

A 1PON card can be installed in a SIC slot of a router.

Figure 7-189 shows the appearance of a 1PON card.

Figure 7-189 1PON card appearance



Version Mapping

Table 7-414 lists the device models and software versions supporting the 1PON.

Table 7-414 Version mapping

Card Name	Device Model
1PON	AR6000 series (All models in this series except the
NOTE	AR6140-9G-2AC and AR6140K-9G-2AC)
This card is supported in V200R002C00 and later versions.	AR6000-S series (All models in this series except the AR6140-S)

Functions and Features

Table 7-415 describes the functions and features of a 1PON card.

Table 7-415 Functions and features

Function and Feature	Description	
Basic functions	Uses fibers to connect to the Internet so that services can be transmitted with high bandwidth and high reliability.	
	Supports EPON/GPON but not GE.	
	As FTTH becomes popular, PON access gradually becomes the mainstream mode.	
High bandwidth	The PON network provides the bandwidth of 1 Gbit and allows migration to 10 Gbit/s.	

Function and Feature	Description	
High reliability	Compared with traditional leased lines, PON technology provides higher reliability and a longer transmission distance.	
Optical interface shutdown	The CPU of the SD5103 implements optical interface shutdown.	
Power-off alarm	If the card is powered off, the PON interface reports a power-off alarm to the OLT.	
DDM detection	Detects the receiving optical power and monitors the transmitting optical power.	
ONU function	 Receives cells broadcast in TDM mode at a downlink rate of 1.25 Gbit/s (EPON) or 2.488 Gbit/s (GPON). 	
	 Supports burst transmission in TDMA mode at an uplink rate of 1.25 Gbit/s (EPON) or 1.244 Gbit/s (GPON). 	

Panel

Figure 7-190 shows the indicators on a 1PON card, and **Table 7-416** describes the indicator states and meanings.

Figure 7-190 Indicators on a 1PON card

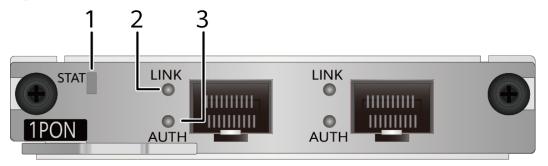


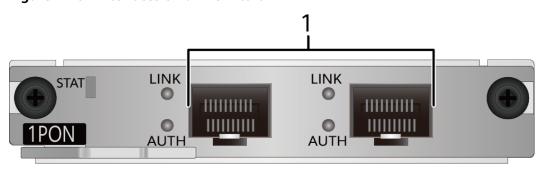
Table 7-416 Indicator description

Number	Indicator	Color	Description
1	STAT	Green	Slow blinking: The system is running properly. Fast blinking: The system is being powered on or restarting.

Number	Indicator	Color	Description
		Red	Steady on: A fault that affects services has occurred and cannot be rectified automatically. The fault needs to be rectified manually.
		Off	Off: The software is not running or is being reset.
2 and 3	PON interface indicators: • Upper LINK indicator: indicates that optical signals are received from the downstream device. • Lower AUTH indicator: indicates the authentication status.	Green	If both the LINK indicator and AUTH indicator are steady on, the ONU has registered successfully.
			If the LINK indicator is steady on and the AUTH indicator blinks fast, the ONU is registering.
			If both the LINK indicator and AUTH indicator blink fast, optical transmission from the ONU times out. That is, the ONU is a rogue ONU.
			If both the LINK indicator and AUTH indicator are off, the 1PON does not request data transmission.

Figure 7-191 shows the interfaces on a 1PON card.

Figure 7-191 Interfaces on a 1PON card



1. Two PON interfaces

PON interface

PON interfaces include EPON interfaces and GPON interfaces. They transmit data, voice, and video services. **Table 7-417** lists attributes of a PON interfaces.

Table 7-417 PON interface attributes

Attribute	Description
Connector type	SC
PON interface attributes	The optical interface attributes vary depending on the optical module used. For details, see 9.7 GPON/EPON Optical Modules.
Frame format	Ethernet_II, Ethernet_SNAP, IEEE 802.2, IEEE 802.3.
Network protocol	IP

Technical Specifications

Table 7-418 describes the technical specifications of a 1PON card.

Table 7-418 Technical specifications

Item	Specifications	
Card type	SIC	
Hot swap	Supported	
Physical specifications	 Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.) Maximum power consumption: 10 W Weight: 0.3 kg (0.66 lb) 	
Environment parameters	 Weight: 0.3 kg (0.66 lb) Operating temperature: 0°C to 45°C (32°F to 113°F) Operating relative humidity: 5% to 95%, noncondensing Storage temperature: -40°C to +70°C (-40°F to +158°F) Operating altitude: 0 to 5000 m (16404.2 ft.) 	

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-419 provides 1PON card ordering information.

Table 7-419 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
03020TJE	AR0MSOPP2 A00	1PON	1-Port GPON/EPON Dual-mode Interface Card

7.16 Capacitor Card

7.16.1 DGP (Dying Gasp Capacitor Card)

Card Overview

A DGP card provides capacitance to support the dying gasp function on a router and can be installed in a SIC slot.

Figure 7-192 shows the appearance of a DGP card.

Figure 7-192 DGP card appearance



Version Mapping

Table 7-420 lists the device models and software versions supporting the DGP.

Table 7-420 Version mapping

Card Name	Device Model
DGP	AR6120
NOTE	AR6121
This card is supported in V200R009C00 and later	AR6121K
versions.	AR6140-16G4XG (This card is supported in V300R019C10 and later versions.)
	AR6280
	AR6280K
	AR6300
	AR6300K
	AR6000-S series (All models in this series except the AR6140-S)

Functions and Features

Table 7-421 describes the functions and features of a DGP card.

Table 7-421 Functions and features

Function and Feature	Description
Capacitor recharge time	5 to 6 minutes NOTE If the router experiences a power outage before the capacitor on the DGP card is fully recharged, the dying gasp function may not take effect.
Capacitor power supply time	≥ 100 ms
Discharge channel	After the DGP card is removed from the router, the reserved energy can be released from the discharge channel.

Panel

Figure 7-193 shows the indicators on a DGP card, and Table 7-422 describes the indicator states and meanings.

Figure 7-193 Indicators on a DGP card

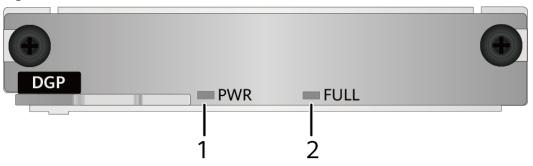


Table 7-422 Indicator description

Number	Indicator	Color	Description
1	PWR	Green	Steady green: The card has been powered on. Off: The card is not powered on.
2	FULL	Green	Steady green: The capacitor of the card has been fully recharged. Off: The capacitor of the card has not been fully recharged.

Technical Specifications

Table 7-423 lists the technical specifications of a DGP card.

Table 7-423 Technical specifications

Item	Specification
Card type	SIC
Hot swap	Supported
Physical specifications	• Dimensions (H x W x D): 19.82 mm x 100.1 mm x 223.5 mm (0.78 in. x 3.94 in. x 8.80 in.)
	Maximum power consumption: 16 W
	Weight: 0.43 kg (0.95 lb)
Environment	Operating temperature: 0°C to 45°C (32°F to 113°F)
parameters	Operating relative humidity: 5% to 95%, noncondensing
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Operating altitude: 0 m to 5000 m (0 ft. to 16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 7-424 provides DGP card ordering information.

Table 7-424 Ordering information

Part Number	Model	Name Label (Silkscreen)	Description
02311VFB	AR-DGP-S	DGP	Dying Gasp Capacitor Card

8 Cables

- 8.1 Power Cables
- 8.2 Console Cable
- 8.3 Ethernet Cable
- 8.4 Ground Cable
- 8.5 Optical Fiber
- 8.6 Voice Cables
- 8.7 E1/T1 Cable
- 8.8 E3/T3 Cable
- 8.9 SA Cable
- 8.10 8AS Cable
- 8.11 G.SHDSL Cable
- 8.12 ISDN Cable
- 8.13 E&M Trunk Cable
- 8.14 Antennas
- 8.15 VGA Video Cable
- 8.16 2VDSL2 Cable

8.1 Power Cables

8.1.1 DC Power Cable (04150695)

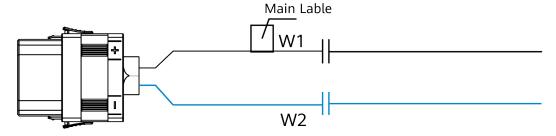
Description

DC power cables for a router include a -48 V return ground cable (blue) and a -48 V power cable (black), which are connected to the RTN(+) and NEG(-) terminals on the router's DC power module respectively.

Appearance and Structure

Figure 8-1 shows the structure of DC power cables.

Figure 8-1 Structure of DC power cables



Connection

An DC power cable is connected as follows:

- One end is connected to the matching DC power terminal on the DC power module of a router.
- The other end is connected to an external power source.

Ordering Information

Table 8-1 provides the DC power cable ordering information.

Table 8-1 DC power cable ordering information

Part Number	Description	Remarks
04150695	Power Cable,3m,12AWG,PS2F,12UL1015B +12UL1015BL	Standard configuration

8.1.2 AC Power Cable

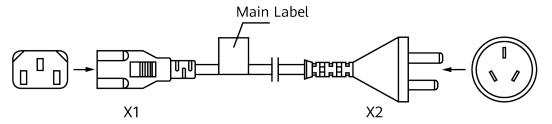
Description

An AC power cable has a C13 connector at one end, and the connector on the other end is determined based on the standard in the country or region to which the cable is delivered. This section describes the AC power cable used in China. **Table 8-2** lists the AC power cables applicable in different countries and regions.

Appearance and Structure

Figure 8-2 shows the structure of an AC power cable used in China.

Figure 8-2 Structure of an AC power cable used in China



Connection

An AC power cable is connected as follows:

- The C13 straight female connector is connected to the AC power socket of a router.
- The PI straight male connector is connected to an external power source.

Ordering Information

Table 8-2 provides the AC power ordering information.

Table 8-2 AC power cable ordering information

Country/ Region	Part Number	Description	Remarks
China	04041104	Power Cords Cable, China AC Power 250V10A, 3.0m, PISM, 227IEC53-1.0^2(3C), C13SF, Black	Optional
China	04150254	Power Cords Cable, China AC Power 250V10A, 1.0m, PIAM, 227IEC53-1.0^2(3C), C13SF, Black	Optional
Japan	04040887	Power Cable, Japan AC Power Cable 125V12A, 3.0m, PBSM, HVCTF-1.25mm^2(3C), C13SF, Black	Optional
Brazil	04150258	Power Cable, Brazil AC Power Cable 250V10A, 3.0m, PJSM-I, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
Europe	04041056	Power Cords Cable, Europe AC Power Cable 250V10A, 3m, PFSM, H05VVF 1.0^2(3C), C13SF, Black	Optional
Australia	04040888	Power Cords Cable, Australia AC Power Cable 250V10A, 3.0m, PISM, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional

Country/ Region	Part Number	Description	Remarks
South Africa	04040889	Power Cords Cable, South Africa AC Power Cable 250V10A, 3.0m, PDAM, H05VV-F-1.5mm^2(3C), C13SF, Black	Optional
America	04020728	Power Cable, America AC Power Cable 125V10A, 3.0m, PBSM, 18SJT(3C), C13SF, Black	Optional
Britain	04040890	Power Cable, Britain AC Power Cable 250V10A, 3.0m, PGAM, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
Switzerland	04041119	Power Cable, Switzerland AC Power Cable 250V10A, 3.0m, PJSM, H05VV- F-1.0mm^2(3C), C13SF, Black	Optional
Italy	04041120	Power Cable, Italy AC Power Cable 250V10A, 3.0m, PLSM, H05VV-F-1.0mm^2(3C), C13SF, Black	Optional
Argentina	04047785	Power Cords Cable, Argentina AC Power 250V10A, 3.0m, PISM, H05VV- F-1.0mm^2(3C), C13SF, Black	Optional
Korea	0405G028	Power Cords Cable, Korea AC Power 250V10A, 3m, PFSM, H05VV-F 3*1.0^2(3C), C13SF, Black	Optional
Denmark	0405G02K	Power Cords Cable, Denmark AC Power 250V10A, 3m, PKSM, H05VV- F-3*1.0^2(3C), C13SF, Black	Optional
India	04051035	Power Cords Cable, India AC Power 250V10A, 3.0m,PD-I AM, IS 694-1.0mm^2(3C), C13 SF, Black	Optional

8.2 Console Cable

8.2.1 Console Cable

Description

A console cable connects the console interface of a router to the serial interface of a computer. The cable connects to the router through the RJ45 connector and connects to the PC through the DB9 connector.

Structure and Pin Assignments

Figure 8-3 shows the structure of a console cable.

Figure 8-3 Structure of a console cable

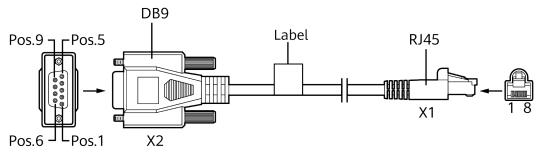


Table 8-3 lists the pin assignments of a console cable.

Table 8-3 Pin assignments of a console cable

X1 (RJ45)	Signal	Direction	X2 (DB9)
3	TXD	→	2
5	GND	-	5
6	RXD	←	3

MOTE

- TXD and RXD are defined based on signal stream direction on the router, and the corresponding wires must be connected to the RXD and TXD wires on the remote device (computer).
- A console cable does not have an RTS, CTS, DSR, or DTR signal wire, and therefore does not support hardware-based flow control.
- Pins not listed in the table are not connected.

Connection

A console cable is connected as follows:

- The RJ45 connector is connected to the console interface of a router.
- The DB9 connector is connected to a maintenance terminal, generally a computer.

Ordering Information

Table 8-4 provides the console cable ordering information.

Table 8-4 Console cable ordering information

Part Number	Description
04051113	Serial Port Cable, 3m, D9 FM, CC2P0.32PWG1U, MP8-I

8.3 Ethernet Cable

8.3.1 Ethernet Cable

Description

An Ethernet cable consists of twisted pairs and RJ45 connectors at both ends. Pin assignments in the RJ45 connectors comply with the T568A or T568B standard. **Table 8-5** describes the two standards.

Table 8-5 T568A and T568B standards

T568A		T568B	
Pin	Wire Color	Pin	Wire Color
1	White and green	1	White and orange
2	Green	2	Orange
3	White and orange	3	White and green
4	Blue	4	Blue
5	White and blue	5	White and blue
6	Orange	6	Green
7	White and brown	7	White and brown
8	Brown	8	Brown

Depending on whether RJ45 connectors at both ends comply with the same standard, Ethernet cables are classified into two types:

- Straight-through cable: The RJ45 connectors at both ends comply with the T568B standard.
- Crossover cable: One RJ45 connector complies with the T568A standard, and the other RJ45 connector complies with the T568B standard.

Structure and Pin Assignments

Figure 8-4 shows the structure of an Ethernet cable.

