RG-CR Series Cloud-Managed Security Routers

Hardware Installation and Reference Guide

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Preface

Intended Audience

This document is intended for:

- Network engineers
- Technical support and servicing engineers
- Network administrators

Technical Support

- Ruijie Reyee website: https://reyee.ruijie.com
- Online support center: https://reyee.ruijie.com/en-global/support
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Conventions

1. Signs

The signs used in this document are described as follows:

Danger

An alert that calls attention to safety instruction that if not understood or followed can result in personal injury.

Warning

An alert that calls attention to important rules and information that if not understood or followed can result in data loss or equipment damage.

Caution

An alert that calls attention to essential information that if not understood or followed can result in function failure or performance degradation.

Note

An alert that contains additional or supplementary information that if not understood or followed will not lead to serious consequences.

Specification

An alert that contains a description of product or version support.

2. Notes

This manual provides installation steps, troubleshooting, technical specifications, and usage guidelines for cables and connectors. It is intended for users who want to understand the above and have extensive experience in network deployment and management, and assume that users are familiar with related terms and concepts.

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1 Overview

1.1 About the RG-CR Series

The RG-CR series routers are next-generation cloud-managed routers launched by Ruijie Networks for gateway deployment on small- and medium-sized networks. The equipment integrates multiple features, including Network Address Translation (NAT), multi-WAN load balancing, URL filtering, SD-WAN, application control, and DoS/DDoS attack defense, to meet diverse networking and security requirements.

With Cybrey App and Cybrey Cloud, the RG-CR series routers support rapid deployment, intelligent O&M, one-click fault analysis, and service health diagnosis. In addition, the equipment also support unified cloud management, allowing running data to be synchronized to Cybrey Cloud for remote O&M, batch configuration, and automatic inspection.

1.2 RG-CR510XS

1.2.1 Equipment Appearance

The RG-CR510XS provides six 10/100/1000BASE-T ports, two 10/100/1000/2.5GBASE-T ports, two 10GE SFP+ ports, one MGMT port (reusing LAN0), one console port, and one USB 2.0 port on the front panel.

The nameplate is located on the bottom of the equipment. It provides information, such as the IP address of the management interface, and default username and password for login.

1. Front Panel

Figure 1-1 Front Panel

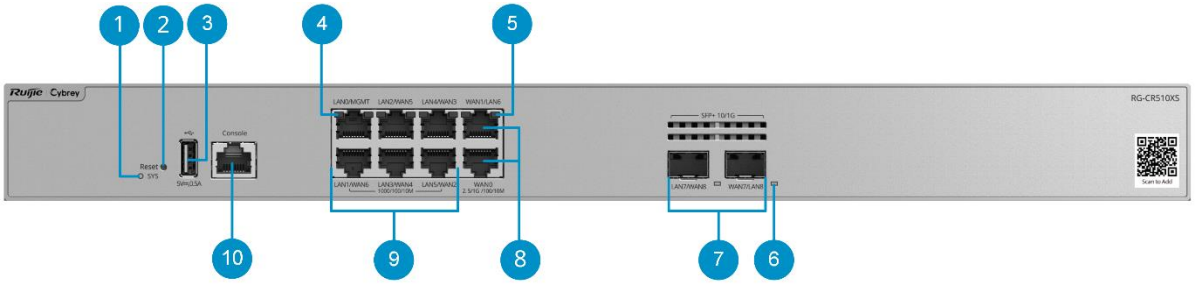


Table 1-1 Components on the Front Panel

No.	Component	Description
1	System status LED (SYS)	● Solid green: The system is operating properly. ● Blinking green: The system is being initialized. If the LED is in this state for a long time, the system malfunctions. ● Solid red: A system fault alarm is generated, or the equipment temperature exceeds the normal operating temperature range. ● Off: The system is not powered on.

No.	Component	Description
2	Reset button	● Equipment restart: Short press (less than 5 seconds) ● Factory reset: Long press (more than 5 seconds) Both operations will trigger automatic collection of equipment information. After startup, choose **System** > **Fault Diagnosis** > **One-Click Collection**, and download the equipment status information.
3	USB port	1 x USB 2.0 port for connecting a USB flash drive.
4	10/100/1000BASE-T port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
5	10/100/1000/2.5GBASE-T port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
6	10GE SFP+ port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
7	10GE SFP+ ports	2 x 10GE optical ports (LAN7 and LAN8), which are backward compatible with 1GE SFP ports on the peer equipment.
8	10/100/1000/2.5GBASE-T ports	2 x 10/100/1000/2.5GBASE-T ports (WAN0 and WAN1), which support auto-negotiation at 10 Mbps, 100 Mbps, 1000 Mbps, or 2.5 Gbps, and connect Ethernet cables with RJ45 connectors.
9	10/100/1000BASE-T ports	6 x 10/100/1000BASE-T ports (LAN0 to LAN5), which support auto-negotiation at 10 Mbps, 100 Mbps, or 1000 Mbps, and connect Ethernet cables with RJ45 connectors. The LAN0 port can also be used as the MGMT interface. Its default IP address is 10.20.48.1/20. You can access the device's eWeb management page through this interface for configuration and management.
10	Console port	Used to connect to the equipment console for equipment maintenance and diagnosis. Note: ● When the console port is used, set the baud rate to 115200 bps, data bit to 8, stop bit to 1, with no parity check and data flow control. ● The console port is only used in special scenarios. For detailed operations, contact technical support.

2. Rear Panel

Figure 1-2 Rear Panel



Table 1-2 Components on the Rear Panel

No.	Component	Description
1	Power cord retainer hole	Used to install the power cord retainer. It secures the power cord.
2	Power connector	Connects to the alternating current (AC) power cord.
3	Grounding screw	Connects the grounding wire to ensure electrical safety.

1.2.2 Technical Specifications

Table 1-1 Technical Specifications

Model	**RG-CR510XS**
Memory	2 GB DDR4 memory (ECC not supported)
Hard Disk	Not supported
Fixed Service Port	● 6 x 10/100/1000BASE-T ports, which support auto-negotiation at 10 Mbps, 100 Mbps, or 1000 Mbps and automatically identify straight-through and crossover cables. ● 2 x 10/100/1000/2.5GBASE-T ports,which support auto-negotiation at 10 Mbps, 100 Mbps, 1000 Mbps, or 2.5 Gbps in full-duplex mode. ● 2 x 10GE SFP+ ports (1000BASE-X/10GBASE-R): For details about the supported optical transceiver models, see Section Appendix B 10GE SFP+ Transceivers.
Fixed Management Port	● 1 x RJ45 MGMT port (reusing LAN0) ● 1 x RJ45 console port
USB Port	1 x USB 2.0 port (Type-A connector)
4G Port	Not supported
Bypass Port	Not supported
Expansion Module	Not supported
Unit Dimensions (W x D x H)	442 mm x 220 mm x 44 mm (17.40 in. x 8.66 in. x 1.73 in.; without rubber pads)

Power Supply	1 x fixed power supply
Rated Input Voltage	100 V AC to 240 V AC, 50/60 Hz
Maximum Input Voltage	90 V AC to 264 V AC, 50/60 Hz
Rated Input Current	0.6 A
Maximum Input Current	0.6 A
Maximum Power Consumption	25 W
Weight	2.45 kg (5.40 lbs)
Operating Temperature	0°C to 45°C (32°F to 113°F) at a height below 1,800 m (5,905.51 ft.) above the sea level Note: At an altitude between 1,800 m (5,905.51 ft.) and 5,000 m (16,404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the maximum temperature decreases by 1°C (1.8°F).
Operating Humidity	40% RH to 65% RH (non-condensing)
Storage Temperature	–40°C to 70°C (–40°F to 158°F)
Storage Humidity	10% RH to 90% RH (non-condensing)
Operating Altitude	0 m to 5,000 m (0 ft. to 16,404.2 ft.)