Figure 8-4 Structure of an Ethernet cable

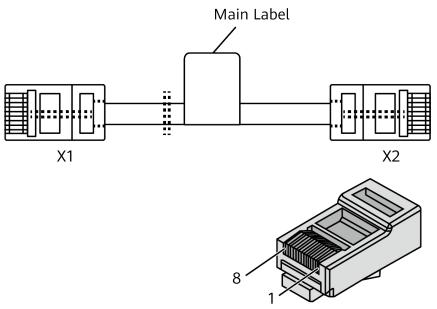


Table 8-6 lists the pin assignments of a straight-through cable.

Table 8-6 Pin assignments of a straight-through cable

X1 (RJ45)	Wire Color	X2 (RJ45)
1	White and orange	1
2	Orange	2
3	White and green	3
4	Blue	4
5	White and blue	5
6	Green	6
7	White and brown	7
8	Brown	8

Table 8-7 lists the pin assignments of a crossover cable.

Table 8-7 Pin assignments of a crossover cable

X1 (RJ45)	Wire Color	X2 (RJ45)
1	White and orange	3
2	Orange	6
3	White and green	1

X1 (RJ45)	Wire Color	X2 (RJ45)
4	Blue	4
5	White and blue	5
6	Green	2
7	White and brown	7
8	Brown	8

Connection

A straight-through cable can connect devices at different network layers in the following scenarios:

- Connect a switch or hub to a router.
- Connect a computer (server or workstation) to a switch or hub.
- Connect a switch to an upper-layer switch through an uplink interface.

A crossover cable can connect devices at the same network layer in the following scenarios:

- Connect a computer to a router.
- Connect two switches at the same layer.
- Connect two hubs.
- Connect two computers.
- Connect two routers.
- Connect an Ethernet interface of an ADSL modem to the network interface of a computer.

□ NOTE

Most network devices support auto-negotiation on their interfaces. After auto-negotiation is enabled, the local and remote interfaces can automatically negotiate about communication parameters. In this case, the two interfaces can be connected by either a straight-through cable or a crossover cable.

Ordering Information

Select straight-through or crossover cables according to your network requirements. In an environment with severe electromagnetic interference, shielded Ethernet cables are recommended.

Table 8-8 provides the Ethernet cable ordering information.

Table 8-8 Ethernet cable ordering information

Part Number	Description	Remarks
04070050	Signal Cable, Shielded Straight Through Cable, 2.0m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
04070006	Signal Cable, Shielded Straight Through Cable, 3m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional
04070007	Signal Cable, Shielded Crossover Network Cable, 3m, MP8- II,CC4P0.5GY(S), MP8-II, FTP	Optional
04024336	Single Cable, Straight Through Cable, 2.00m, MP8-I, CC4P0.5GY, MP8- I, Unshielded, DL3470d	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

8.4 Ground Cable

8.4.1 Ground Cable

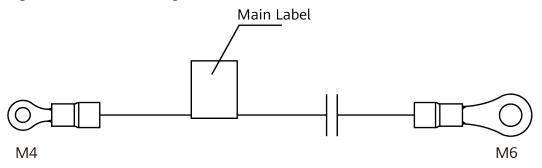
Description

A ground cable grounds a router to protect it from lightning and electromagnetic interference.

Appearance and Structure

Figure 8-5 shows the structure of a ground cable.

Figure 8-5 Structure of a ground cable



Connection

A ground cable is connected as follows:

- The M4 lug is connected to the ground point on a router.
- The M6 lug is connected to the ground point or equipotential terminal on a cabinet.

Ordering Information

Table 8-9 provides the ground cable ordering information.

Table 8-9 Ground cable ordering information

Part Numb er	Description	Remarks
041500 52	Power Cable, 0.4m, 6mm^2, Yellow&Green, OT6-4, H07Z-K-6^2G&Y, OT6-6, LSZH	Standard configuration

8.5 Optical Fiber

8.5.1 Optical Fiber

Description

Determine the type and number of optical fibers based on the optical modules used:

- Single-mode optical modules must be used with single-mode optical fibers.
- Multimode optical modules must be used with multimode optical fibers.
- PON optical modules must be used with 1SC/PC-1SC/PC single-mode optical fibers.

- Each optical module with separate Tx and Rx channels must be used with two optical fibers of the same type.
- Each single-fiber-bidirectional optical module is used with only one optical fiber.

■ NOTE

A single-mode optical fiber and a multimode optical fiber have the same appearance but different colors. A single-mode optical fiber is yellow and a multimode optical fiber is orange.

Structure and Pin Assignments

Figure 8-6 shows the structure of an LC/PC single-mode optical fiber.

Figure 8-6 Structure of an LC/PC single-mode optical fiber



Figure 8-7 shows the structure of an SC/PC single-mode optical fiber.

Figure 8-7 Structure of an SC/PC single-mode optical fiber



Figure 8-8 shows the structure of an LC/PC multimode optical fiber.

Figure 8-8 Structure of an LC/PC multimode optical fiber



Table 8-10 lists the pin assignments of an optical fiber.

Table 8-10 Pin assignments of an optical fiber

Terminal on the Local Device	Signal Direction	Terminal on the Remote Device
Optical interface Tx terminal	->	Optical interface Rx terminal
Optical interface Rx terminal	<-	Optical interface Tx terminal

Connection

An optical fiber is a carrier of optical signals and transmits optical signals over a short distance. An optical fiber is connected as follows:

One end is connected to an optical interface of router.

• The other end is connected to an optical distribution frame (ODF) or an optical interface of the upstream device or another device.

Ordering Information

Table 8-11 provides the optical fiber ordering information.

Table 8-11 Optical fiber ordering information

Part Number	Description	Remarks
14130221	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 10m	Optional
14130197	Patch Cord, FC/PC-LC/PC, Single mode, 2mm, 10m	Optional
14130222	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 10m	Optional
14130295	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 20m	Optional
14130199	Patch Cord, LC/PC-LC/PC, Single mode, G.652D, 2mm, 10m	Optional
14130251	Patch Cord, LC/PC-LC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130223	Patch Cord, LC/PC-SC/PC, Multimode, A1b, 2mm, 10m	Optional
14130279	Patch Cord, LC/PC-SC/PC, Multimode, A1b, 2mm, 20m	Optional
14130196	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 10m	Optional
14130280	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130276	Patch Cord, LC/PC-SC/PC, Single mode, G.652D, 2mm, 30m	Optional

Part Number	Description	Remarks
14130277	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 30m	Optional
14130278	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 30m	Optional
14130282	Patch Cord, LC/PC-LC/PC, Single mode, G.652, 2mm, 30m	Optional
14130294	Patch Cord, LC/PC-LC/PC, Multimode, A1b, 2mm, 30m	Optional
14130273	Patch Cord, FC/PC-LC/PC, Multimode, A1b, 2mm, 20m	Optional
14130274	Patch Cord, FC/PC-LC/PC, Single mode, G.652D, 2mm, 20m	Optional
14130248	Adapter, LC/PC-LC/PC, 2, Blue, Square	Optional
14130001	Adapter, FC-FC, 2, Silvery white, Shell:Metal, Sleeve:Zirconia, Round	Optional
14130134	Adapter, SC-SC, 2, Blue, Square	Optional
14130253	Patch Cord, FC/PC-SC/PC, Single mode, G.652, 3mm, 10m	Optional
14130230	Patch Cord, SC/PC-SC/PC, Single mode, G.652, 3mm, 10m	Optional
14130275	Patch Cord, LC/PC, SC/PC, Multimode, 2mm, 30m	Optional
14130098	Patch Cord, SC/PC-SC/PC, Single mode, G.652D, 3mm, 5m	Optional
14130126	Patch Cord, 1SC/ PC-1SC/PC, Single mode, 3mm, 15m	Optional

Part Number	Description	Remarks
14130147	Patch Cord, 1SC/ PC-1SC/PC, Single mode, 3mm, 20m	Optional

8.6 Voice Cables

8.6.1 32FXS Cable

Description

A 32FXS cable connects a 32FXS interface card to analog telephones. The DB68 connector of the cable is connected to the 32FXS interface card, and the bare wires at the other end must be cramped with RJ11 connectors before they can be connected to telephones.

Structure and Pin Assignments

Figure 8-9 shows the structure of a 32FXS cable.

Figure 8-9 Structure of a 32FXS cable

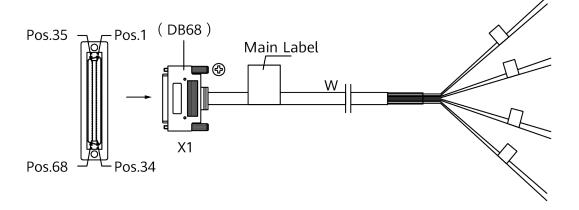


Table 8-12 lists the pin assignments of a 32FXS cable.

□ NOTE

32FXS cables are bundled into four groups using bundle straps. Each group has eight twisted pairs with each twisted pair consisting of two core wires. Prepare RJ11 connectors based on the colors of core wires in twisted pairs. If the core wires of a twisted pair have been separated, you can strip the 32FXS cable of a specific length and make the core wires to form a twisted pair again.

Table 8-12 Pin assignments of a 32FXS cable

X1 (DB68)	Bundle Strap Color	Twisted Pair Color	Signal	Port
36	Blue	Blue	Tip(+)	1
35		White	Ring(-)	
38		Orange	Tip(+)	2
37		White	Ring(-)	
40		Green	Tip(+)	3
39		White	Ring(-)	
42		Brown	Tip(+)	4
41		White	Ring(-)	
44		Gray	Tip(+)	5
43		White	Ring(-)	
46		Blue	Tip(+)	6
45		Red	Ring(-)	
48		Orange	Tip(+)	7
47		Red	Ring(-)	
50		Green	Tip(+)	8
49		Red	Ring(-)	
2	Blue	Brown	Tip(+)	9
1		Red	Ring(-)	
4		Gray	Tip(+)	10
3		Red	Ring(-)	
6		Blue	Tip(+)	11
5		Black	Ring(-)	
8		Orange	Tip(+)	12
7		Black	Ring(-)	
10		Green	Tip(+)	13
9		Black	Ring(-)	
12		Brown	Tip(+)	14
11		Black	Ring(-)	
14		Gray	Tip(+)	15

X1 (DB68)	Bundle Strap Color	Twisted Pair Color	Signal	Port
13		Black	Ring(-)	
16		Blue	Tip(+)	16
15		Yellow	Ring(-)	
54	Orange	Blue	Tip(+)	17
53		White	Ring(-)	
56		Orange	Tip(+)	18
55		White	Ring(-)	
58		Green	Tip(+)	19
57		White	Ring(-)	
60		Brown	Tip(+)	20
59		White	Ring(-)	
62		Gray	Tip(+)	21
61		White	Ring(-)	
64		Blue	Tip(+)	22
63		Red	Ring(-)	
66		Orange	Tip(+)	23
65		Red	Ring(-)	
68		Green	Tip(+)	24
67		Red	Ring(-)	
20	Orange	Brown	Tip(+)	25
19		Red	Ring(-)	
22		Gray	Tip(+)	26
21		Red	Ring(-)	
24		Blue	Tip(+)	27
23		Black	Ring(-)	
26		Orange	Tip(+)	28
25		Black	Ring(-)	
28		Green	Tip(+)	29
27		Black	Ring(-)	

X1 (DB68)	Bundle Strap Color	Twisted Pair Color	Signal	Port
30		Brown	Tip(+)	30
29		Black	Ring(-)	
32		Gray	Tip(+)	31
31		Black	Ring(-)	
34		Blue	Tip(+)	32
33		Yellow	Ring(-)	

Connection

A 32FXS cable is connected as follows:

- The DB68 connector is connected to the 32FXS interface card.
- The RJ11 connectors at the other end are connected to analog telephones.

Ordering Information

A 32FXS cable is delivered without RJ11 connectors. RJ11 connectors need to be made onsite.

Table 8-13 provides the 32FXS cable ordering information.

Table 8-13 32FXS cable ordering information

Part Number	Description	Remarks
04140090	Subscriber Cable, 32-Channel, 5m, 0.4mm, 64 cores, D68M-V, CC32P0.4P430U(S)-I	Optional

8.6.2 16FXS Cable

Description

A 16FXS cable connects a 16FXS interface card to analog telephones. The DB68 connector of the cable is connected to the 16FXS interface card, and the bare wires at the other end must be cramped with RJ11 connectors before they can be connected to telephones.

Structure and Pin Assignments

Figure 8-10 shows the structure of a 16FXS cable.

Figure 8-10 Structure of a 16FXS cable

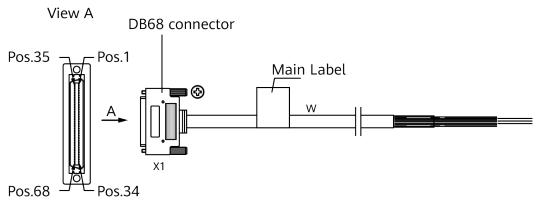


Table 8-14 lists the pin assignments of a 16FXS cable.

Table 8-14 Pin assignments of a 16FXS cable

X1 (DB68)	Wire Color	Signal	Port
36	Blue	Tip(+)	1
35	White	Ring(-)	
38	Orange	Tip(+)	2
37	White	Ring(-)	
40	Green	Tip(+)	3
39	White	Ring(-)	
42	Brown	Tip(+)	4
41	White	Ring(-)	
44	Gray	Tip(+)	5
43	White	Ring(-)	
46	Blue	Tip(+)	6
45	Red	Ring(-)	
48	Orange	Tip(+)	7
47	Red	Ring(-)	
50	Green	Tip(+)	8
49	Red	Ring(-)	
2	Brown	Tip(+)	9
1	Red	Ring(-)	
4	Gray	Tip(+)	10

X1 (DB68)	Wire Color	Signal	Port
3	Red	Ring(-)	
6	Blue	Tip(+)	11
5	Black	Ring(-)	
8	Orange	Tip(+)	12
7	Black	Ring(-)	
10	Green	Tip(+)	13
9	Black	Ring(-)	
12	Brown	Tip(+)	14
11	Black	Ring(-)	
14	Gray	Tip(+)	15
13	Black	Ring(-)	
16	Blue	Tip(+)	16
15	Yellow	Ring(-)	

Connection

A 16FXS cable is connected as follows:

- The DB68 connector is connected to the 16FXS interface card.
- The RJ11 connectors at the other end are connected to analog telephones.

Ordering Information

A 16FXS cable is delivered without RJ11 connectors. RJ11 connectors need to be made onsite.

Table 8-15 provides the 16FXS cable ordering information.

Table 8-15 16FXS cable ordering information

Part Number	Description	Remarks
04140129	Subscriber Cable, 16-Channel, 5m, 0.4mm, 32 Cores, D68M- V,CC16P0.4P430U	Optional

8.6.3 Universal Telephone Cable

Description

A universal telephone cable is applicable to the interfaces listed in Table 8-16.

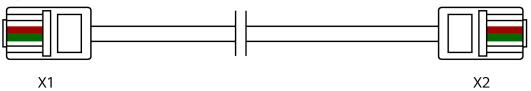
Table 8-16 Interfaces supporting a universal telephone cable

Cable	Interface Type
Universal telephone cable	FXS interface
	FXO interface
	ADSL interface
	VDSL2 interface

Appearance and Structure

Figure 8-11 shows the structure of a universal telephone cable.

Figure 8-11 Structure of a universal telephone cable



Pin Assignments

Table 8-17 and Table 8-18 list the pin assignments of a universal telephone cable.

Table 8-17 Pin assignments of a universal telephone cable

X1 (RJ11)	Signal	Direction	X2 (RJ11)
1	-	-	1
2	-	-	2
3	Tip(+)	← →	3
4	Ring(-)	← →	4
5	-	-	5
6	-	-	6

Table 8-18 Pin assignments of a universal telephone cable

X1 (RJ11)	Signal	Direction	X2 (RJ11)
1	-	-	1
2	-	-	2
3	Ring(-)	← →	3
4	Tip(+)	← →	4
5	-	-	5
6	-	-	6

Connection

A universal telephone cable is connected as follows:

- The RJ11 connector on one end is connected to a router.
- The RJ11 connector on the other end is connected to an analog telephone or fax machine

Ordering Information

Table 8-19 provides the universal telephone cable ordering information.

Table 8-19 Universal telephone cable ordering information

Part Number	Description	Remarks
04026507	Single Cable,Phone Connection Line,2.125m,MP6-II, 28UL20251,2CW,MP6-II,W4773	Optional

8.7 E1/T1 Cable

8.7.1 75-Ohm DB9-to-BNC Cable (Dedicated for E1)

Description

A 75-ohm DB9-to-BNC cable is applicable to the card models listed in **Table 8-20**.

11 3			
Cable	Card Model	Working Mode	Network Device Interface Type
75-ohm DB9- to-BNC cable	• 1E1/T1-M • 2E1/T1-M	E1/CE1/PRI	BNC
	• 2E1/T1-F • 1E1/T1-F	E1-F	BNC
	1VE1	VE1	BNC

Table 8-20 Card models supporting a 75-ohm DB9-to-BNC cable

Structure and Pin Assignments

Figure 8-12 shows the structure of a 75-ohm DB9-to-BNC cable.

Figure 8-12 Structure of a 75-ohm DB9-to-BNC cable

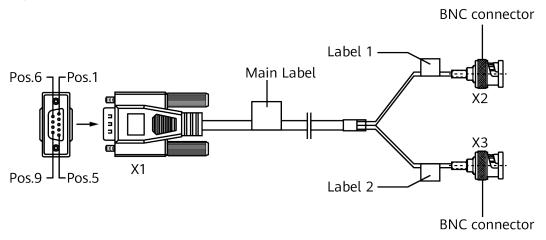


Table 8-21 shows the pin assignments of a 75-ohm DB9-to-BNC cable.

Table 8-21 Pin assignments of a 75-ohm DB9-to-BNC cable

DI	39		BNC	
Pin	Signal	Label	Pin	Signal
1	Rx +	R	Core wire	Rx
2	Rx -		Insulated wire	GND
6	Tx +	Т	Core wire	Тх
7	Tx -		Insulated wire	GND

Ⅲ NOTE

- Tx stands for transmission, and Rx stands for receiving.
- The R and T tags on BNC coaxial cables indicate the signal directions on a router. The R and T BNC coaxial cables must be connected to the Tx and Rx interfaces on the remote device.

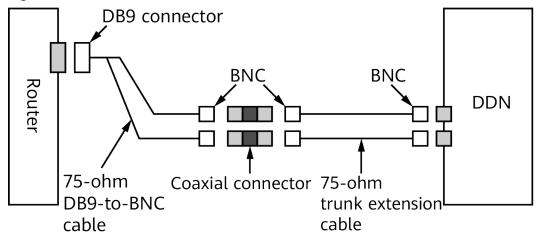
Trunk Extension Cable

Ⅲ NOTE

A 75-ohm DB9-to-BNC cable is 3 m long by default. If the default length is not enough for cable connection, you can use a 75-ohm trunk extension cable as an extension cable.

When using a 75-ohm trunk extension cable to prolong a 75-ohm DB9-to-BNC cable, connect one BNC connector of the trunk cable to a coaxial connector and the other BNC connector to the remote device, as shown in **Figure 8-13**.

Figure 8-13 Connection of a 75-ohm trunk extension cable



Connection

A 75-ohm DB9-to-BNC cable is connected as follows:

- The DB9 connector is connected to a router.
- The BNC connectors at the other end are connected to a network device.

Ordering Information

□ NOTE

If 75-ohm DB9-to-BNC cables need to be prolonged, configure two RF coaxial connectors and two 75-ohm trunk extension cables for each 75-ohm DB9-to-BNC cable.

Table 8-22 provides the 75-ohm DB9-to-BNC cable ordering information.

Table 8-22 75-ohm DB9-to-BNC cable ordering information

Part Number	Description	Remarks
04120275	Trunk Cable, 3m, 75ohm, 1E1, 2.2mm, D9M, SYFVZP75-1.2/0.25*4(S), 2*BNC75SM-V, For AR	Optional
04024299	Trunk Extension Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

8.7.2 120-Ohm DB9-to-RJ45 Cable (Dedicated for E1)

Description

A 120-ohm DB9-to-RJ45 cable is applicable to the card models listed in **Table 8-23**.

Table 8-23 Card models supporting a 120-ohm DB9-to-RJ45 cable

Cable	Card Model	Working Mode	Network Device Interface Type
120-ohm DB9- to-RJ45 cable	1E1/T1-M2E1/T1-M	E1/CE1/PRI	RJ45
	• 2E1/T1-F • 1E1/T1-F	E1-F	RJ45
	1VE1	VE1	RJ45

Structure and Pin Assignments

Figure 8-14 shows the structure of a 120-ohm DB9-to-RJ45 cable.

D-type connector
(9-pin, male)

Network port connector
(8-pin, RJ-45)

Pos.9

Pos.9

Network port connector
(8-pin, RJ-45)

X1

Figure 8-14 Structure of a 120-ohm DB9-to-RJ45 cable

Table 8-24 shows the pin assignments of a 120-ohm DB9-to-RJ45 cable.

Table 8-24 Pin assignments of a 120-ohm DB9-to-RJ45 cable

DB9		RJ45	
Pin	Signal	Pin	Signal
1	Rx +	4	Rx +
2	Rx -	5	Rx -
6	Tx +	1	Tx +
7	Tx -	2	Tx -

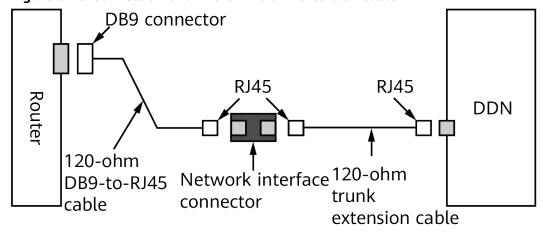
Trunk Extension Cable

□ NOTE

A 120-ohm DB9-to-RJ45 cable is 3 m long by default. If the default length is not enough for cable connection, you can use a 120-ohm trunk extension cable as an extension cable.

When using a 120-ohm trunk extension cable to prolong a 120-ohm DB9-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface connector and the other RJ45 connector to the remote device, as shown in **Figure 8-15**.

Figure 8-15 Connection of a 120-ohm trunk extension cable



Connection

A 120-ohm DB9-to-RJ45 cable is connected as follows:

- The DB9 connector is connected to a router.
- The RJ45 connector is connected to a network device.

Ordering Information

■ NOTE

If 120-ohm DB9-to-RJ45 cables need to be prolonged, configure one network interface connector and one 120-ohm trunk extension cable for each 120-ohm DB9-to-RJ45 cable.

Table 8-25 provides the 120-ohm DB9-to-RJ45 cable ordering information.

Table 8-25 120-ohm DB9-to-RJ45 cable ordering information

Part Number	Description	Remarks
04120276	Trunk Cable, 3m, 120ohm, 1E1, D9M, 120CC2P0.4P430U(S), MP8-II, For AR	Optional
04120278	Trunk Extension Cable, 15m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC2P0.4P430U(S), MP8-II.	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

8.7.3 100-Ohm DB9-to-RJ45 Cable (Dedicated for T1)

Description

A 100-ohm DB9-to-RJ45 cable is applicable to the card models listed in **Table 8-26**.

Table 8-26 Card models supporting a 100-ohm DB9-to-RJ45 cable

Cable	Card Model	Working Mode	Network Device Interface Type
100-ohm DB9- to-RJ45 cable	1E1/T1-M2E1/T1-M2E1/T1-F1E1/T1-F	T1	RJ45

Structure and Pin Assignments

Figure 8-16 shows the structure of a 100-ohm DB9-to-RJ45 cable.

Figure 8-16 Structure of a 100-ohm DB9-to-RJ45 cable

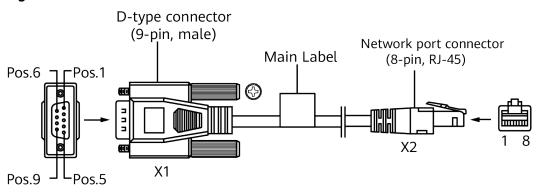


Table 8-27 shows the pin assignments of a 100-ohm DB9-to-RJ45 cable.

Table 8-27 Pin assignments of a 100-ohm DB9-to-RJ45 cable

DB9		RJ45	
Pin	Signal	Pin	Signal
1	Rx +	4	Rx +
2	Rx -	5	Rx -
6	Tx +	1	Tx +
7	Tx -	2	Tx -

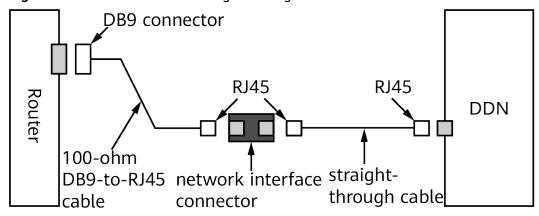
Straight-Through Cable

■ NOTE

A 100-ohm DB9-to-RJ45 cable is 3 m long by default. If the default length is not enough for cable connection, you can use a straight-through cable as an extension cable.

When using a straight-through cable to prolong a 100-ohm DB9-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface connector and the other RJ45 connector to the remote device, as shown in **Figure 8-17**.

Figure 8-17 Connection of a straight-through cable



Connection

A 100-ohm DB9-to-RJ45 cable is connected as follows:

- The DB9 connector is connected to a router.
- The RJ45 connector is connected to a network device.

Ordering Information

□ NOTE

If 100-ohm DB9-to-RJ45 cables need to be prolonged, configure one network interface connector and one straight-through cable for each 100-ohm DB9-to-RJ45 cable.

Table 8-28 provides the 100-ohm DB9-to-RJ45 cable ordering information.

Table 8-28 100-ohm DB9-to-RJ45 cable ordering information

Part Number	Description	Remarks
04120277	Trunk Cable, 3m, 100ohm, 1T1, 0.53mm, D9M, CC4P0.5P430U(S), MP8-IV, LSZH	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded, Conversion Socket, NO keyed	Optional

8.7.4 75-Ohm RJ45-to-BNC Cable (Dedicated for E1)

Description

A 75-ohm RJ45-to-BNC cable is applicable to the card models listed in Table 8-29.

Table 8-29 Card models supporting a 75-ohm RJ45-to-BNC cable

Cable	Card/Router Model	Working Mode	Network Device Interface Type
75-ohm RJ45- to-BNC cable	• 4E1/T1-M • 8E1/T1-M	E1/CE1/PRI	BNC
	4E1/T1-F8E1/T1-F	E1-F	BNC
	4E1-IMA	ATM	BNC

Structure and Pin Assignments

Figure 8-18 shows the structure of a 75-ohm RJ45-to-BNC cable.

Figure 8-18 Structure of a 75-ohm RJ45-to-BNC cable

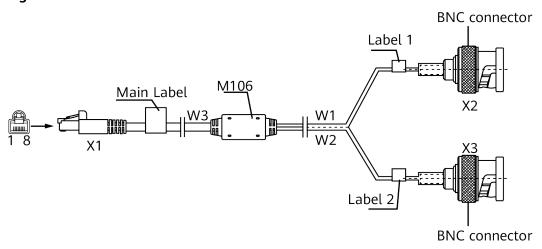


Table 8-30 shows the pin assignments of a 75-ohm RJ45-to-BNC cable.

Table 8-30 Pin assignments of a 75-ohm RJ45-to-BNC cable

RJ45		BNC		
Pin	Signal	Label	Pin	Signal
1	Rx -	R	Core wire	Rx
2	Rx +		Insulated wire	GND
4	Tx -	Т	Core wire	Тх

RJ45		BNC		
Pin	Signal	Label Pin Signal		Signal
5	Tx +		Insulated wire	GND

MOTE

- Tx stands for transmission, and Rx stands for receiving.
- The R and T tags on BNC coaxial cables indicate the signal directions on a router. The R
 and T BNC coaxial cables must be connected to the Tx and Rx interfaces on the remote
 device.

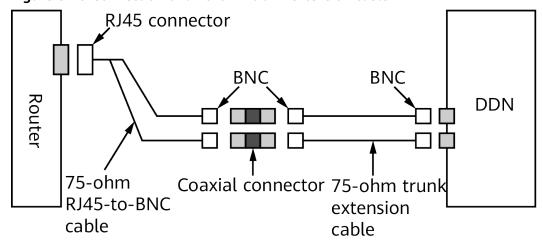
Trunk Extension Cable

Ⅲ NOTE

If the default length is not enough for cable connection, you can use a 75-ohm trunk extension cable as an extension cable.

When using a 75-ohm trunk extension cable to prolong a 75-ohm RJ45-to-BNC cable, connect one BNC connector of the trunk cable to a coaxial connector and the other BNC connector to the remote device, as shown in **Figure 8-19**.

Figure 8-19 Connection of a 75-ohm trunk extension cable



Connection

A 75-ohm RJ45-to-BNC cable is connected as follows:

- The RJ45 connector is connected to a router.
- The BNC connectors at the other end are connected to a network device.

Ordering Information

If 75-ohm RJ45-to-BNC cables need to be prolonged, configure two RF coaxial connectors and two 75-ohm trunk extension cables for each 75-ohm RJ45-to-BNC cable.

Table 8-31 provides the 75-ohm RJ45-to-BNC cable ordering information.

Table 8-31 75-ohm RJ45-to-BNC cable ordering information

Part Number	Description	Remarks
04120387	Trunk Cable,3m,75ohm, 1*E1,2.2mm,2*BNC75SM-V, (2*SYFYZ75-1.2/0.26PWG 1U +120CC2P0.4P430U(S)-I),MP8-II,LSZH,120ohm to 75ohm cable	Optional
04120387-001	Trunk Cable,50m,75ohm, 1*E1,2.2mm,2*BNC75SM-V, (2*SYFYZ75-1.2/0.26PWG 1U +120CC2P0.4P430U(S)-I),MP8-II,LSZH,120ohm to 75ohm cable	Optional
04120387-002	Trunk Cable,100m, 75ohm,1*E1,2.2mm, 2*BNC75SM-V, (2*SYFYZ75-1.2/0.26PWG 1U +120CC2P0.4P430U(S)- I),MP8-II,LSZH,120ohm to 75ohm cable	Optional
04024299	Trunk Extension Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

8.7.5 120-Ohm RJ45-to-RJ45 Cable (Dedicated for E1)

Description

A 120-ohm RJ45-to-RJ45 cable is applicable to the card models listed in **Table 8-32**.