Caution

Due to the wide variety of USB flash drives, the equipment may not support some of them. You are advised to use a genuine Kingston USB flash drive formatted with the FAT32 file system.

1.2.3 Cooling

The RG-CR510XS has one built-in fan and adopts the left-to-right airflow design to enable air cooling, ensuring that the equipment operates properly in the specified environment. Maintain sufficient clearance on both sides of the equipment for air circulation and ventilation.

1.3 RG-CR2010XS

1.3.1 Equipment Appearance

The RG-CR2010XS provides four 10/100/1000BASE-T ports, four 10/100/1000/2.5GBASE-T ports, two 10GE SFP+ ports, one MGMT port (reusing LAN0), one console port, and one USB 2.0 port on the front panel. The rear panel includes one SATA hard disk slot.

The nameplate is located on the bottom of the equipment. It provides information, such as the IP address of the management interface, and default username and password for login.

1. Front Panel

Figure 1-3 Front Panel

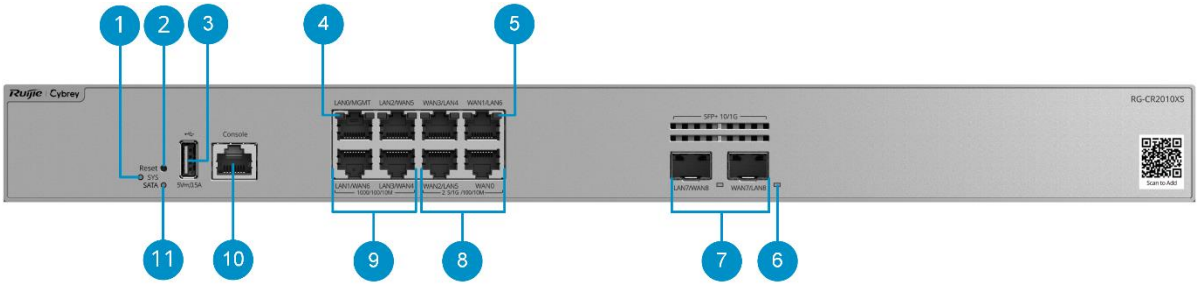


Table 1-3 Components on the Front Panel

No.	Component	Description
1	System status LED (SYS)	● Solid green: The system is operating properly. ● Blinking green: The system is being initialized. If the LED is in this state for a long time, the system malfunctions. ● Solid red: A system fault alarm is generated, or the equipment temperature exceeds the normal operating temperature range. ● Off: The system is not powered on.
2	Reset button	● Equipment restart: Short press (less than 5 seconds) ● Factory reset: Long press (more than 5 seconds) Both operations will trigger automatic collection of equipment information. After startup, choose **System** > **Fault Diagnosis** > **One-Click Collection**, and download the equipment status information.
3	USB port	1 x USB 2.0 port for connecting a USB flash drive.
4	10/100/1000BASE-T port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
5	10/100/1000/2.5GBASE-T port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
6	10GE SFP+ port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
7	10GE SFP+ ports	2 x 10GE optical ports (LAN7 and LAN8), which are backward compatible with 1GE SFP ports on the peer equipment.
8	10/100/1000/2.5GBASE-T ports	4 x 10/100/1000/2.5GBASE-T ports (WAN0 to WAN3), which support auto-negotiation at 10 Mbps, 100 Mbps, 1000 Mbps, or 2.5 Gbps, and connect Ethernet cables with RJ45 connectors.

No.	Component	Description
9	10/100/1000BASE-T ports	4 x 10/100/1000BASE-T ports (LAN0 to LAN3), which support auto-negotiation at 10 Mbps, 100 Mbps, or 1000 Mbps, and connect Ethernet cables with RJ45 connectors. The LAN0 port can also be used as the MGMT interface. Its default IP address is 10.20.48.1/20. You can access the device's eWeb management page through this interface for configuration and management.
10	Console port	Used to connect to the equipment console for equipment maintenance and diagnosis. Note: ● When the console port is used, set the baud rate to 115200 bps, data bit to 8, stop bit to 1, with no parity check and data flow control. ● The console port is only used in special scenarios. For detailed operations, contact technical support.
11	Hard disk status LED (SATA)	● Solid green: The hard disk is installed and operates properly. ● Blinking green: The hard disk is reading or writing data. ● Solid red: A hard disk fault occurs. ● Off: No hard disk module is installed.

2. Rear Panel

Figure 1-4 Rear Panel

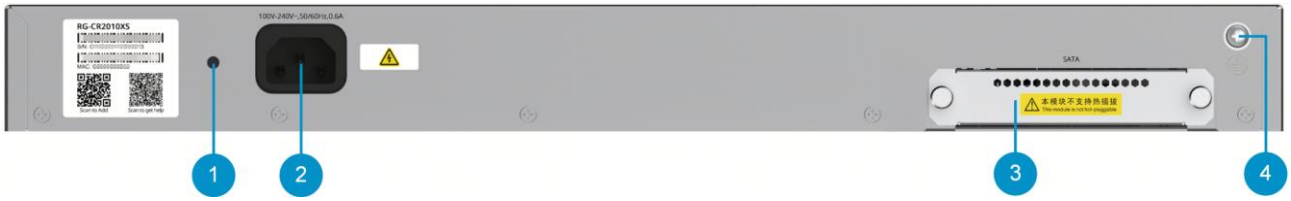


Table 1-4 Components on the Rear Panel

No.	Component	Description
1	Power cord retainer hole	Used to install the power cord retainer. It secures the power cord.
2	Power connector	Connects to the alternating current (AC) power cord.
3	Hard disk module slot	Accommodates a hard disk module to expand equipment storage. The hard disk module is not included by default and must be purchased separately.
4	Grounding screw	Connects the grounding wire to ensure electrical safety.

1.3.2 Technical Specifications

Table 1-5 Technical Specifications

Model	RG-CR2010XS
Memory	4 GB DDR4 memory (ECC not supported)
Hard Disk	No hard disk is included by default. The supported expansion modules are as follows: ● Ruijie hard disks ○ RG-NSEC-HDD-1T-B: 1 TB ○ RG-NSEC-SSD-480G-B-M: 480 GB ● Hard disks from other vendors ○ Western Digital: WD10SPZX ○ Seagate: ST1000LM048 ○ Transcend: TS1TSSD470P
Fixed Service Port	● 4 x 10/100/1000BASE-T ports, which support auto-negotiation at 10 Mbps, 100 Mbps, or 1000 Mbps, and automatically identify straight-through and crossover cables. ● 4 x 10/100/1000/2.5GBASE-T ports, which support auto-negotiation at 10 Mbps, 100 Mbps, 1000 Mbps, or 2.5 Gbps in full-duplex mode. ● 2 x 10GE SFP+ ports (1000BASE-X/10GBASE-R). For details about the supported optical transceiver models, see Section Appendix B 10GE SFP+ Transceivers.
Fixed Management Port	● 1 x RJ45 MGMT port (reusing LAN0) ● 1 x RJ45 console port
USB Port	1 x USB 2.0 port (Type-A connector)
4G Port	Not supported
Bypass Port	Not supported
Expansion Module	Not supported
Unit Dimensions (W x D x H)	442 mm x 220 mm x 44 mm (17.40 in. x 8.66 in. x 1.73 in.)
Power Supply	1 x fixed power supply
Rated Input Voltage	100 V AC to 240 V AC, 50/60 Hz
Maximum Input Voltage	90 V AC to 264 V AC, 50/60 Hz
Rated Input Current	0.6 A
Maximum Input Current	0.6 A
Maximum Power Consumption	25 W

Weight	2.45 kg (5.40 lbs)
Operating Temperature	0°C to 45°C (32°F to 113°F) at a height below 1,800 m (5,905.51 ft.) above the sea level Note: At an altitude between 1,800 m (5,905.51 ft.) and 5,000 m (16,404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the maximum temperature decreases by 1°C (1.8°F).
Operating Humidity	40% RH to 65% RH (non-condensing)
Storage Temperature	–40°C to 70°C (–40°F to 158°F)
Storage Humidity	10% RH to 90% RH (non-condensing)
Operating Altitude	0 m to 5,000 m (0 ft. to 16,404.2 ft.)