11 3			
Cable	Card Model	Working Mode	Network Device Interface Type
120-ohm RJ45- to-RJ45 cable	4E1/T1-M8E1/T1-M	E1/CE1/PRI	RJ45
	• 4E1/T1-F • 8E1/T1-F	E1-F	RJ45
	4E1-IMA	ATM	RJ45

Table 8-32 Card models supporting a 120-ohm RJ45-to-RJ45 cable

Structure and Pin Assignments

Figure 8-20 shows the structure of a 120-ohm RJ45-to-RJ45 cable.

Figure 8-20 Structure of a 120-ohm RJ45-to-RJ45 cable

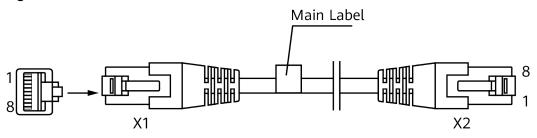


Table 8-33 shows the pin assignments of a 120-ohm RJ45-to-RJ45 cable.

Table 8-33 Pin assignments of a 120-ohm RJ45-to-RJ45 cable

X	1	х	2
Pin	Signal	Pin	Signal
1	Rx -	4	Rx -
2	Rx +	5	Rx +
4	Tx -	1	Tx -
5	Tx +	2	Tx +

Trunk Extension Cable

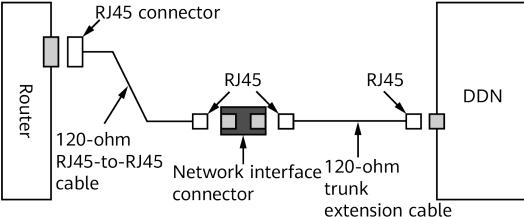
□ NOTE

If the default length is not enough for cable connection, you can use a 120-ohm trunk extension cable as an extension cable.

When using a 120-ohm trunk extension cable to prolong a 120-ohm RJ45-to-RJ45 cable, connect one RJ45 connector of the trunk cable to a network interface

connector and the other RJ45 connector to the remote device, as shown in **Figure 8-21**.

Figure 8-21 Connection of a 120-ohm trunk extension cable



Connection

A 120-ohm RJ45-to-RJ45 cable is connected as follows:

- One RJ45 connector is connected to a router.
- The other RJ45 connector is connected to a network device.

Ordering Information

□ NOTE

If 120-ohm RJ45-to-RJ45 cables need to be prolonged, configure one network interface connector and one 120-ohm trunk extension cable for each 120-ohm RJ45-to-RJ45 cable.

Table 8-34 provides the 120-ohm RJ45-to-RJ45 cable ordering information.

Table 8-34 120-ohm RJ45-to-RJ45 cable ordering information

Part Number	Description	Remarks
04040497	Trunk Cable, 3m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC4P0.4P430U(S), MP8-II, Expert 2.0.	Optional
04040497-003	Trunk Cable, 50m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC4P0.4P430U(S), MP8-II, Expert 2.0.	Optional

Part Number	Description	Remarks
04040497-004	Trunk Cable, 100m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC4P0.4P430U(S), MP8-II, Expert 2.0.	Optional
04120278	Trunk Extension Cable, 15m, 120ohm, 1*E1,0.4mm, MP8-II, 120CC2P0.4P430U(S), MP8-II.	Optional
14080099	Network Interface Connector, 8PIN, 8Bit, Unshielded	Optional

8.8 E3/T3 Cable

8.8.1 E3/T3 Cable

Description

An E3/T3 cable connects a 1E3/CE3/T3/CT3 interface card to a remote device. The cable connects to the interface card through the SMB75 connector and connects to the remote device through the BNC connector.

Each 1E3/CE3/T3/CT3 interface card needs to be connected to a remote device using two E3/T3 cables.

Structure and Pin Assignments

Figure 8-22 shows the structure of an E3/T3 cable.

Figure 8-22 Structure of an E3/T3 cable

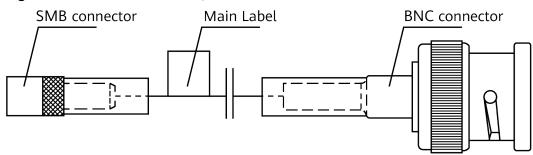


Table 8-35 lists the pin assignments of an E3/T3 cable.

Table 8-35 Pin assignments of an E3/T3 cable

SMB75		BNC	
Pin	Signal	Pin	Signal
Core wire	Signal wire	Core wire	Signal wire
Insulated wire	GND	Insulated wire	GND

- Connect the SMB75 connector of one E3/T3 cable to the Tx interface on the 1E3/CE3/T3/CT3 interface card, and the BNC connector to the Rx interface on the remote device.
- Connect the SMB75 connector of one E3/T3 cable to the Rx interface on the 1E3/CE3/T3/CT3 interface card, and the BNC connector to the Tx interface on the remote device.

Ordering Information

If the two devices to be connected are far from each other, you can use trunk cables to extend the E3/T3 cables. In this case, you also need to use a coaxial connector for each E3/T3 cable.

Table 8-36 provides the E3/T3 cable ordering information.

Table 8-36 E3/T3 cable ordering information

Part Number	Description	Remarks
04042685	Single Cable, SMB75SF-IV, SYV75-2/0.34(S), BNC75SM-III, 10m, 75 ohm Clock Cable, MD5500	Optional
04024299	Trunk Extension Cable, 15.00m, 75ohm, 2.2mm, BNC75AM-II, SYFVZ75-1.2/0.25, BNC75AM-II, C&C08A, DL3445	Optional
14040202	Coaxial Connector, BNC, 75ohm, Straight/Socket, Dual, Female, Connected With E1 Cable BNC Male Plug	Optional

8.9 SA Cable

8.9.1 V.24 DTE Cable

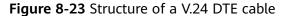
Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-23 shows the structure of a V.24 DTE cable.



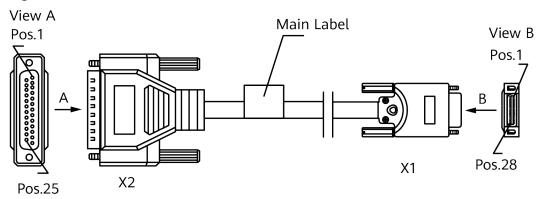


Table 8-37 lists the pin assignments of a V.24 DTE cable.

Table 8-37 Pin assignments of a V.24 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
1	TXD	→	2
19	RXD	←	3
13	RTS	→	4
23	CTS	←	5
27	DTR	→	20
25	DSR	←	6
11	DCD	←	8
22	LL	→	18
3	TXC	←	15
15	TXCE	→	24
17	RXC	←	17

X1 (DB28)	Signal	Direction	X2 (DB25)
21	GND	← →	1
6	GND	← →	7
10	MODE_DCE		
7	MODE0		

A V.24 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-38 provides the V.24 DTE cable ordering information.

Table 8-38 V.24 DTE cable ordering information

Part Number	Description	Remarks
04043589	Single Cable, V.24 Serial Port Cable, 3m, D25M, CC(5P+8C)0.32P296U(S), D28M, DTE	Optional

8.9.2 V.24 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-24 shows the structure of a V.24 DCE cable.

Figure 8-24 Structure of a V.24 DCE cable

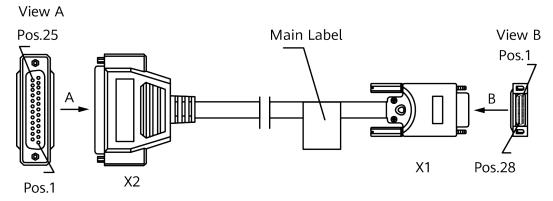


Table 8-39 lists the pin assignments of a V.24 DCE cable.

Table 8-39 Pin assignments of a V.24 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
19	RXD	←	2
1	TXD	→	3
23	CTS	←	4
13	RTS	→	5
25	DSR	←	20
27	DTR	→	6
11	DCD	→	8
22	LL	←	18
3	TXC	→	15
17	RXC	←	24
15	TXCE	→	17
21	GND	← →	1
6	GND	← →	7
7	MODE0		

A V.24 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:

- If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
- If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-40 provides the V.24 DCE cable ordering information.

Table 8-40 V.24 DCE cable ordering information

Part Number	Description	Remarks
04043590	Single Cable, V.24 Serial Port Cable, 3m, D25F, CC(5P+8C)0.32P296U(S), D28M, DCE	Optional

8.9.3 V.35 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-25 shows the structure of a V.35 DTE cable.

Figure 8-25 Structure of a V.35 DTE cable

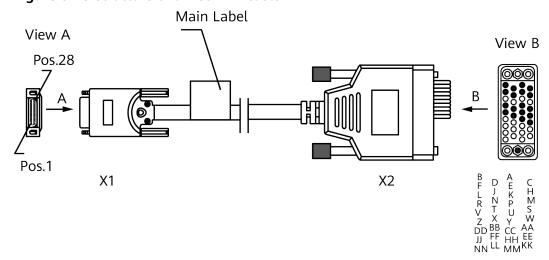


Table 8-41 lists the pin assignments of a V.35 DTE cable.

Table 8-41 Pin assignments of a V.35 DTE cable

X1 (DB28)	Signal	Direction	X2
1	TXD+	→	Р
2	TXD-	→	S
19	RXD+	←	R
20	RXD-	←	Т
17	RXC+	←	V
18	RXC-	←	X
3	TXC+	←	Υ
4	TXC-	←	AA
15	TXCE+	→	U
16	TXCE-	→	W
11	DCD+	←	F
22	LL	→	J
13	RTS+	→	С
23	CTS+	←	D
27	DTR+	\rightarrow	н
25	DSR+	←	Е
21	GND	← →	В
6	GND		А
10	MODE_DCE		
7	MODE0		
8	MODE1		

A V.35 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).

- If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-42 provides the V.35 DTE cable ordering information.

Table 8-42 V.35 DTE cable ordering information

Part Number	Description	Remarks
04043591	Single Cable, V.35 Serial Port Cable, 3m, D28M, CC(5P+8C)0.32P296U(S), D34M+D34PS, DTE	Optional

8.9.4 V.35 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-26 shows the structure of a V.35 DCE cable.

Figure 8-26 Structure of a V.35 DCE cable

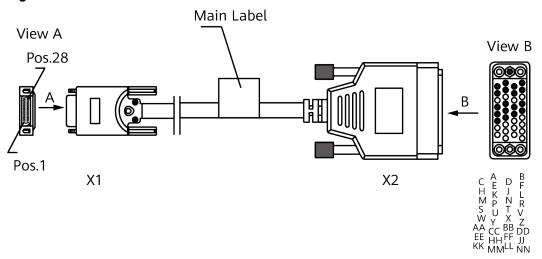


Table 8-43 lists the pin assignments of a V.35 DCE cable.

Table 8-43 Pin assignments of a V.35 DCE cable

X1 (DB28)	Signal	Direction	X2
19	RXD+	←	Р
20	RXD-	←	S
1	TXD+	→	R
2	TXD-	→	Т
15	TXCE+	→	V
16	TXCE-	\rightarrow	X
3	TXC+	\rightarrow	Υ
4	TXC-	→	AA
17	RXC+	←	U
18	RXC-	←	W
11	DCD+	\rightarrow	F
22	LL	←	J
23	CTS+	←	С
13	RTS+	→	D
25	DSR+	←	Н
27	DTR+	→	E
21	GND	← →	В
6	GND	← →	А
7	MODE0		
8	MODE1		

A V.35 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-44 provides the V.35 DCE cable ordering information.

Table 8-44 V.35 DCE cable ordering information

Part Number	Description	Remarks
04043592	Single Cable, V.35 Serial Port Cable, 3m, D28M, CC(5P+8C)0.32P296U(S), D34F+D34PS, DCE	Optional

8.9.5 X.21 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-27 shows the structure of an X.21 DTE cable.

Figure 8-27 Structure of an X.21 DTE cable

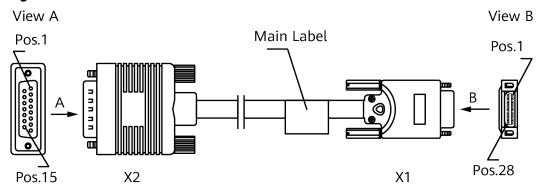


Table 8-45 lists the pin assignments of an X.21 DTE cable.

Table 8-45 Pin assignments of an X.21 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB15)
13	RTS+	→	3

X1 (DB28)	Signal	Direction	X2 (DB15)
14	RTS-	→	10
23	CTS+	←	5
24	CTS-	←	12
19	RXD+	←	4
20	RXD-	←	11
1	TXD+	→	2
2	TXD-	→	9
17	RXC+	←	6
18	RXC-	←	13
21	GND	← →	1
6	GND	← →	8
10	MODE_DCE		
9	MODE2		

An X.21 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB15) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-46 provides the X.21 DTE cable ordering information.

Table 8-46 X.21 DTE cable ordering information

Part Number	Description	Remarks
04043593	Single Cable, X.21 Serial Port Cable, 3m, D15M, CC(5P+8C)0.32P296U(S), D28M, DTE	Optional

8.9.6 X.21 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-28 shows the structure of an X.21 DCE cable.

Figure 8-28 Structure of an X.21 DCE cable

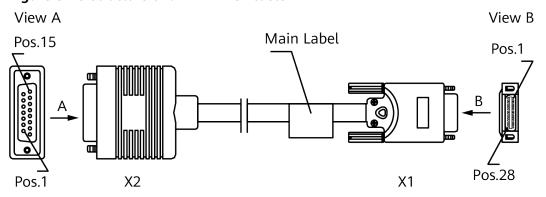


Table 8-47 lists the pin assignments of an X.21 DCE cable.

Table 8-47 Pin assignments of an X.21 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB15)
13	RTS+	\rightarrow	5
14	RTS-	\rightarrow	12
23	CTS+	←	3
24	CTS-	←	10
19	RXD+	←	2
20	RXD-	←	9
1	TXD+	→	4
2	TXD-	→	11
15	RXC+	→	6

X1 (DB28)	Signal	Direction	X2 (DB15)
16	RXC-	\rightarrow	13
21	GND	\rightarrow	1
6	GND	← →	8
9	MODE_DCE		

An X.21 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB15) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-48 provides the X.21 DCE cable ordering information.

Table 8-48 X.21 DCE cable ordering information

Part Number	Description	Remarks
04043594	Single Cable, X.21 Serial Port Cable, 3m, D15F, CC(5P+8C)0.32P296U(S), D28M, DCE	Optional

8.9.7 RS449 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-29 shows the structure of an RS449 DTE cable.

Figure 8-29 Structure of an RS449 DTE cable

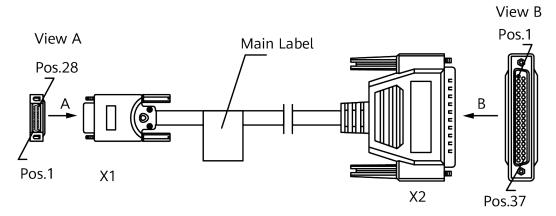


Table 8-49 lists the pin assignments of an RS449 DTE cable.

Table 8-49 Pin assignments of an RS449 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB37)
27	DTR+	→	12
28	DTR-	→	30
25	DSR+	←	11
26	DSR-	←	29
13	RTS+	→	7
14	RTS-	→	25
23	CTS+	←	9
24	CTS-	←	27
11	DCD+	←	13
12	DCD-	←	31
19	RXD+	←	6
20	RXD-	←	24
1	TXD+	→	4
2	TXD-	→	22
15	TXCE+	→	17
16	TXCE-	→	35
17	RXC+	←	8
18	RXC-	←	26
3	TXC+	←	5

X1 (DB28)	Signal	Direction	X2 (DB37)
4	TXC-	←	23
22	LL	←	10
21	GND	← →	1
6	GND	← →	19
8	MODE_DCE		
10	MODE1		

An RS449 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB37) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-50 provides the RS449 DTE cable ordering information.

Table 8-50 RS449 DTE cable ordering information

Part Number	Description	Remarks
04043595	Single Cable, RS449 Serial Port Cable, 3m, D28M, 100CC13P0.32P296U(S), D37M-I, DTE	Optional

8.9.8 RS449 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-30 shows the structure of an RS449 DCE cable.

Figure 8-30 Structure of an RS449 DCE cable

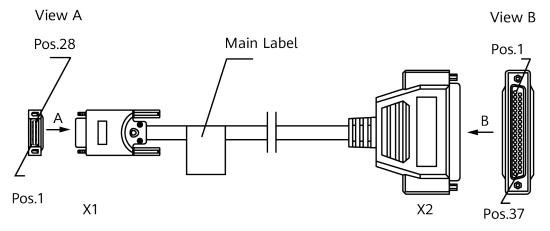


Table 8-51 lists the pin assignments of an RS449 DCE cable.

Table 8-51 Pin assignments of an RS449 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB37)
27	DTR+	→	11
28	DTR-	→	29
25	DSR+	←	12
26	DSR-	←	30
13	RTS+	→	9
14	RTS-	→	27
23	CTS+	←	7
24	CTS-	←	25
11	DCD+	→	13
12	DCD-	→	31
19	RXD+	←	4
20	RXD-	←	22
1	TXD+	→	6
2	TXD-	→	24
15	TXCE+	→	8
16	TXCE-	→	26

X1 (DB28)	Signal	Direction	X2 (DB37)
17	RXC+	←	17
18	RXC-	←	35
3	TXC+	→	5
4	TXC-	→	23
22	LL	→	10
21	GND	← →	1
6	GND	← →	19
8	MODE_DCE		

An RS449 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB37) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-52 provides the RS449 DCE cable ordering information.

Table 8-52 RS449 DCE cable ordering information

Part Number	Description	Remarks
04043596	Single Cable, RS449 Serial Port Cable, 3m, D28M, 100CC13P0.32P296U(S), D37F-I, DCE	Optional

8.9.9 RS530 DTE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-31 shows the structure of an RS530 DTE cable.

Figure 8-31 Structure of an RS530 DTE cable

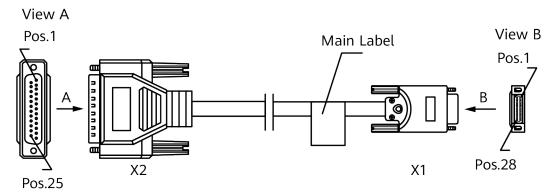


Table 8-53 lists the pin assignments of an RS530 DTE cable.

Table 8-53 Pin assignments of an RS530 DTE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
27	DTR+	→	20
28	DTR-	→	23
25	DSR+	←	6
26	DSR-	←	22
13	RTS+	→	4
14	RTS-	→	19
23	CTS+	←	5
24	CTS-	←	13
11	DCD+	←	8
12	DCD-	←	10
19	RXD+	←	3

X1 (DB28)	Signal	Direction	X2 (DB25)
20	RXD-	←	16
1	TXD+	\rightarrow	2
2	TXD-	\rightarrow	14
15	TXCE+	→	24
16	TXCE-	→	11
17	RXC+	←	17
18	RXC-	←	9
3	TXC+	←	15
4	TXC-	←	12
22	LL	→	18
21	GND	← →	1
6	GND	← →	7
10	MODE_DCE		
7	MODE0		
9	MODE2		

An RS530 DTE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-54 provides the RS530 DTE cable ordering information.

Table 8-54 RS530 DTE cable ordering information

Part Number	Description	Remarks
04043597	Single Cable, RS530 Serial Port Cable, 3m, D25M, 100CC13P0.32P296U(S), D28M, DTE	Optional

8.9.10 RS530 DCE Cable

Description

NOTICE

Before selecting SA cables for a router, obtain the remote device type (including the synchronous/asynchronous mode and DTE/DCE role), and the signal standard, baud rate, and clock required for the remote device.

Structure and Pin Assignments

Figure 8-32 shows the structure of an RS530 DCE cable.

Figure 8-32 Structure of an RS530 DCE cable

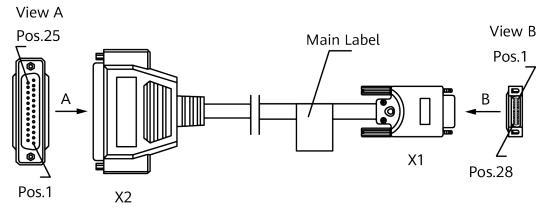


Table 8-55 lists the pin assignments of an RS530 DCE cable.

Table 8-55 Pin assignments of an RS530 DCE cable

X1 (DB28)	Signal	Direction	X2 (DB25)
27	DTR+	\rightarrow	6
28	DTR-	\rightarrow	22
25	DSR+	←	20

X1 (DB28)	Signal	Direction	X2 (DB25)
26	DSR-	←	23
13	RTS+	→	5
14	RTS-	→	13
23	CTS+	←	4
24	CTS-	←	19
11	DCD+	→	8
12	DCD-	→	10
19	RXD+	←	2
20	RXD-	←	14
1	TXD+	→	3
2	TXD-	→	16
15	TXCE+	→	17
16	TXCE-	→	9
17	RXC+	←	24
18	RXC-	←	11
3	TXC+	→	15
4	TXC-	→	12
22	LL	←	18
21	GND	← →	1
6	GND	— →	7
7	MODE0		
9	MODE2		

An RS530 DCE cable is connected as follows:

- The X1 connector (DB28) is connected to the SA interface card of a router.
- Connection of the X2 connector (DB25) depends on the type of the WAN link:
 - If the WAN link is a digital data network (DDN) line, connect the X2 connector to an interface of a channel service unit (CSU) or data service unit (DSU).
 - If the WAN link is a dial-up line, connect the X2 connector to the serial interface on a modem.

Ordering Information

Table 8-56 provides the RS530 DCE cable ordering information.

Table 8-56 RS530 DCE cable ordering information

Part Number	Description	Remarks
04043770	Single Cable, RS530 Serial Port Cable, 3m, D25F, 100CC13P0.32P296U(S), D28M, DCE	Optional

8.10 8AS Cable

8.10.1 8AS Cable

Description

An 8AS interface card can be used in four scenarios, where different cables are required. **Table 8-57** describes the scenarios and applicable cables.

Table 8-57 Types and application scenarios of 8AS cables

Cable Type	Application Scenario	Description
Straight-through cable	Financial dumb terminal	The pin assignments at both ends of the cable are the same.
Adapter cable plus straight-through cable	Telecommunications terminal	An adapter cable has an RJ45 male plug at one end and an RJ45 female socket at the other end. The cable converts the wire sequences on a dumb terminal to the standard wire sequences for telecommunications devices. The RJ45 male socket of the adapter cable is
		connected to a straight- through cable, which is connected to a terminal.

Cable Type	Application Scenario	Description
Adapter cable plus asynchronous serial cable	Common network device	An asynchronous serial cable has an RJ45 connector at one end and a DB25/DB9 connector at the other end.
Self-made cable	Serial port server	The wire sequences of twisted pairs in the two RJ45 connectors are determined by the type of signals transmitted from the connected terminal.

Straight-Through Cable: Connecting to a Financial Dumb Terminal

Figure 8-33 shows the structure of a straight-through cable.

Figure 8-33 Structure of a straight-through cable

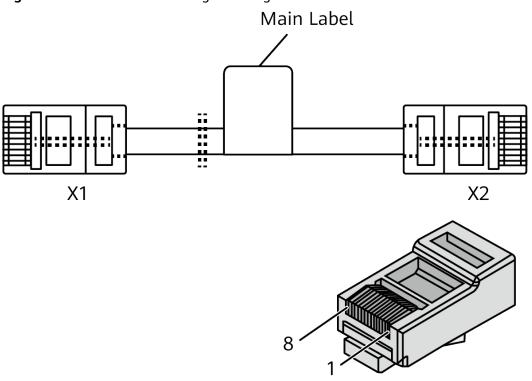


Table 8-58 lists the pin assignments of a straight-through cable.

Table 8-58 Pin assignments of a straight-through cable

X1 (RJ45)	Signal	Direction	X2 (RJ45)
1	DCD	←	1

X1 (RJ45)	Signal	Direction	X2 (RJ45)
2	DTR	→	2
3	DSR	←	3
4	GND	-	4
5	RXD	←	5
6	TXD	→	6
7	CTS	←	7
8	RTS	→	8

Adapter Cable plus Straight-Through Cable: Connecting to a Telecommunications Terminal

Figure 8-34 shows the structure of an adapter cable.

Figure 8-34 Structure of an adapter cable

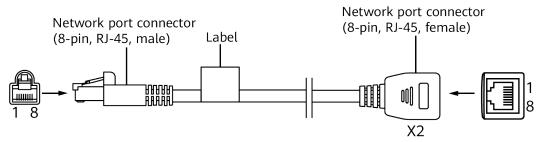


Table 8-59 lists the pin assignments of an adapter cable.

Table 8-59 Pin assignments of an adapter cable

X1 (Mal e)	Signal	Direc tion	X2 (Female)
1	DCD	←	Blue
2	DTR	→	Orange
3	DSR	←	White and brown
4	GND	-	White and blue
5	RXD	←	Green
6	TXD	→	White and green
7	CTS	←	Brown

X1 (Mal e)	Signal	Direc tion	X2 (Female)
8	RTS	→	White and orange

Figure 8-35 shows the structure of a straight-through cable.

Figure 8-35 Structure of a straight-through cable

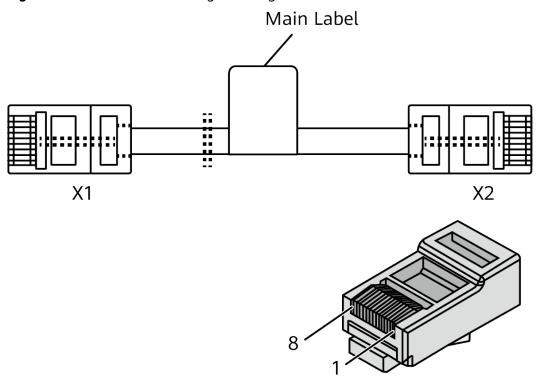


Table 8-60 lists the pin assignments of a straight-through cable.

Table 8-60 Pin assignments of a straight-through cable

X1 (RJ45)	Signal	Direction	X2 (RJ45)
1	DCD	←	1
2	DTR	→	2
3	DSR	←	3
4	GND	-	4
5	RXD	←	5
6	TXD	→	6
7	СТЅ	←	7

X1 (RJ45)	Signal	Direction	X2 (RJ45)
8	RTS	→	8

Adapter Cable plus Asynchronous Serial Cable: Connecting to a Common Network Device

Figure 8-36 shows the structure of an adapter cable.

Figure 8-36 Structure of an adapter cable

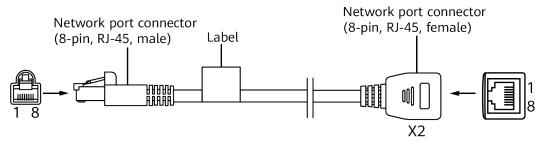


Table 8-61 lists the pin assignments of an adapter cable.

Table 8-61 Pin assignments of an adapter cable

X1 (Mal e)	Signal	Direc tion	X2 (Female)
1	DCD	←	Blue
2	DTR	→	Orange
3	DSR	←	White and brown
4	GND	-	White and blue
5	RXD	←	Green
6	TXD	→	White and green
7	CTS	←	Brown
8	RTS	→	White and orange

Figure 8-37 shows the structure of an asynchronous serial cable.

D-type connector (25-pin, male)

Pos.14 Pos.1

Pos.25 Pos.13 X1

Pos.9 Pos.5

D-type connector (9-pin, male)

Figure 8-37 Structure of an asynchronous serial cable

Table 8-62 lists the pin assignments of an asynchronous serial cable.

Table 8-62 Pin assignments of an asynchronous serial cable

X2 (RJ 45)	Signal	Direction	X1 (DB 25)	X3 (DB 9)
1	RTS	\rightarrow	4	7
2	DTR	→	20	4
3	TXD	→	2	3
4	DCD	←	8	1
5	GND	-	7	5
6	RXD	←	3	2
7	DSR	←	6	6
8	CTS	←	5	8

Self-made Cable: Connecting to a Serial Port Server

Figure 8-38 shows the structure of a self-made cable.

Main Label

X1

X2

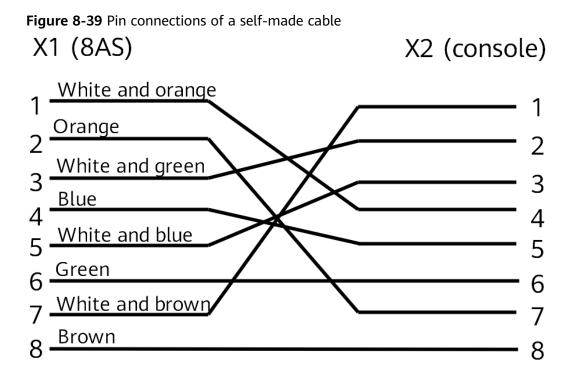
Figure 8-38 Structure of a self-made cable

Table 8-63 lists the pin assignments of a self-made cable.

Table 8-63 Pin assignments of a self-made cable

X1 (8AS)	Signal	Direc tion	X2 (console)
1	DCD	←	4
2	DTR	→	7
3	DSR	←	2
4	GND	-	5
5	RXD	←	3
6	TXD	→	6
7	CTS	←	1
8	RTS	→	8

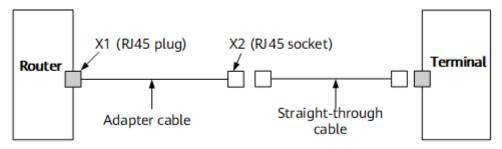
Figure 8-39 shows the pin connections of a self-made cable.



Connection

- Financial dumb terminal connection: Connect one end of a straight-through cable to the 8AS interface card and the other end of the cable to the dumb terminal.
- Telecommunications terminal connection: Connect the X1 end (RJ45 male plug) of an adapter cable to the 8AS interface card and the other end to a straight-through cable. Then connect the other end of the straight-through cable to the telecommunications terminal. See Figure 8-40.