Caution

Due to the wide variety of USB flash drives, the equipment may not support some of them. You are advised to use a genuine Kingston USB flash drive formatted with the FAT32 file system.

1.3.3 Cooling

The RG-CR2010XS has one built-in fan and adopts the left-to-right airflow design to enable air cooling, ensuring that the equipment operates properly in the specified environment. Maintain sufficient clearance on both sides of the equipment for air circulation and ventilation.

1.4 RG-CR5016XS

1.4.1 Equipment Appearance

The RG-CR5016XS provides 8 x 10/100/1000BASE-T ports, 4 x 10/100/1000/2.5GBASE-T ports, 4 x 10GE SFP+ ports, 1 x management port (MGMT), 1 x USB 3.0 port, and 1 x console port on the front panel. The rear panel includes one hard disk module slot and two power module slots.

The nameplate is located on the bottom of the equipment. It provides information, such as the IP address of the management interface, and default username and password for login.

1. Front Panel

Figure 1-5 Front Panel

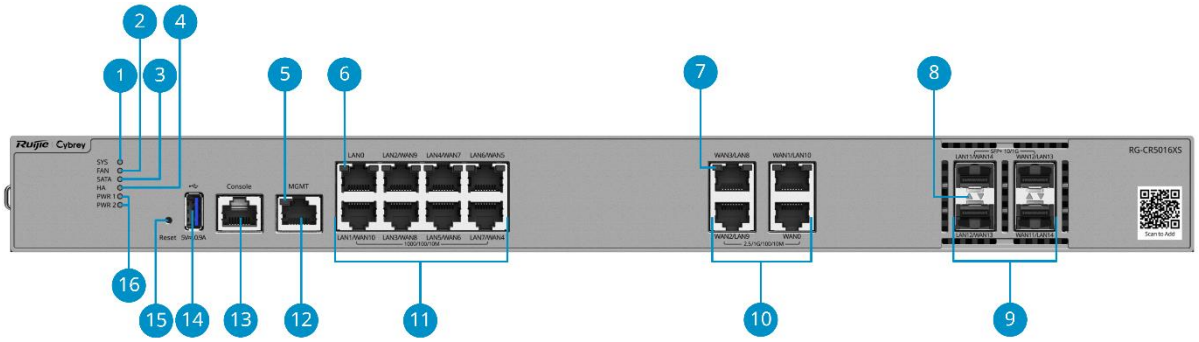


Table 1-6 Components on the Front Panel

No.	Component	Description
1	System status LED (SYS)	● Solid green: The system is operating properly. ● Blinking green: The system is being initialized. If the LED is in this state for a long time, the system malfunctions. ● Solid red: A system fault alarm is generated, or the equipment temperature exceeds the normal operating temperature range. ● Off: The system is not powered on.
2	Fan status LED (FAN)	● Solid green: The fan module operates properly. ● Solid red: The fan module malfunctions. ● Off: The fan module has no power input.
3	Hard disk status LED (SATA)	● Solid green: The hard disk is installed and operates properly. ● Blinking green: The hard disk is reading or writing data. ● Solid red: A hard disk fault occurs. ● Off: No hard disk module is installed.
4	HA active/standby LED (HA)	● Solid green: The high availability (HA) system works normally and the device is operating in the active role. ● Blinking green: The HA system works normally and the device is operating in the standby role. ● Solid red: The HA system malfunctions. ● Off: The HA system is disabled.
5	MGMT port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
6	10/100/1000BASE-T port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
7	10/100/1000/2.5GBASE-T port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.

No.	Component	Description
8	10GE SFP+ port LED	● Solid green: The port is Up. ● Blinking green: The port is receiving or transmitting data. ● Off: The port is Down.
9	10GE SFP+ ports	4 x 10GE optical ports, which are backward compatible with 1GE SFP ports
10	10/100/1000/2.5GBASE-T ports	4 x 10/100/1000/2.5GBASE-T ports, which support auto-negotiation at 10 Mbps, 100 Mbps, 1000 Mbps, or 2.5 Gbps and connecting Ethernet cables with RJ45 connectors.
11	10/100/1000BASE-T ports	8 x 10/100/1000BASE-T ports, which support auto-negotiation at 10 Mbps, 100 Mbps, or 1000 Mbps, and connect Ethernet cables with RJ45 connectors.
12	MGMT port	The management port has a default IP address (10.20.30.42/24). Upon first login, you can log in to the eWeb management page of the equipment through the management port.
13	Console port	Used to connect to the equipment console for equipment maintenance and diagnosis. Note: ● When the console port is used, set the baud rate to 115200 bps, data bit to 8, stop bit to 1, with no parity check and data flow control. ● The console port is only used in special scenarios. For detailed operations, contact technical support.
14	USB port	One USB 3.0 port for connecting a USB flash drive.
15	Reset button	● Equipment restart: Short press (less than 5 seconds) ● Factory reset: Long press (more than 5 seconds) Both operations will trigger automatic collection of equipment information. After startup, choose **System** > **Fault Diagnosis** > **One-Click Collection**, and download the equipment status information.
16	Power LEDs (PWR1 and PWR2)	● Solid green: The power module operates properly. ● Solid red: The power module malfunctions or has no power input. ● Off: The system is not powered on.

2. Rear Panel

Figure 1-6 Rear Panel

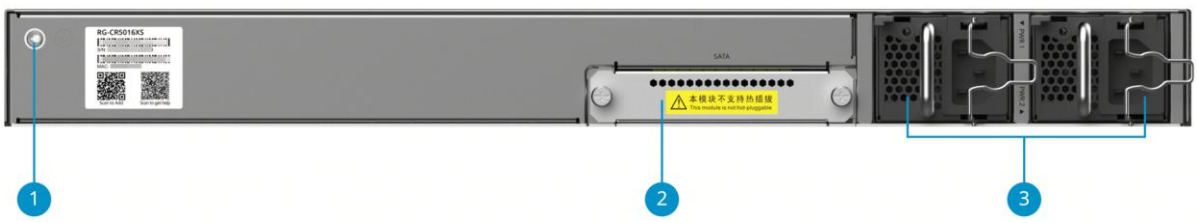


Table 1-7 Components on the Rear Panel

No.	Component	Description
1	Grounding screw	Connects the grounding wire to ensure electrical safety.
2	Hard disk module slot	Accommodates a hard disk module to expand equipment storage. The hard disk module is not included by default and must be purchased separately.
3	Power module slot	Two power module slots are provided for installing pluggable power modules. The power modules are not included by default and must be purchased separately.