Figure 8-40 Adapter cable and straight-through cable connection in a telecommunications scenario



- Common network device connection: Connect the X1 end (RJ45 male plug) of an adapter cable to the 8AS interface card and the other end to a RJ45 connector of an asynchronous serial cable. Then connect the DB9 or DB25 connector of the asynchronous serial cable to the telecommunications terminal.
- Serial port server connection: Connect the X1 end (RJ45) of a self-made cable to the 8AS interface card, and the X2 end (RJ45) to the serial port server.

Ordering Information

Table 8-64 provides the 8AS cable ordering information.

Table 8-64 8AS cable ordering information

Cable Type	Part Num ber	Description	Rema rks
Straight-through cable	0407 0006	Signal Cable, Shielded Straight Through Cable, 3m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optio nal
Adapter cable	0404 2329	Single Cable, MP8(S)-III, CC8C0.32P296U(S), MP8-II, 0.12m, Transit Cable	Optio nal
Asynchronous serial cable	0402 1299	Single Cable, Auxiliary Port Cable, 3m, D25M, 2*CC4P0.32P296U(S), DB9M +MP8-VI, QuidwayR2501, W2215	Optio nal

8.11 G.SHDSL Cable

8.11.1 G.SHDSL Cable

Description

A G.SHDSL cable connects a G.SHDSL interface to a DSLAM directly to provide broadband network access service for users. One G.SHDSL interface can connect to four telephone lines through a G.SHDSL cable.

Structure and Pin Assignments

Figure 8-41 shows the structure of a G.SHDSL cable.

Network port connector Main Label
(8-pin, RJ-45)

X2
Label 2

X3
Label 3

X4
Label 4

X5

Figure 8-41 Structure of a G.SHDSL cable

Table 8-65 lists the pin assignments of a G.SHDSL cable.

Table 8-65 Pin assignments of a G.SHDSL cable

X1 (RJ45)	Signal	X2/X3/X4/X5 (RJ11)
1	LINE1 A	2.3
2	LINE1 B	2.4
3	LINE2 A	3.3
6	LINE2 B	3.4
4	LINEO A	4.3
5	LINEO B	4.4
7	LINE3 A	5.3
8	LINE3 B	5.4

■ NOTE

As shown in **Table 8-65**, a G.SHDSL cable uses the standard pin assignments. It has four ports, each of which has two wires (A/B). The two wires in a port can be assigned in any sequence, but the wire pairs must be assigned in certain sequence.

Connection

A G.SHDSL cable is connected as follows:

The RJ45 connector is connected to the G.SHDSL interface of a router.

• The RJ11 connectors are connected to network devices, usually DSLAMs.

Ordering Information

Table 8-66 provides the G.SHDSL cable ordering information.

Table 8-66 G.SHDSL cable ordering information

Part Number	Description	Remarks
04070136	Signal Cable, G.SHDSL, 3m, MP8-I, CC4P0.5GY, 4*MP6	Mandatory

8.12 ISDN Cable

8.12.1 Standard ISDN S/T Cable

Description

A 1BST interface card works in terminal equipment (TE) mode and supports only data services, but not voice services. The 1BST interface card uses a standard ISDN S/T cable (straight-through cable).

Structure and Pin Assignments

Figure 8-42 shows the structure of a standard ISDN S/T cable.

Main Label

X1

X2

Figure 8-42 Structure of a standard ISDN S/T cable

Table 8-67 shows the pin assignments of a standard ISDN S/T cable.

Table 8-67 Pin assignments of a standard ISDN S/T cable

X1 (RJ45)	Signal	X2 (RJ45)
1	-	1
2	-	2
3	Tx+	3
4	Rx+	4
5	Rx-	5
6	Tx-	6
7	-	7
8	-	8

A standard ISDN S/T cable is connected as follows:

 One RJ45 connector is connected to the ISDN interface on a 1BST interface card. • The other RJ45 connector is connected to a network device.

Ordering Information

Table 8-68 provides the standard ISDN S/T cable ordering information.

Table 8-68 ISDN S/T cable ordering information

Part Number	Description	Remarks
04070050	Signal Cable, Shielded Straight Through Cable, 2.0m, MP8-II, CC4P0.5GY(S), MP8-II, FTP	Optional

8.12.2 Crossover ISDN S/T Cable

Description

A 2BST interface card works in network termination (NT) mode and supports only voice services, but not data services. The 2BST interface card uses a crossover ISDN S/T cable (adapter cable). A straight-through cable can be used as an extension cable for the crossover ISDN S/T cable.

Structure and Pin Assignments

Figure 8-43 shows the structure of a crossover ISDN S/T cable.

Figure 8-43 Structure of a crossover ISDN S/T cable

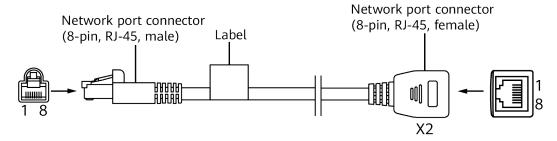


Table 8-69 shows the pin assignments of a crossover ISDN S/T cable.

Table 8-69 Pin assignments of a crossover ISDN S/T cable

X1 (TE)	Signal	X2 (NT)
1	-	1
2	-	2

X1 (TE)	Signal	X2 (NT)
3	Tx+	4
4	Rx+	3
5	Rx-	6
6	Tx-	5
7	-	7
8	-	8

In a crossover ISDN S/T cable, pins 4 and 5 are used to transmit signals, and pins 3 and 6 are used to receive signals.

Connection

A crossover ISDN S/T cable is connected as follows:

- The RJ45 male plug is connected to the ISDN interface on a 2BST interface card.
- The other RJ45 female socket is connected to a network device.

Ordering Information

Table 8-70 provides the crossover ISDN S/T cable ordering information.

Table 8-70 Crossover ISDN S/T cable ordering information

Part Number	Description	Remarks
04070137	Signal Cable, ISDN-NT, 3m, MP8-IV, CC4P0.5P430U(S), MP8(S)-III	Standard configuration

8.13 E&M Trunk Cable

8.13.1 E&M Trunk Cable

Description

An E&M trunk cable has an RJ45 connector at one end, and the other end needs to have a connector made onsite according to the device connection requirements.

Structure and Pin Assignments

Figure 8-44 shows the structure of an E&M trunk cable.

Figure 8-44 Structure of an E&M trunk cable

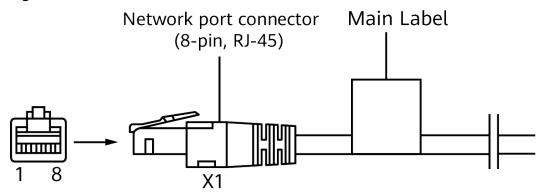


Table 8-71 lists the pin assignments of an E&M trunk cable.

Table 8-71 Pin assignments of an E&M trunk cable

X1 (RJ45)	Wire Color	Pin Assignment	Pin Description
1	White and orange	SB	Isolated signal power output
2	Orange	Е	Used by the PBX to receive control signals
3	White and green	R1	 Two-wire mode: not connected Four-wire mode: ring transmission line
4	Blue	R	 Two-wire mode: ring line Four-wire mode: ring receiving line
5	White and blue	Т	 Two-wire mode: tip line Four-wire mode: tip receiving line

X1 (RJ45)	Wire Color	Pin Assignment	Pin Description
6	Green	T1	 Two-wire mode: not connected Four-wire mode: tip transmission line
7	White and brown	М	Pin used by the PBX to send control signals. The voltage of the M line is -48 V with a deviation of ±3 V.
8	Brown	SG	Isolated signal ground

Figure 8-45 shows the E&M trunk cable connection between the local and remote devices.

Figure 8-45 E&M trunk cable connection



----E&M trunk cable----



□ NOTE

An E&M trunk cable can be a shielded or an unshielded cable.

- If a shielded network cable is used as the E&M trunk cable, the local and remote devices can be directly connected using this cable.
- If an unshielded network cable is used as the E&M trunk cable and does not need to be led outdoors, the local and remote devices can be directly connected using this cable.
- If an unshielded network cable is used as the E&M trunk cable and needs to be led outdoors, the local and remote devices must be connected using a cable management strip. For details on how to connect the devices through a cable management strip, see "(Optional) Installing a Cable Management Strip and a Protective Unit" in *Hardware Installation Guide* of the required router.

Connection

An E&M trunk cable is connected as follows:

- The RJ45 connector is connected to the E&M interface of the local router.
- The other end is connected to the remote device through a network cable or cable management strip.

8.14 Antennas

8.14.1 Wi-Fi Whip Antenna

Description

A Wi-Fi antenna is delivered with a router that provides the Wi-Fi function. It is used on a Wi-Fi antenna interface to provide Wi-Fi access.

Wi-Fi Whip Antenna

Figure 8-46 shows the appearance of a Wi-Fi whip antenna.

Figure 8-46 Wi-Fi whip antenna



Table 8-72 lists technical specifications of a Wi-Fi whip antenna.

Table 8-72 Technical specifications of a Wi-Fi whip antenna

Item	Specification
Connector type	RP-SMA-M
Frequency bands supported	2400 MHz to 2500 MHz or 5150 MHz to 5850 MHz
Maximum gain	2.15dBi/3dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Table 8-73 lists the Wi-Fi whip antenna ordering information.

Table 8-73 Wi-Fi whip antenna ordering information

Antenna Type	Part Number	Description
Wi-Fi whip antenna	27010806	Isotropic Antenna, 2400-2500/5150-5850MHz, >2.15dBi/ 3dBi, Vertical, Omni, 5W-0r-RP-SMA-J, without Bracket

8.14.2 3G Antenna

Description

3G antennas are classified into two types:

- 3G whip antenna: directly installed on a router. 3G whip antennas are recommended in desk mounting and wall mounting scenarios.
- 3G indoor remote antenna: delivered with a 3 m feeder. 3G indoor remote antennas are recommended in cabinet/rack mounting scenarios.

- 3G whip antennas are delivered with a router.
- 3G indoor remote antennas are optional and need to be purchased separately if required.

Appearance and Structure

Figure 8-47 shows the appearance of a 3G whip antenna.

Figure 8-47 3G whip antenna



Table 8-74 lists the technical specifications of a 3G whip antenna.

Table 8-74 Technical specifications of a 3G whip antenna

Item	Specification
Connector type	SMA-M

Item	Specification
Frequency bands supported	824 MHz to 960 MHz/1710 MHz to 2170 MHz
Maximum gain	1 dBi/2 dBi
Standing wave	3
Polarization	Vertical
Direction	Omnidirectional

Figure 8-48 shows the appearance of a 3G indoor remote antenna.

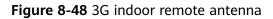




Table 8-75 lists the technical specifications of a 3G indoor remote antenna.

Table 8-75 Technical specifications of a 3G indoor remote antenna

Item	Specification
Connector type	SMA-M
Cable length	3 m
Frequency bands supported	824 MHz to 960 MHz/1710 MHz to 2170 MHz
Maximum gain	1 dBi/2.5 dBi
Standing wave	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 8-76 provides the 3G antenna ordering information.

Table 8-76 3G antenna ordering information

Antenna Type	Part Number	Description	Remarks
3G whip antenna	27010809	Isotropic Antenna, 824-960/1710-2170MHz, 1dBi/2dBi, Vertical, Omni, 5W, 0r, SMA-Male, Do not need Bracket	Mandatory
3G indoor remote antenna	27010824	Isotropic Antenna, 824-960/1710-2170MHz, >=1.0dBi(824-960MHz)&>=2. 5dBi(1710-2170MHz), Vertical, Omni, 10W, 0r, SMA-Male, do not need bracket	Optional

8.14.3 LTE Whip Antenna

Description

An LTE whip antenna is delivered with a router or card that provides the LTE function. It is used on an LTE antenna interface to provide LTE access.

Appearance and Structure

Figure 8-49 shows the appearance of an LTE whip antenna.

Figure 8-49 LTE whip antenna



Table 8-77 lists the technical specifications of an LTE whip antenna.

Table 8-77 Technical specifications of an LTE whip antenna

Item	Specification
Connector type	SMA-J
Frequency bands supported	698 MHz to 960 MHz/1710 MHz to 2690 MHz
Maximum gain	2 dBi/4.5 dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 8-78 provides the LTE whip antenna ordering information.

Table 8-78 LTE whip antenna ordering information

Cable Type	Part Number	Description
LTE whip antenna	27011207	Isotropic Antenna,698MHz-960MHz/ 1420MHz-2690MHz,2.1dBi(max) (698-960/2110-2170MHz)/4.6dBi(max) (1710-1990/2500-2690MHz)

8.14.4 LTE Indoor Remote Antenna

Description

An LTE indoor remote antenna has a 3 m feeder and is delivered with a router or card that provides the LTE function. It is used on an LTE antenna interface to provide LTE access.

Appearance and Structure

Figure 8-50 shows the appearance of an LTE indoor remote antenna.

Figure 8-50 LTE indoor remote antenna



Table 8-79 lists the technical specifications of an LTE indoor remote antenna.

Table 8-79 Technical specifications of an LTE indoor remote antenna

Item	Specification
Connector type	SMA-J
Cable length	3 m
Frequency bands supported	698 MHz to 960 MHz1710 MHz to 2690 MHz
Maximum gain	698 MHz to 960 MHz: 1dBi1710 MHz to 2690 MHz: 3dBi
Standing wave ratio	2.5
Polarization	Vertical
Direction	Omnidirectional

Ordering Information

Table 8-80 provides the LTE indoor remote antenna ordering information.

Table 8-80 LTE indoor remote antenna ordering information

Antenna Type	Part Number	Description
LTE indoor remote antenna	27012152	Omni-directional Antenna, 698MHz-960MHz/1710MHz-2690MHz, 1.0dBi(698MHz-960MHz)&3dBi(1710M Hz-2690MHz)
RF extension cable	04130824	Radio Frequency Cable,6m

8.14.5 5G Remote Antenna

Description

A 5G remote antenna can be connected to the 5G antenna interface on a router through a self-contained 1 m feeder. The 5G remote antennas are recommended in cabinet/rack mounting scenarios.

Appearance and Structure

Figure 8-51 shows the appearance of a 5G remote antenna.

Figure 8-51 5G remote antenna



Technical Specifications

Table 8-81 lists the technical specifications of a 5G remote antenna.

Table 8-81 Technical specifications of a 5G remote antenna

Item	Description
Connector type	SMB-K
Cable length	1 m
Frequency bands supported	 698 MHz to 960 MHz 1710 MHz to 2690 MHz 3300 MHz to 5000 MHz
Gain	 698 MHz to 821 MHz: 2 dBi 824 MHz to 960 MHz: 3 dBi 1710 MHz to 2690 MHz: 3 dBi 3300 MHz to 5000 MHz: 3 dBi
Standing wave ratio	 698 MHz to 960 MHz: 3.5 1710 MHz to 2690 MHz: 3 3300 MHz to 5000 MHz: 3
Polarization	Vertical
Direction	Omnidirectional

Connection

A 5G remote antenna connects to a 5G antenna interface of a router.

Ordering Information

Table 8-82 provides the 5G remote antenna ordering information.