1.4.2 Technical Specifications

Table 1-8 Technical Specifications

Model	RG-CR5016XS
Memory	8 GB DDR4 memory
Hard Disk	No hard disk is included by default. The supported expansion modules are as follows: ● Ruijie hard disks ○ RG-NSEC-HDD-1T-B: 1 TB ○ RG-NSEC-SSD-480G-B-M: 480 GB ● Hard disks from other vendors ○ Western Digital: WD10SPZX ○ Seagate: ST1000LM048 ○ Transcend: TS1TSSD470P
Fixed Service Port	● 8 x 10/100/1000BASE-T ports, which support auto-negotiation at 10 Mbps, 100 Mbps, or 1000 Mbps, and automatically identify straight-through and crossover cables. ● 4 x 10/100/1000/2.5GBASE-T ports, which support auto-negotiation at 10 Mbps, 100 Mbps, 1000 Mbps, or 2.5 Gbps in full-duplex mode. ● 4 x 10GE SFP+ ports (1000BASE-X/10GBASE-R). For details about the supported optical transceiver models, see Section Appendix B 10GE SFP+ Transceivers.
Fixed Management Port	● 1 x RJ45 MGMT port ● 1 x RJ45 console port
USB Port	1 x USB 3.0 port
Bypass Port	Not supported
Expansion Module	Not supported

Unit Dimensions (W x D x H)	442 mm x 420 mm x 43.6 mm (17.40 in. x 16.54 in. x 1.72 in.; without rubber pads)
Power Supply	No power module is included by default. The equipment supports two pluggable power modules (RG-PA150IB-F).
Rated Input Voltage	100 V AC to 240 V AC, 50/60 Hz
Maximum Input Voltage	90 V AC to 264 V AC, 50/60 Hz
Rated Input Current	3 A
Maximum Input Current	3 A
Maximum Power Consumption	75 W
Weight	4.8 kg (10.58 lbs)
Operating Temperature	0°C to 45°C (32°F to 113°F) at a height below 1,800 m (5,905.51 ft.) above the sea level Note: At an altitude between 1,800 m (5,905.51 ft.) and 5,000 m (16,404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the maximum temperature decreases by 1°C (1.8°F).
Operating Humidity	40% RH to 65% RH (non-condensing)
Storage Temperature	–40°C to 70°C (–40°F to 158°F)
Storage Humidity	10% RH to 90% RH (non-condensing)
Operating Altitude	0 m to 5,000 m (0 ft. to 16,404.2 ft.)

Caution

Due to the wide variety of USB flash drives, the equipment may not support some of them. You are advised to use a genuine Kingston USB flash drive formatted with the FAT32 file system.

1.4.3 Cooling

The RG-CR5016XS has two built-in fans and adopts the left-to-right airflow design to enable air cooling, ensuring that the equipment operates properly in the specified environment. Maintain sufficient clearance on both sides of the equipment for air circulation and ventilation.

1.5 Modules

1.5.1 Hard Disk Modules

The RG-CR2010XS and RG-CR5016XS support hard disk modules for expanding storage, which is used to store logs and report data. Purchase hard disk models based on equipment models.

Note

The hard disks have built-in software and are formatted as EXT4. They support plug-and-play.

Caution

- Avoid vibration and impact during transportation and use.
- The original packaging must be used during transportation.
- At an altitude above 3,000 m (9,842.52 ft.), the hard disks may malfunction.
- When handling the hard disks, avoid dropping them, applying pressure to their surface, or covering their ventilation holes.

1. RG-NSEC-HDD-1T-B

The RG-NSEC-HDD-1T-B hard disk module provides a storage capacity of 1 TB. Its appearance is shown in Figure 1-2.

Figure 1-2 Hard Disk Appearance

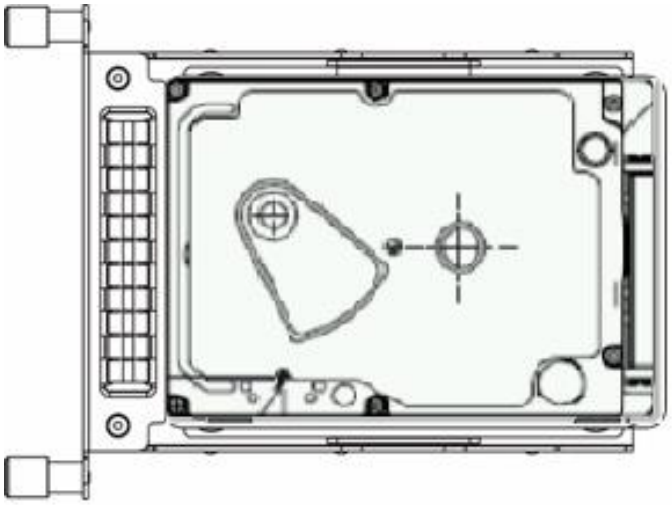


Table 1-9 Specifications

Model	RG-NSEC-HDD-1T-B
Supported Equipment Model	RG-CR2010XS and RG-CR5016XS
Unit Dimensions (W x D x H)	98.1 mm x 116.0 mm x 19.2 mm (3.86 in. x 4.57 in. x 0.76 in.)

Weight	0.25 kg (0.55 lbs)
Hard Disk Type	Mechanical hard disk
Port Type	SATA
Storage Capacity	1 TB
Maximum Power Consumption	3.5 W
Operating Temperature	0°C to 60°C (32°F to 140°F)
Storage Temperature	–40°C to 65°C (–40°F to 149°F)
Operating Humidity	5% RH to 95% RH (non-condensing)
Storage Humidity	5% RH to 90% RH (non-condensing)
Operating Altitude	0 m to 3,000 m (0 ft. to 9,842.52 ft.)
Hot Swapping	Not supported

2. RG-NSEC-SSD-480G-B-M

The RG-NSEC-SSD-480G-B-M can expand the storage capacity of the equipment by 480 GB.

Figure 1-3 Hard Disk Appearance

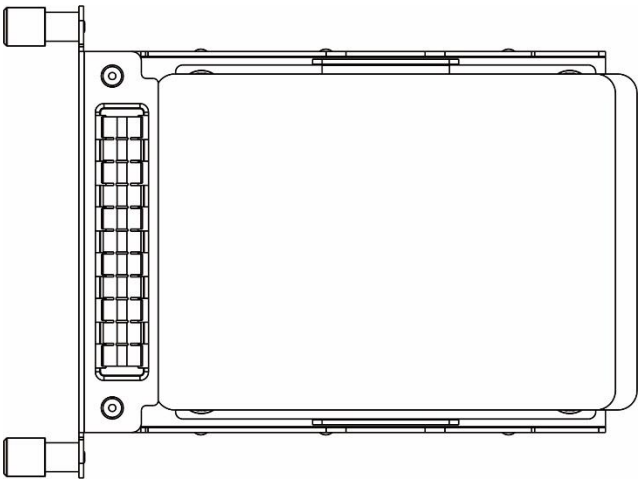


Table 1-10 Specifications

Model	RG-NSEC-SSD-480G-B-M
Supported Equipment Model	RG-CR2010XS and RG-CR5016XS
Unit Dimensions (W x D x H)	98.1 mm x 116.0 mm x 19.2 mm (3.86 in. x 4.57 in. x 0.76 in.)
Weight	0.2 kg (0.44 lbs)
Hard Disk Type	Solid state drive
Port Type	SATA
Storage Capacity	480 GB
Maximum Power Consumption	2.4 W
Operating Temperature	0°C to 70°C (32°F to 158°F)
Storage Temperature	–40°C to 85°C (–40°F to 185°F)
Operating Humidity	5% RH to 95% RH (non-condensing)
Storage Humidity	5% RH to 95% RH (non-condensing)
Operating Altitude	0 m to 3,000 m (0 ft. to 9,842.52 ft.)
Hot Swapping	Not supported

1.5.2 Power Module

The RG-CR5016XS supports pluggable power modules. Power modules are not included by default and must be purchased separately.