Table 8-82 5G remote antenna ordering information

Part Number	Description	Remarks
27013849	Omni-directional Antenna, 698-960MHz/1710-2690MHz/ 3300-5000Mhz, 2.0 dBi (698-821MHz)&3 dBi (824MHz-5000MHz), Vertical polarization, omnidirectional, 1m, 5W, SMB-K, No bracket	Optional

8.15 VGA Video Cable

8.15.1 VGA Video Cable

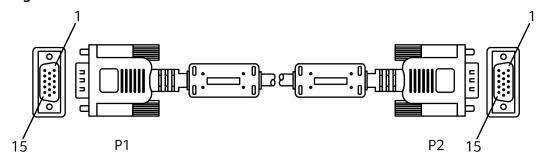
Description

A VGA video cable connects a router to a video terminal. Both ends of the cable are VGA connectors, which are connected to VGA interfaces of the router and video terminal respectively.

Appearance and Structure

Figure 8-52 shows the structure of a VGA video cable.

Figure 8-52 Structure of a VGA video cable



Pin Assignments

Table 8-83 lists pin assignments of a VGA video cable.

Table 8-83 Pin assignments of a VGA video cable

Connector P1	Wire Color	Connector P2
1	Red coaxial wire	1
6	Red coaxially wound wire	6

Connector P1	Wire Color	Connector P2
2	Green coaxial wire	2
7	Green coaxially wound wire	7
3	Blue coaxial wire	3
8	Blue coaxially wound wire	8
4	Red	4
5	Orange	5
9	Purple	9
10	Gray	10
11	Brown	11
12	Yellow	12
13	Black	13
14	Blue	14
15	Green	15

Connection

A VGA video cable is connected as follows:

- The VGA connector at the P1 end is connected to the VGA video interface on a router.
- The VGA connector at the P2 end is connected to the VGA video interface on a video terminal, for example, an advertising screen.

Ordering Information

Table 8-84 provides the VGA video cable ordering information.

Table 8-84 VGA video cable ordering information

Part Number	Description	Remarks
04051110	Audio Video&Control Signal Cable, VGA Cable, 0.6m, D15M-I, CC8P0.4B, D15M-I, Magnet both sides	Mandatory

8.16 2VDSL2 Cable

8.16.1 2VDSL2 Cable

Description

A 2VDSL2 cable is applicable to the router or the board which supports VDSL interface bounding. **Table 8-85** lists the interface type of a 2VDSL2 cable.

Table 8-85 Interfaces supporting a 2VDSL2 cable

Cable	Interface Type
2VDSL2 cable	2VDSL2 interface

Structure and Pin Assignments

Figure 8-53 shows the structure of a 2VDSL2 cable.

Figure 8-53 Structure of a 2VDSL2 cable

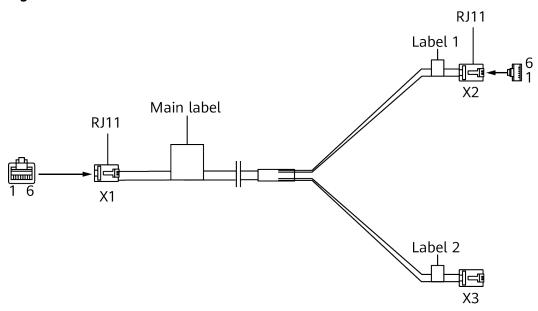


Table 8-86 lists the pin assignments of a 2VDSL2 cable.

Table 8-86 Pin assignments of a 2VDSL2 cable

X1 (RJ11)	Signal	Wire Color	X2 (RJ11)	X3 (RJ11)
3	Tip(+)	White	3	-
4	Ring(-)	Blue	4	-
2	Tip(+)	White	-	3

X1 (RJ11)	Signal	Wire Color	X2 (RJ11)	X3 (RJ11)
5	Ring(-)	Orange	-	4

Connection

A 2VDSL2 cable is connected as follows:

- The X1 (RJ11) connector on one end is connected to a router or a board.
- The X2 (RJ11) or X3 (RJ11) connector on the other end is connected to an analog telephone or fax machine.

Ordering Information

Table 8-87 provides the 2VDSL2 cable ordering information.

Table 8-87 2VDSL2 cable ordering information

Part Number	Description	Remarks
04070342	Signal Cable,VDSL Cable, 3.0m,MP6,CC2P0.48B(S),2*MP6	Optional

9 Pluggable Modules for Interfaces

- 9.1 Important Notes About Using Optical Modules Certified for Huawei Routers
- 9.2 Understanding Optical Modules
- 9.3 Understanding Copper Modules
- 9.4 FE SFP/eSFP Optical Modules
- 9.5 GE eSFP Optical Modules
- 9.6 GE SFP Copper Modules
- 9.7 GPON/EPON Optical Modules
- 9.8 10GE SFP+ Optical Modules

9.1 Important Notes About Using Optical Modules Certified for Huawei Routers

9.1.1 How to Identify Huawei-Certified Optical Modules

NOTICE

- Huawei routers must use Huawei-certified optical modules. Non-Huaweicertified optical modules cannot ensure transmission reliability and may affect service stability. Huawei is not responsible for any problem caused by the use of non-Huawei-certified optical modules and will not fix such problems.
- The methods provided here are only for reference. To confirm whether optical modules you use have been certified by Huawei, contact technical support personnel.

If the optical modules you use are delivered after July 1, 2013, use either of the following methods to determine whether they have been certified by Huawei.

Method 1: Check for "HUAWEI" on the Label

If an optical module has been certified by Huawei, its label contains "HAUWEI", as shown in Figure 9-1.

Figure 9-1 "HUAWEI" on the label of a Huawei-certified optical module



Method 2: Run the display transceiver Command

If an optical module meets the following conditions, it has been certified by Huawei. Otherwise, the optical module is not a Huawei-certified one.

- In the **display elabel** command output, the **Manufactured** field displays a date later than 2013-07-01.
- In the display version command output, the display version is V200R001C00 or later.
- In the display transceiver command output, the Manufacturing Date field displays a date later than 2013-07-01, and the Vendor Name field displays HUAWEI.

```
<Huawei> display transceiver
XGigabitEthernet2/0/0 transceiver information:
Common information:
 Transceiver Type
                        :XFP-STM64-LX-SM1310
 Connector Type
                         :LC
 Wavelength(nm)
                          :1310
 Transfer Distance(m)
                          :100000(9um)
 Digital Diagnostic Monitoring :YES
 Vendor Name
                       :HUAWEI
 Vendor Part Number
                           :02315208
 Ordering Name
Manufacture information:
                           :210231520810E4000803
 Manu. Serial Number
 Manufacturing Date
                           :2013-09-11
 Vendor Name
                       :HUAWEI
```

9.1.2 Risks of Using Non-Huawei-Certified Optical Modules

During certification of optical modules for Huawei routers, Huawei completes comprehensive functionality verification to ensure quality of optical modules. The verified items include optical module plug/unplug, transmit optical power, receive optical power, signal transmission quality, data reading, error tolerance, compatibility, electromagnetic compatibility (EMC), and environmental parameters.

Non-Huawei-certified optical modules may cause the following problems:

 Non-standard structure and size cause failures to install optical modules on adjacent optical interfaces.

Structures or sizes of some non-Huawei-certified optical modules do not comply with the Multi-Source Agreement (MSA). When such an optical module is installed on an optical interface, the size of this optical module hinders optical module installation on adjacent optical interfaces.

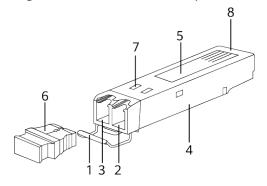
- Data bus defects cause suspension of a router's data bus.
 Some non-Huawei-certified optical modules have defects in data bus designs.
 Using such an optical module on a router causes suspension of the connected data bus on the router. As a result, data on the suspended bus cannot be read.
- Improper edge connector size damages electronic devices of optical interfaces.
 If a non-Huawei-certified optical module with improper edge connector size is used on an optical interface, electronic devices of the optical interface will be damaged by short circuits.
- Non-standard temperature monitoring causes incorrect alarms.
 The temperature monitoring systems of some non-Huawei-certified optical modules do not comply with industry standards and report temperature values higher than the real temperature. When such optical modules are used on a router, the system will report incorrect temperature alarms.
- Improper register settings cause errors or failures in reading parameters or diagnostic information.
 - Some non-Huawei-certified optical modules have improper A0 register values, which can cause errors or failures when the system attempts to read parameters or diagnostic information from a data bus.
- Some non-Huawei-certified optical modules are not designed in compliance with EMC standards and have low anti-interference capability. Additionally, they bring electromagnetic interference to nearby devices.
- The operating temperature ranges of non-Huawei-certified optical modules cannot meet service requirements. When they are used under relatively high temperature, the optical power decreases, resulting in service interruption.

9.2 Understanding Optical Modules

9.2.1 What Is an Optical Module

On an optical network, a sender needs to convert electrical signals into optical signals before sending them to a receiver, and the receiver needs to convert received optical signals into electrical signals. An optical module is a component that completes electrical/optical conversion on an optical network. Figure 9-2 shows the structure of an optical module.

Figure 9-2 Structure of an optical module



1. Handle	2. Receiver	3. Transmitter
4. Shell	5. Label	6. Dust plug
7. Spring	8. Connector	-

9.2.2 Types of Optical Modules

Optical modules are available in various types to meet diversified requirements.

• Classified by transmission rates

Depending on transmission rates, optical modules are classified into FE, GE, 10GE, and 40GE optical modules.

Classified by encapsulation types

The higher transmission rate an optical module provides, the more complex structure it has. Optical modules are encapsulated in different modes to provide different structures. Huawei routers support optical modules of the following encapsulation types: SFP, eSFP, SFP+, XFP, and QSFP+.

- SFP: small form-factor pluggable. SFP optical modules support LC fiber connectors and are hot swappable.
- eSFP: enhanced small form-factor pluggable. An eSFP module is an SFP module that supports monitoring of voltage, temperature, bias current, transmit optical power, and receive optical power. Sometimes, eSFP is also called SFP.
- SFP+: small form-factor pluggable plus, SFP with a higher rate. SFP+
 optical modules are more sensitive to electromagnetic interference (EMI)
 because they have a higher rate. To reduce EMI, SFP+ optical modules
 have more springs than SFP optical modules and the cages for SFP+
 modules on a card are tighter.
- XFP: 10 Gigabit small form-factor pluggable. X is the Roman numeral 10, meaning that all XFP optical modules provide a 10 Gbit/s transmission rate. XFP optical modules support LC fiber connectors and are hot swappable. They are wider and longer than SFP+ optical modules.
- QSFP+: quad small form-factor pluggable. QSFP+ optical modules support MPO fiber connectors and are larger than SFP+ optical modules.

Classified by physical layer standards

Different physical layer standards are defined to allow data transmission in different modes. Therefore, different types of optical modules are produced to comply with these standards. The **Standard** column of **Table 9-1** lists the physical layer standards.

Classified by modes

Optical fibers are classified into single-mode and multimode fibers. Therefore, optical modules are also classified into single-mode and multimode modules to support different optical fibers.

Single-mode optical modules are used with single-mode fibers. Single-mode fibers support a wide band and large transmission capacity, and are used for long-distance transmission.

 Multimode optical modules are used with multimode fibers. Multimode fibers have lower transmission performance than single-mode fibers because of modal dispersion, but their costs are also lower. They are used for small-capacity, short-distance transmission.

Table 9-1 provides optical module classification based on different factors.

Table 9-1 Optical module classification

Encapsul ation Type	Rate	Standard	Description
SFP	FE	100BASE-FX (IEEE 802.3u)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 100 Mbit/s over a distance within 2 km.
	GE	1000BASE-BX (IEEE 802.3ah)	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 10 km.
eSFP	FE	100BASE-LX (IEEE 802.3ah)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 100 Mbit/s over a distance within 80 km.
		100BASE-BX (IEEE 802.3ah)	Uses one single-mode fiber for bidirectional transmission at 100 Mbit/s over a distance within 15 km.
	GE	1000BASE-SX (IEEE 802.3z)	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 1 km.
		1000BASE-LX (IEEE 802.3z) 1000BASE-LX10 (IEEE 802.3ah)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 40 km.
		1000BASE-EX	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 40 km.
		1000BASE-ZX	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 100 km.

Encapsul ation Type	Rate	Standard	Description
		1000BASE-BX	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 40 km.
		CWDM	Coarse wavelength division multiplexing, which uses one single-mode fiber to transmit signals on multiple channels. It transmits data at 1 Gbit/s over a distance within 80 km.
		DWDM	Dense wavelength division multiplexing, which uses one single-mode fiber to transmit signals on multiple channels. It transmits data at 1 Gbit/s over a distance within 120 km.
SFP+	10GE	10GBASE-USR	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 10 Gbit/s over a distance within 100 m.
		10GBASE-BX	Uses one single-mode fiber for bidirectional transmission at 10 Gbit/s over a distance within 10 km.
• SFP+ • XFP	10GE	10GBASE-SR (IEEE 802.3ae)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 10 Gbit/s over a distance within 400 m.
		10GBASE-LR (IEEE 802.3ae)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 10 km.
		10GBASE-ER (IEEE 802.3ae)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 40 km.
		10GBASE-ZR	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 80 km.

Encapsul ation Type	Rate	Standard	Description
QSFP+	40GE	40GBASE-SR4 (IEEE 802.3ba)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 40 Gbit/s over a distance within 400 m.
		40GBASE-LR4 (IEEE 802.3ba)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 40 Gbit/s over a distance within 10 km.

9.2.3 Parameter Description

Transmit optical power

Output optical power of an optical module when it is working properly. When two optical modules are connected, the transmit optical power of one end must be within the range of receive optical power on the other end.

Receive optical power

Average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). The upper limit of this parameter is the overload optical power and the lower limit is the maximum receiver sensitivity. When two optical modules are connected, the receive optical power on one end determines the range of transmit optical power on the other end.

Maximum receiver sensitivity

Minimum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). When two optical modules are connected, the maximum receiver sensitivity on one end determines the minimum value of transmit optical power on the other end.

Overload optical power

Maximum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). When two optical modules are connected, the overload optical power on one end determines the maximum transmit optical power on the other end.

Extinction ratio

Minimum ratio of the average optical power with signals transmitted against the average optical power without signals transmitted in complete modulation mode. The extinction ratio indicates the capability of an optical module to identify signal 0 and signal 1. This parameter is a quality indicator for optical modules. Optical modules with a large extinction ratio may not have good quality. Qualified optical modules should have an extinction ratio complying with IEEE 802.3.

Fiber mode

Mode of optical fibers defined based on core diameters and features of optical fibers. Optical fibers are classified into single-mode and multimode fibers. Generally, multi-mode fibers have large core diameters and severe dispersion, so they transmit optical signals over short distances. Single-mode fibers have small dispersion and can transmit optical signals over long distances.

Modal bandwidth

Bandwidth measured at a point with transmit power several dB lower than that of the point with the peak center wavelength. Modal bandwidth reflects spectrum characteristics of multimode fibers. The higher modal bandwidth a multimode fiber has, the longer transmission distance the fiber supports.

Fiber diameter

Diameter of the core of a fiber. According to international standards for optical fibers, the diameter of a multimode fiber is 62.5 μ m or 50 μ m, and the diameter of a single-mode fiber is 9 μ m. Select optical fibers with diameters supported by the optical modules.