1. RG-PA150IB-F

Figure 1-7 RG-PA150IB-F Appearance

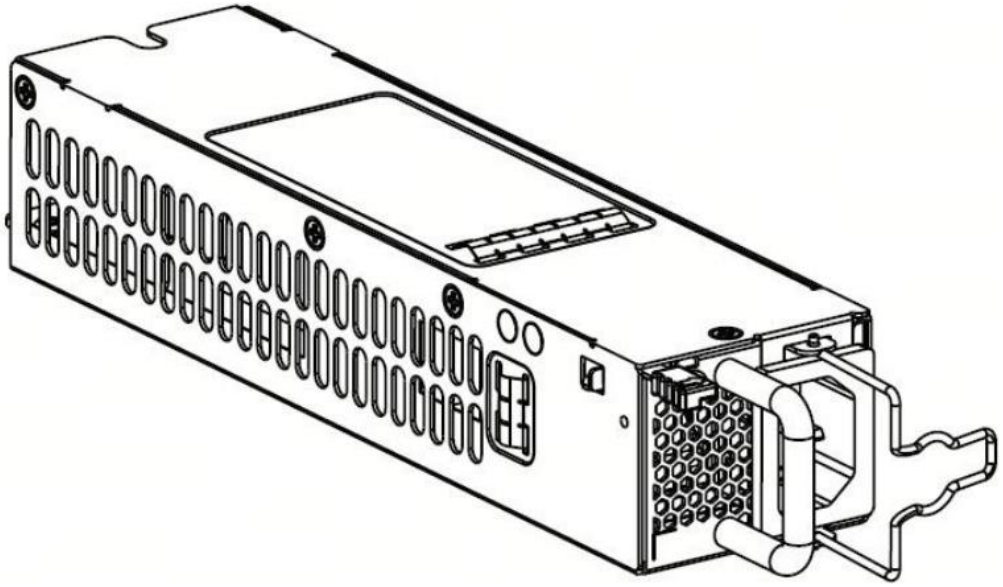


Figure 1-8 Front Panel

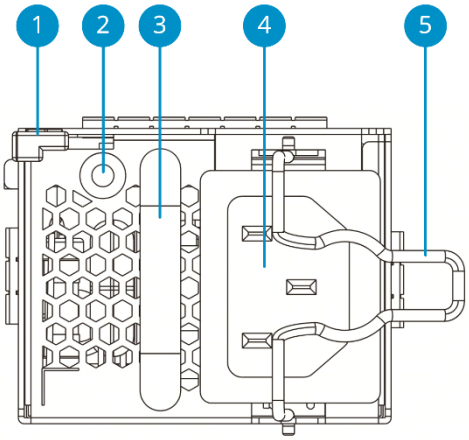


Table 1-11 Components on the Front Panel

No.	Component	Description
1	Power supply latch	Secures the power module to prevent it from coming loose or being accidentally removed. To replace the power module, slide the latch to the right to unlock it before removing the power module.
2	Power output status LED	● Off: The power module has no output or malfunctions. ● Solid green: The power module operates properly.

No.	Component	Description
3	Power module handle	Used to smoothly install or remove the power module from the slot.
4	Power connector	Three-pin power connector, used to connect the power cord.
5	Power cord retention clip	Used to secure the power cord and prevent it from coming loose.

Table 1-12 RG-PA150IB-F Power Module Specifications

Model	RG-PA150IB-F
Supported Equipment Model	RG-CR5016XS
Unit Dimensions (W x D x H)	50.5 mm x 196 mm x 40 mm (1.99 in. x 7.72 in. x 1.57 in.)
Weight	0.55 kg (1.21 lbs)
Rated Input Voltage	AC: 100 V AC to 240 V AC, 50/60 Hz HVDC: 192 V DC to 288 V DC
Rated Input Current	3 A max
Rated Output Voltage	12 V
Maximum Output Current	12.5 A
Maximum Output Power	150 W
Input Ground-Leakage Current	≤ 3.5 mA
Temperature	Operating temperature: –10°C to 55°C (14°F to 131°F)
	Storage temperature: –40°C to 70°C (–40°F to 158°F)
Humidity	Operating humidity: 5% RH to 95% RH (non-condensing)
	Storage humidity: 5% RH to 95% RH (non-condensing)
Operating Altitude	0–5,000 m (0–16,404.20 ft.)
Hot Swapping	Supported When two power modules are installed for power redundancy, one power module can be disconnected from the external power source and then removed or replaced.

2 Preparing for Installation

2.1 Safety Guidelines

Note

- To avoid personal injury or equipment damage, review the safety guidelines in this chapter before you begin the installation.
- The following safety guidelines may not include all the potentially hazardous situations.

Warning

- Operation of this equipment in a residential environment could cause radio interference.

CE

EU REP. Company Name: AC WORKS CONSULTING SRLS
Tel No.: +39 0541381034
E-mail: acworksltd@outlook.com
Reg Address: Via Carpi 5, 47838, Riccione(RN)-ITALY

UK REP. Company Name: Equiventia CP LTD
E-mail: acworksltd@outlook.com
Reg Address: 25 Norway Gate, London, England, SE16 7TR, United Kingdom

- This equipment is not suitable for use in locations where children are likely to be present.
- Avoid vibration and impact during transportation and use.
- The original packaging must be used during transportation.

Warning

The equipment contains a button cell. Swallowing a button cell can cause serious internal burns within 2 hours and may be fatal.

- Keep children away from new and used button cells.
- If the battery compartment is not securely closed, stop using the equipment and keep it away from children.
- If you think a button cell may have been swallowed or placed in any part of the body, seek medical assistance immediately.

Warning

Note: The equipment contains a lithium battery (button cell):

- If the battery is damaged, contact Ruijie technical support to replace it with the same model and dispose of the used battery properly. Do not replace the battery by yourself. Replacing the battery with an incorrect model may cause an explosion or invalidate the safety protection.
- Exposing the battery to extremely high temperatures and/or extremely low air pressure may cause the battery to explode or leak flammable liquids or gases.
- Throwing the battery into a fire or oven, or mechanically crushing or cutting it may cause the battery to explode.

2.1.1 General Precautions

- Install the equipment in a standard 19-inch rack.
- Never operate the equipment in a wet environment, and avoid any liquids inside it. Keep the chassis clean and dust-free.
- Keep the equipment away from heat sources.
- Ensure that the rack and power distribution system are properly grounded.
- Keep the equipment away from walk areas.
- During installation and maintenance, do not wear loose clothing or ornament that may get caught in the chassis.
- Keep tools and accessories away from walk areas.

2.1.2 Chassis-Lifting Guidelines

- Avoid moving the equipment frequently.
- Turn off all power supplies and disconnect all cables before lifting or moving the equipment.
- Two or more people are required to lift the chassis. Keep balance and prevent personal injuries when lifting or moving the equipment.

2.1.3 Electricity Safety

Warning

- Any deviation from standard or improper electrical operations can result in accidents such as fires or electric shocks, potentially causing severe or even fatal harm to both individuals and equipment.
- Direct or indirect touch through a wet object on high-voltage and mains supply can bring a fatal danger.

- Always observe the local regulations and standards. Only qualified personnel should be allowed to operate the equipment.
- Carefully check the work area for potential hazards, including ungrounded power system, absent safety grounds, and damp floors.
- Locate the emergency power-off switch in the room before installation. In the case of an accident, cut off the power supply immediately.
- Never assume that power is disconnected from a circuit. Always check.
- Use an uninterruptible power supply (UPS), as it can prevent power outages and avoid power interference.

2.1.4 Preventing ESD Damage

- Ensure that the chassis is connected to earth ground.
- Keep the site as dust free as possible.
- Maintain appropriate humidity conditions.
- Before installing any pluggable modules, wear an anti-ESD wrist strap and make sure that it is properly grounded.
- When handling a module, do not touch its components and printed circuit board (PCB) directly with your hands.

- When storing a module, place it in a static-shielding container or lay it face up on an anti-static workbench. Do not place it randomly.
- Avoid contact between the printed circuit boards and clothing. The anti-ESD wrist strap only protects the printed circuit boards from ESD voltages on the body. ESD voltages on clothing can still cause damage.

2.1.5 Laser Safety

The equipment supports various types of optical transceivers, which are Class 1 laser products.

Pay attention to the following:

- When an optical transceiver is working, ensure that its port is connected to an optical cable or covered by a dust cap to keep out dust and prevent it from burning your eyes.
- Do not stare into an optical port.

Note

Do not approach or stare into an optical port under any circumstances. This may cause permanent damage to your eyes.

2.2 Site Requirements

The equipment must be installed indoors for normal operation and prolonged service life.

The installation site must meet the following requirements.

2.2.1 Airflow

Maintain sufficient space around air vents to ensure adequate airflow through the chassis. Manage the cables using cable ties or cable management brackets to avoid blocking air intakes.

2.2.2 Space

You are advised to have a pathway of at least 0.8 m (2.62 ft.) wide in the equipment room. This space ensures that you can move the chassis and swap the modules easily.

Do not install the equipment against a wall. Instead, maintain a minimum clearance of 0.4 m (1.31 ft.) around the equipment for heat dissipation and equipment maintenance.

2.2.3 Temperature and Humidity

To ensure normal operation and prolonged service life of the equipment, maintain appropriate temperature and humidity conditions in the equipment room.

Prolonged exposure to inappropriate temperature and humidity conditions can cause damage to the equipment.

- In an environment with high relative humidity, insulating materials are prone to poor insulation or even electricity leakage.
- In an environment with low relative humidity, insulating gaskets may shrink, resulting in screw loosening.
- In a dry environment, static electricity is more likely to occur, posing a risk to the internal circuits of equipment.
- A high temperature can accelerate the aging process of insulation materials, greatly reducing the availability of the equipment and severely affecting its service life.

Table 2-1 Temperature and Humidity

Temperature		Relative Humidity	
Long-Term Operating Condition	**Short-Term Operating Condition**	**Long-Term Operating Condition**	**Short-Term Operating Condition**
15°C to 30°C (59°F to 86°F)	0°C to 45°C (32°F to 113°F)	40% RH to 65% RH (non-condensing)	10% RH to 90% RH (non-condensing)

Note

- The operating temperature and humidity are measured at 1.5 m (4.92 ft.) above the floor and 0.4 m (1.31 ft.) before the rack when there is no protective plate in front or on the rear of the rack.
- Short-term operation: The equipment operates continuously for no more than 48 hours at a time, or for a total of no more than 15 days per year.

2.2.4 Cleanliness

Dust poses a significant hazard to the equipment. Dust on the enclosure causes electrostatic adhesion, leading to poor contact of the metallic joints. Electrostatic adhesion is more likely to occur in an indoor environment with relatively low humidity, not only affecting the service life of the equipment, but also causing communication faults. The following table lists the requirements for dust concentration and particle size in the equipment room.

Table 2-2 Requirements for Dust

Particle Diameter	Concentration (Particles/m^3)
≥ 0.5 μm	≤ 1.4×10^7
≥ 1 μm	≤ 7×10^5
≥ 3 μm	≤ 2.4×10^5
≥ 5 μm	≤ 1.3×10^5

Apart from dust, there are also requirements on the salt, acid, and sulfide in the air of the equipment room. These harmful substances will accelerate metal corrosion and component aging. Therefore, the equipment room should be properly protected against harmful gases, such as sulfur dioxide, hydrogen sulfide, nitrogen dioxide, and chlorine gas. The following table lists the limits on harmful gases.

Table 2-3 Requirements for Gases

Gas	Average (mg/m^3)	Maximum (mg/m^3)
Sulfur dioxide (SO_2)	0.2	1.5
Hydrogen sulfide (H_2S)	0.006	0.03
Nitrogen dioxide (NO_2)	0.04	0.15

Gas	Average (mg/m^3)	Maximum (mg/m^3)
Ammonia gas (NH_3)	0.05	0.15
Chlorine gas (Cl_2)	0.01	0.3

Note

Average refers to the average value of harmful gases measured in a week. **Maximum** refers to the upper limit of harmful gases measured in a week for up to 30 minutes every day.

2.2.5 Grounding

A proper grounding system is crucial for ensuring stable and reliable operation, as well as preventing lightning strikes and interference. Carefully check the grounding conditions at the installation site according to the grounding requirements, and complete grounding properly based on the site situation.

- Safety Grounding

Ensure that the rack and power distribution system are securely grounded if the equipment uses the AC power supply. Otherwise, electric shocks may occur when the insulation resistance between the power module and the chassis decreases.

Caution

The building should provide a protective ground connection to ensure that the equipment is connected to a protective ground.

- Lightning Grounding

The lightning protection system is an independent system composed of a lightning rod, a downlead conductor, and a connector connected to the grounding system. The grounding system is typically used for power reference grounding and safety grounding of the rack. Lightning grounding is required only for facilities, and is not required for the equipment.

- EMC Grounding

Electromagnetic compatibility (EMC) grounding includes shielded grounding, filter grounding, noise and interference suppression, and level reference.

The grounding resistance should be smaller than 1 ohm. Connect the grounding terminal of the rack or workbench to the ground before operating the equipment.

2.2.6 Preventing Electromagnetic Interference

- Take interference prevention measures for the power supply system.
- Keep the equipment away from the grounding system or lightning protection grounding system of the power facility.
- Keep the equipment far away from high-frequency current equipment such as high-power radio transmitting stations and radar launchers.

- Take electromagnetic shielding measures when necessary.

2.2.7 Surge Protection

- Although the equipment can guard against lightning strikes, strong lightning strikes may still damage the equipment. Take the following surge protection measures: Ensure that the grounding wire of the rack is in good contact with the ground.
- Ensure that the neutral point of the AC power socket is in good contact with the ground.
- Install a power arrester in front of the power input end to enhance surge protection for the power supply.

2.2.8 Installation Site

Regardless of whether the equipment is installed in a rack or on a workbench, ensure that the following conditions are met:

- Maintain a proper clearance around the air inlets and outlets for heat dissipation.
- Some models are equipped with fans to draw in cold air from sides and dissipate heat through the rear of the chassis. Maintain a minimum clearance of 15 cm (5.91 in.) around the ventilation openings for heat dissipation. Install the equipment in a standard 19-inch rack, or place it on a clean workbench. The installation of air conditioners is recommended in hot areas.
- The installation site has a good cooling and ventilation system.
- The installation site is sturdy enough to support the weight of the chassis and its accessories.
- The installation site is properly grounded.