Fiber class

The following fiber classes are defined: multimode fiber (G.651), common single-mode fiber (G.652), shifted dispersion fiber (G.653), and non-zero shifted dispersion fiber (G.655). G.651 and G.652 are commonly used fiber classes. Optical fibers of higher classes support longer transmission distances. When selecting optical fibers for optical modules, determine the classes of fibers based on the required transmission distances.

Connector type

Type of the interface on an optical module to accommodate a fiber. Commonly used connector types are LC (applicable to all the SFP, SFP+, and XFP modules), SC, and MPO (applicable to 150 m QSFP+ and CXP modules). Select optical fibers with connectors supported by the optical modules.

Transmission distance

Maximum distance over which optical signals can transmit. Optical signals sent from different types of sources can transmit over different distances because they have different dispersion and attenuation. When connecting optical interfaces, select optical modules and fibers according to the longest signal transmission distance.

Interface rate

Maximum rate of electrical signals that an optical component can transmit without bit errors. The interface rates defined in Ethernet standards include 125 Mbit/s, 1.25 Gbit/s, 10.3125 Gbit/s, and 41.25 Gbit/s. When connecting optical interfaces, select optical modules and fibers based on the maximum signal transmission rate.

Center wavelength

Wavelength measured at the midpoint of the half-amplitude line in the transmit spectrum. Two connected optical modules must have the same center wavelength.

MSA

Multi-Source Agreement, a non-profit organization jointly established by optical module manufacturers. This agreement defines the structure and dimensions of optical transceivers by referring to Optical Internetworking Forum (OIF) and International Telecommunication Union (ITU) standards.

9.2.4 How to View Optical Module Parameters

Viewing the Hardware Description

If you know the model or type of an optical module, you can view the section "Pluggable Modules for Interfaces" in the *Hardware Description* to look up parameters of the optical module, including the center wavelength, transmission distance, fiber types supported, receive optical power, and transmit optical power.

Using a Command

If an optical module is installed in a running router, you can run the **display transceiver** command to view parameters of the optical module, including the center wavelength, transmission distance, fiber types supported, receive optical power, and transmit optical power.

9.3 Understanding Copper Modules

Unlike optical modules, copper modules do not perform electrical-optical conversion. When two optical interfaces have copper modules installed, the interfaces can be connected using a copper cable. Currently, Huawei offers only GE copper modules with RJ45 interfaces. GE copper modules work with Category 5 network cables, comply with 1000BASE-T (IEEE 802.3ab), and support a maximum transmission distance of 100 m.

9.4 FE SFP/eSFP Optical Modules

9.4.1 SFP-FE-SX-MM1310

□ NOTE

Only 1CPOS-155M-W, 1STM1, and 4STM1 interface cards are supported.

Table 9-2 Technical specifications

Item	Description
Transceiver form factor	SFP
Transmission speed	100 Mbit/s155 Mbit/s
Center wavelength (nm)	1310
Standards compliance	100base-FX
Connector type	LC

Item	Description
Applicable cable and maximum transmission distance	Multimode fiber (50 μm or 62.5 μm diameter): 2 km
Transmit power (dBm)	-19.0 to -14.0
Maximum receiver sensitivity (dBm)	-30.0
Overload power (dBm)	-14.0
Extinction ratio (dB)	10
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315233

9.4.2 eSFP-FE-LX-SM1310

Table 9-3 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	100Mbit/s155Mbit/s
Center wavelength (nm)	1310
Standards compliance	100base-LX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 15 km
Transmit power (dBm)	-15.0 to -8.0
Maximum receiver sensitivity (dBm)	-31.0
Overload power (dBm)	-8.0
Extinction ratio (dB)	8.2
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315205

9.4.3 S-SFP-FE-LH40-SM1310

Table 9-4 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	100 Mbit/s
Center wavelength (nm)	1310
Standards compliance	100base-LX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-5.0 to 0
Maximum receiver sensitivity (dBm)	-37.0
Overload power (dBm)	-10.0
Extinction ratio (dB)	10.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317344

9.4.4 SFP-FE-LX-SM1310-BIDI (Single-Fiber-Bidirectional Module)

Table 9-5 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	100 Mbit/s
Center wavelength (nm)	Rx: 1550/Tx: 1310
Standards compliance	100base-BX
Connector type	LC

Item	Description
Applicable cable and maximum transmission distance	Single-mode fiber: 15 km
Transmit power (dBm)	-15.0 to -8.0
Maximum receiver sensitivity (dBm)	-32.0
Overload power (dBm)	-8.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315203

9.4.5 SFP-FE-LX-SM1550-BIDI (Single-Fiber-Bidirectional Module)

Table 9-6 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	100 Mbit/s
Center wavelength (nm)	Rx: 1310/Tx: 1550
Standards compliance	100base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 15 km
Transmit power (dBm)	-15.0 to -8.0
Maximum receiver sensitivity (dBm)	-32.0
Overload power (dBm)	-8.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315202

9.5 GE eSFP Optical Modules

9.5.1 eSFP-GE-SX-MM850

Table 9-7 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	850
Standards compliance	1000base-SX
Connector type	LC
Applicable cable and maximum transmission distance	 Multimode fiber (with modal bandwidth of 160 MHz*km and diameter of 62.5 μm): 0.22 km Multimode fiber (OM1): 0.275 km Multimode fiber (with modal bandwidth of 400 MHz*km and diameter of 50 μm): 0.5 km Multimode fiber (OM2): 0.55 km Multimode fiber (OM3): 1 km
Transmit power (dBm)	-9.5 to -2.5
Maximum receiver sensitivity (dBm)	-17.0
Overload power (dBm)	0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315204

9.5.2 SFP-GE-LX-SM1310

Table 9-8 Technical specifications

Item	Description
Transceiver form factor	eSFP

Item	Description
Transmission speed	1 Gbit/s
Center wavelength (nm)	1310
Standards compliance	1000base-LX/LH
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 10 km
Transmit power (dBm)	-9.0 to -3.0
Maximum receiver sensitivity (dBm)	-20.0
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315200

9.5.3 S-SFP-GE-LH40-SM1310

□ NOTE

AR651F-Lite is not supported.

Table 9-9 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1310
Standards compliance	1000base-LX/LH
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-5.0 to 0

Item	Description
Maximum receiver sensitivity (dBm)	-23
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317346

9.5.4 S-SFP-GE-LH40-SM1550

□ NOTE

AR651F-Lite is not supported.

Table 9-10 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1550
Standards compliance	1000base-LX/LH
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-5.0 to 0
Maximum receiver sensitivity (dBm)	-22
Overload power (dBm)	-3.0
Extinction ratio (dB)	8.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317347

9.5.5 S-SFP-GE-LH80-SM1550

□ NOTE

AR600 series routers are not supported.

Table 9-11 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	1550
Standards compliance	1000base-ZX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	-2.0 to 5.0
Maximum receiver sensitivity (dBm)	-23
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02317348

9.5.6 SFP-GE-LX-SM1310-BIDI (Single-Fiber-Bidirectional Module)

Table 9-12 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	Rx: 1490/Tx: 1310
Standards compliance	1000base-BX
Connector type	LC

Item	Description
Applicable cable and maximum transmission distance	Single-mode fiber: 10 km
Transmit power (dBm)	-9.0 to -3.0
Maximum receiver sensitivity (dBm)	-19.5
Overload power (dBm)	-3.0
Extinction ratio (dB)	6
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315285

9.5.7 SFP-GE-LX-SM1490-BIDI (Single-Fiber-Bidirectional Module)

Table 9-13 Technical specifications

Item	Description
Transceiver type	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	Rx: 1310/Tx: 1490
Standards compliance	1000base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 10 km
Transmit power (dBm)	-9.0 to -3.0
Maximum receiver sensitivity (dBm)	-19.5
Overload power (dBm)	-3.0
Extinction ratio (dB)	6
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02315286

9.5.8 LE2MGSC40DE0 (Single-Fiber-Bidirectional Module)

AR651F-Lite, AR651-X8, AR651W-X4, AR651 (02352HYG), AR651-LTE6EA (02352GDM), AR651W (02352CRB), AR651U-A4-L4EA (02351WGP), and AR651U-A4-L6EA (02351WGN) are not supported.

4GE-2S and 4GEW-S cards are not supported.

Table 9-14 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	Rx: 1490/Tx: 1310
Standards compliance	1000base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-2.0 to +3.0
Maximum receiver sensitivity (dBm)	-23
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310KVV

9.5.9 LE2MGSC40ED0 (Single-Fiber-Bidirectional Module)

□ NOTE

AR651F-Lite, AR651-X8, AR651W-X4, AR651 (02352HYG), AR651-LTE6EA (02352GDM), AR651W (02352CRB), AR651U-A4-L4EA (02351WGP), and AR651U-A4-L6EA (02351WGN) are not supported.

4GE-2S and 4GEW-S cards are not supported.

Table 9-15 Technical specifications

Item	Description
Transceiver form factor	eSFP
Transmission speed	1 Gbit/s
Center wavelength (nm)	Rx: 1310/Tx: 1490
Standards compliance	1000base-BX
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-2.0 to +3.0
Maximum receiver sensitivity (dBm)	-23
Overload power (dBm)	-3.0
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310KVU

9.6 GE SFP Copper Modules

9.6.1 SFP-1000BaseT

□ NOTE

Only 4GE-2S and 4GEW-S interface card are supported.

Table 9-16 Technical specifications

Item	Description
Transceiver form factor	SFP
Transmission speed	The transmission speed varies depending on the port where the copper transceiver module is used
Standards compliance	1000Base-T
Connector type	RJ45

Item	Description
Surge protection	Common mode: ±1 kV
Applicable cable and maximum transmission distance	Ethernet cable: 0.1 km
Part number	02314171

9.7 GPON/EPON Optical Modules

□ NOTE

Only one optical interface can use the GPON/EPON optical module.

9.7.1 SFP-GPON-ONU

□ NOTE

Only 1PON interface card is supported.

Table 9-17 Technical specifications

Item	Specification
Transceiver form factor	SFP
Rate	RX: 2.488 Gbit/s TX: 1.244 Gbit/s
Center wavelength (nm)	RX: 1490; TX: 1310
Standards compliance	1000base-PX20
Connector type	SC
Applicable cable and maximum transmission distance	Single-mode fiber: 20 km
Transmit optical power (dBm)	2.5 to 7.0
Maximum receiver sensitivity (dBm)	-30
Overload optical power (dBm)	-6
Extinction ratio (dB)	9

Item	Specification
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310TBV

9.8 10GE SFP+ Optical Modules

9.8.1 OSX040N01

Table 9-18 Technical Specifications

Item	Description
Transceiver form factor	SFP+
Transmission speed	10 Gbit/s
Center wavelength (nm)	1550
Standards compliance	10Gbase-ER
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 40 km
Transmit power (dBm)	-4.7 to 4.0
Maximum receiver sensitivity (dBm)	-14.1
Overload power (dBm)	-1.0
Extinction ratio (dB)	3.0
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310CNF

9.8.2 OMXD30000

Table 9-19 Technical Specifications

Item	Description
Transceiver form factor	SFP+
Transmission speed	10 Gbit/s
Center wavelength (nm)	850
Standards compliance	10Gbase-SR
Connector type	LC
Applicable cable and maximum transmission distance	 Multimode fiber (OM1): 0.033 km Multimode fiber (OM2): 0.082 km Multimode fiber (OM3): 0.3 km
Transmit power (dBm)	-7.3 to -1
Maximum receiver sensitivity (dBm)	-9.9
Overload power (dBm)	-1.0
Extinction ratio (dB)	3.0
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02318169

9.8.3 OSX010000

Table 9-20 Technical Specifications

Item	Description
Transceiver form factor	SFP+
Transmission speed	10 Gbit/s
Center wavelength (nm)	1310
Standards compliance	10Gbase-LR
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 10 km
Transmit power (dBm)	-8.2 to 0.5

Item	Description
Maximum receiver sensitivity (dBm)	-14.4
Overload power (dBm)	0.5
Extinction ratio (dB)	3.5
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02318170

9.8.4 SFP-10G-ZR

Table 9-21 Technical Specifications

Item	Description
Transceiver form factor	SFP+
Transmission speed	10 Gbit/s
Center wavelength (nm)	1550
Standards compliance	10Gbase-ZR
Connector type	LC
Applicable cable and maximum transmission distance	Single-mode fiber: 80 km
Transmit power (dBm)	0 to 4.0
Maximum receiver sensitivity (dBm)	-24
Overload power (dBm)	-7
Extinction ratio (dB)	9
Operating temperature	0°C to 70°C (32°F to 158°F)
Part number	02310SNN

10 Accessories

10.1 16/32/64/128-Channel DSP Module

10.1 16/32/64/128-Channel DSP Module

Card Overview

The 16/32/64/128-channel DSP module is a VoIP voice processing DIMM that provides the voice over IP (VoIP) functions.

Figure 10-1 shows the appearance of the 16/32/64/128-channel DSP module.

Figure 10-1 Appearance of the 16/32/64/128-channel DSP module



NOTICE

Only the DSP module supported by the router can be inserted into the DSP DIMM slot. The DDR3 memory board or unsupported DIMMs cannot be inserted; otherwise, the router may be damaged or does not function properly.

Version Mapping

Table 10-1 describes the mapping between the 16/32/64/128-channel DSP module and software versions.

Table 10-1 Mapping between the 16/32/64/128-channel DSP module and software versions

Card Name	Device Model
16/32/64/128-channel DSP module NOTE This module is supported in V200R001C01 and later versions.	AR6280 (SRU-200H) AR6300 (SRU-200H)

Functions and Features

Table 10-2 describes the functions and features of the 16/32/64/128-channel DSP module.

Table 10-2 Functions and features of the 16/32/64/128-channel DSP module

Function and Feature	Description
Basic functions	Processes the dial tone.
	Parses telephone numbers.
	Generates interactive voice response (IVR) and signal voice.
	Encode, decode, and convert voice.
	Implements voice conferences and echo canceler (EC).
	Processes IP packets.

Technical Specifications

Table 10-3 describes the technical specifications of the 16/32/64/128-channel DSP module.

Table 10-3 Technical specifications of the 16/32/64/128-channel DSP module

Item	Specification
Physical specifications	• Dimensions (width x height): 133.35 mm x 28 mm (5.25 in. x 1.1 in.)
	Maximum power consumption: 3.5 W
	• Weight: 0.05 kg (0.11 lb)

Item	Specification
Environment	• Operating temperature: 0°C to 45°C (32°F to 113°F)
parameters	Operating relative humidity: 5% to 95%, noncondensing
	• Storage temperature: -40°C to +70°C (-40°F to +158°F)
	• Operating altitude: 0 to 5000 m (16404.2 ft.)

Ordering Information

To place an order, visit https://e.huawei.com/en/how-to-buy to find the local supplier or submit your inquiries online.

Table 10-4 provides the ordering information.

Table 10-4 Ordering information

Part Number	Card Description
03021HWQ	16-channel voice DSP module
03021HWT	32-channel voice DSP module
03021HWU	64-channel voice DSP module
03020XPK	128-channel voice DSP module