2.3 Tools

Table 1-1 lists the tools required during equipment installation. Prepare them in advance.

Table 1-1 Tools

Tool Category	Tool
Common Tools	Phillips screwdriver, hexagon key, M6 cage nuts and matching screws, and cable ties
Dedicated Tools	ESD-preventive gloves, wire stripper, crimping pliers, and RJ45 crimping pliers
Relevant Equipment	Management PC, display, and keyboard

Note

The equipment is delivered without a toolkit. Prepare the preceding tools by yourself.

2.4 Unboxing and Inspection

Before installing the equipment, open its accessory box and check whether all accessories are included. Accessories vary with equipment models. For details, see the *User Manual*.

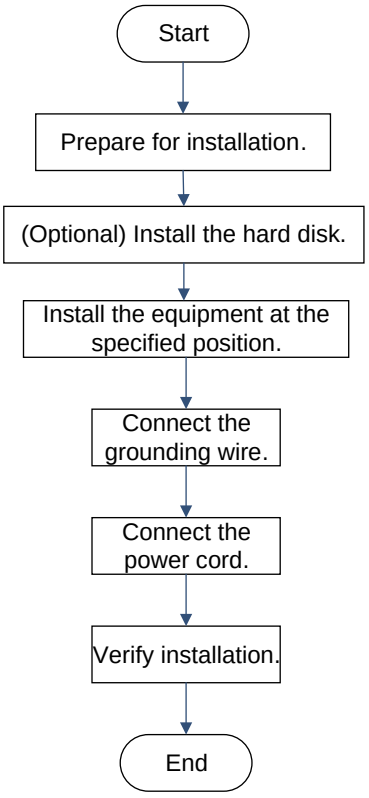
3 Installing the Equipment

Caution

- Before installing the equipment, ensure that guidelines and requirements in Chapter 2 have been met.
- The equipment appearance varies according to different models. The installation flowchart provided in this chapter is for reference only. The actual installation process varies according to device models.

3.1 Installation Procedure

To avoid product damage caused by confusion or misoperations during installation, follow the installation procedure shown in the flowchart.



3.2 Before You Begin

Complete installation preparations according to 2 Preparing for Installation and check the following items:

- The installation site provides sufficient space for heat dissipation.
- The installation site meets the temperature and humidity requirements.
- The power supply is available at the installation site, and its current meets the requirements.
- The network cables have been deployed at the installation site.
- The power supply meets the system power requirements.

- Locate the emergency power-off switch in the room before installation. In the case of an accident, cut off the power supply immediately.

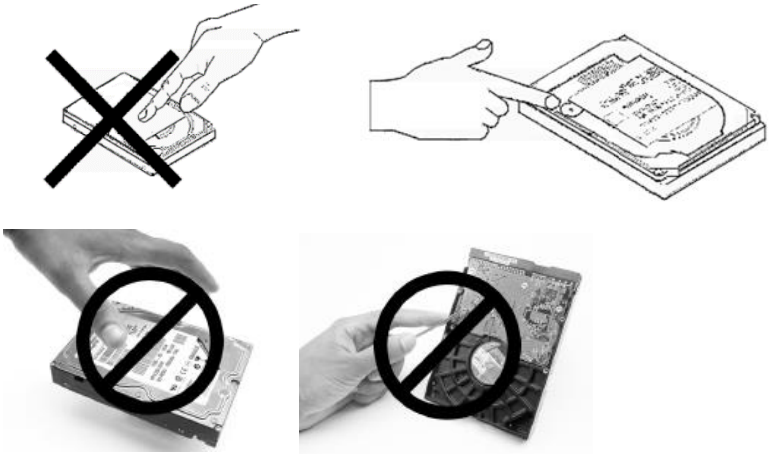
3.3 (Optional) Installing the Hard Disk Module

Application Scenario

Only the RG-CR2010XS and RG-CR5016XS support hard disks. If you purchase a hard disk, install it according to this section to avoid damage.

Precautions

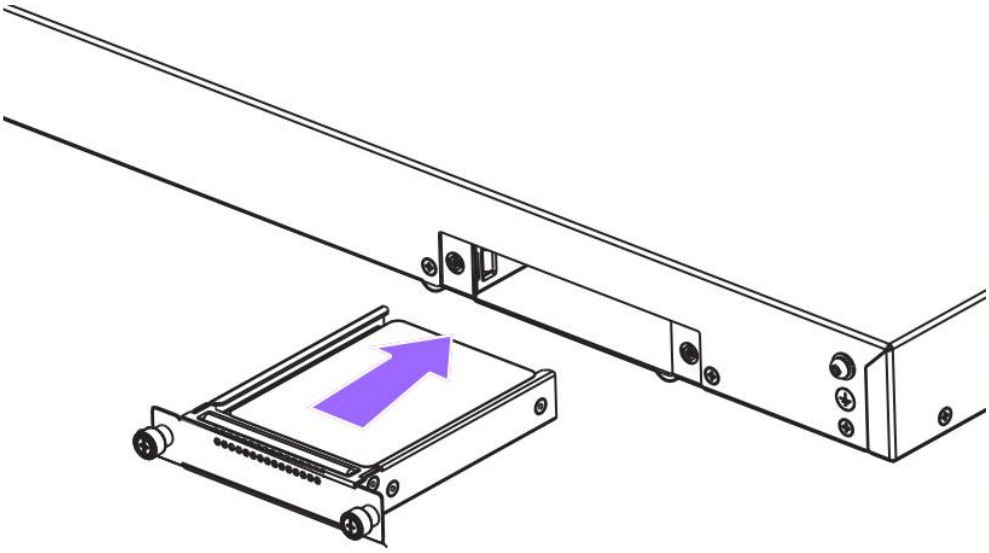
- Hard disks do not support hot swapping. Verify that the equipment is powered off before installing or removing a hard disk.
- Pay attention to the following precautions during the operation:
  - Do not block the hole on the top of the hard disk.
  - Do not press on the hard disk.
  - Do not throw, jolt, vibrate, or shake the hard disk. Hold the hard disk by its side when handling it.
  - Do not touch PCB components with bare hands or tools.



Procedure

(1) On the rear panel of the equipment, use a Phillips screwdriver to turn the two screws on the hard disk slot cover counterclockwise to remove the cover and place it properly.

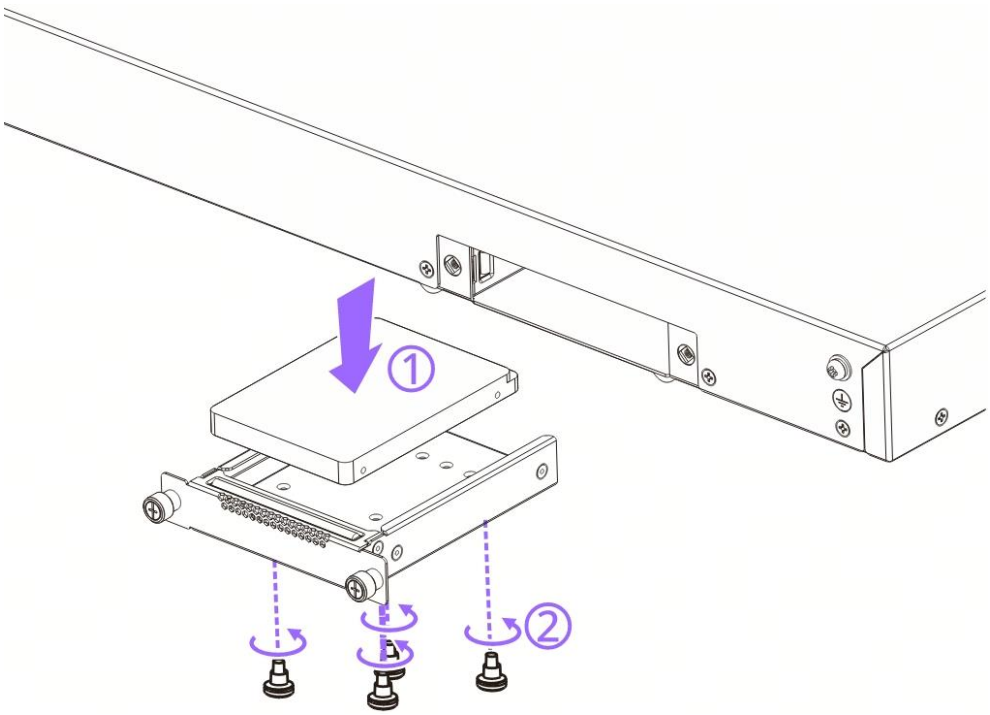
(2) Insert the hard disk slowly and horizontally into the slot until it is fully seated.
  - Install a Ruijie hard disk.

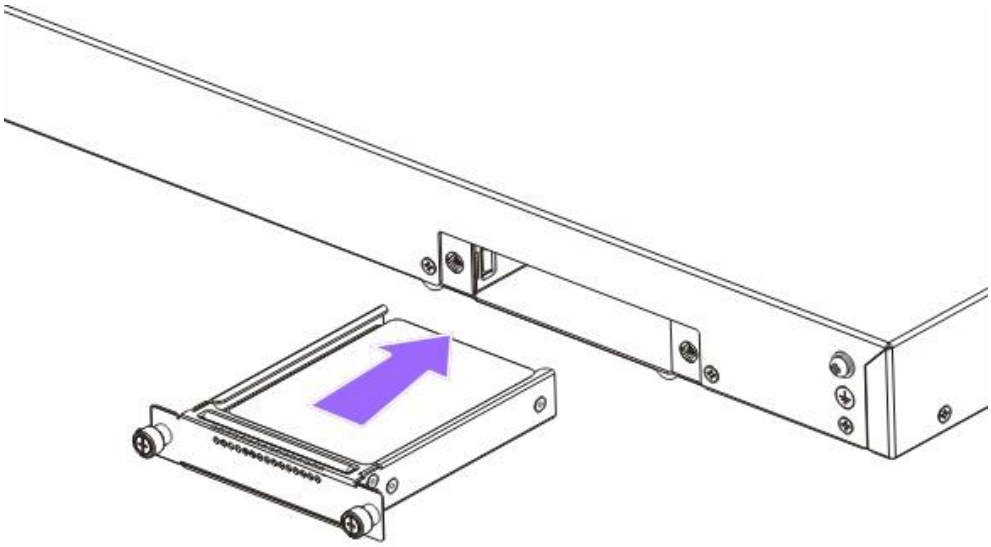


- Install a hard disk from other vendors.

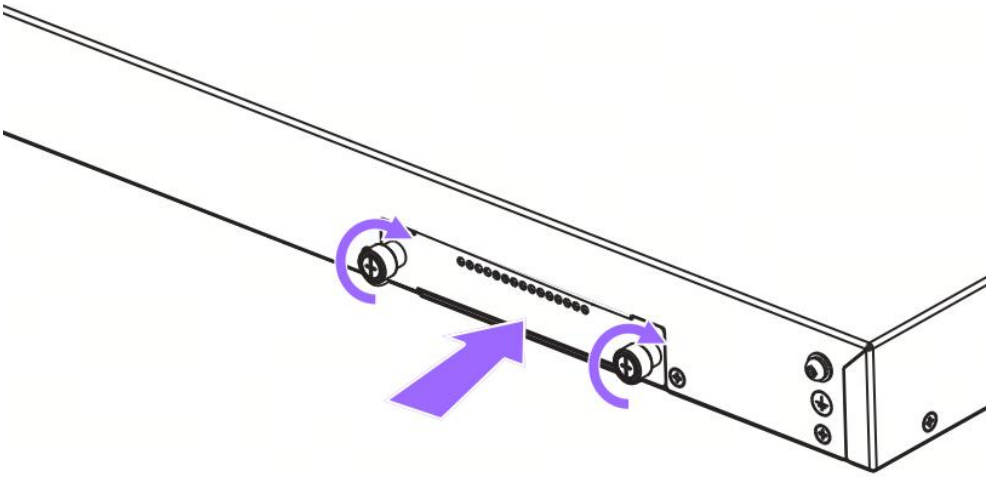
Note

If the hard disk from other vendors is not empty, see Appendix C Formatting Hard Disks from Other Vendors to format the hard disk.





(3) Use a Phillips screwdriver to tighten the screws on the hard disk clockwise.



Note

Install a hard disk slot cover on an empty slot to prevent dust ingress and ensure proper equipment ventilation.

3.4 Installing the Equipment in a Specified Position

3.4.1 Installing the Equipment in a Rack

Application Scenario

When a standard rack is used, you can use the mounting accessories delivered with the equipment to install it.

The equipment is designed to fit standard racks, and can be installed using the included mounting accessories.

Prerequisites

Confirm the following items before installation:

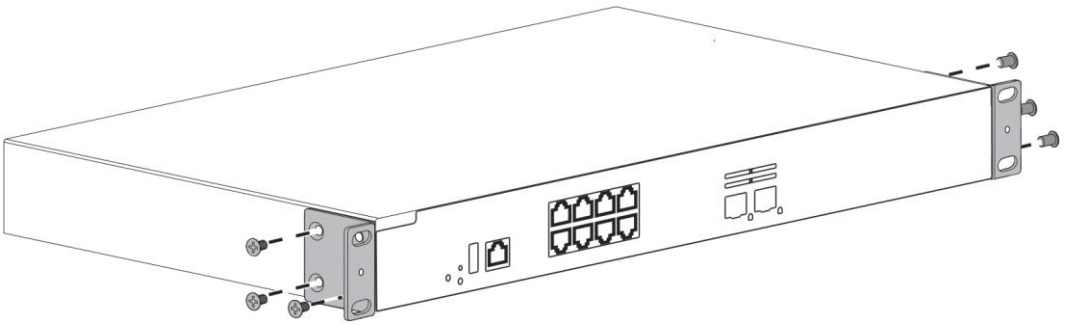
- The rack is secured.

- The equipment installation position in the rack has been determined.

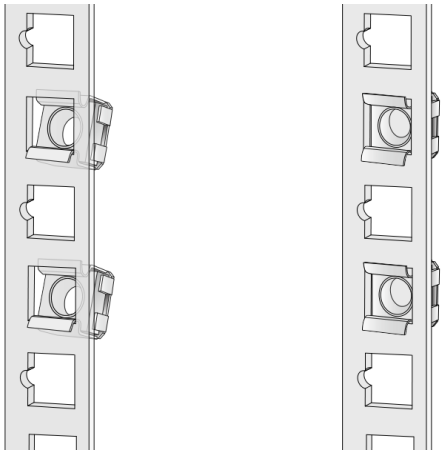
1. Installing the RG-CR510XS or RG-CR2010XS in a Rack

(1) Take out the rack-mount brackets and the corresponding M4 countersunk screws provided with the equipment.

(2) Install rack-mount brackets on both sides of the equipment using six M4 countersunk screws.

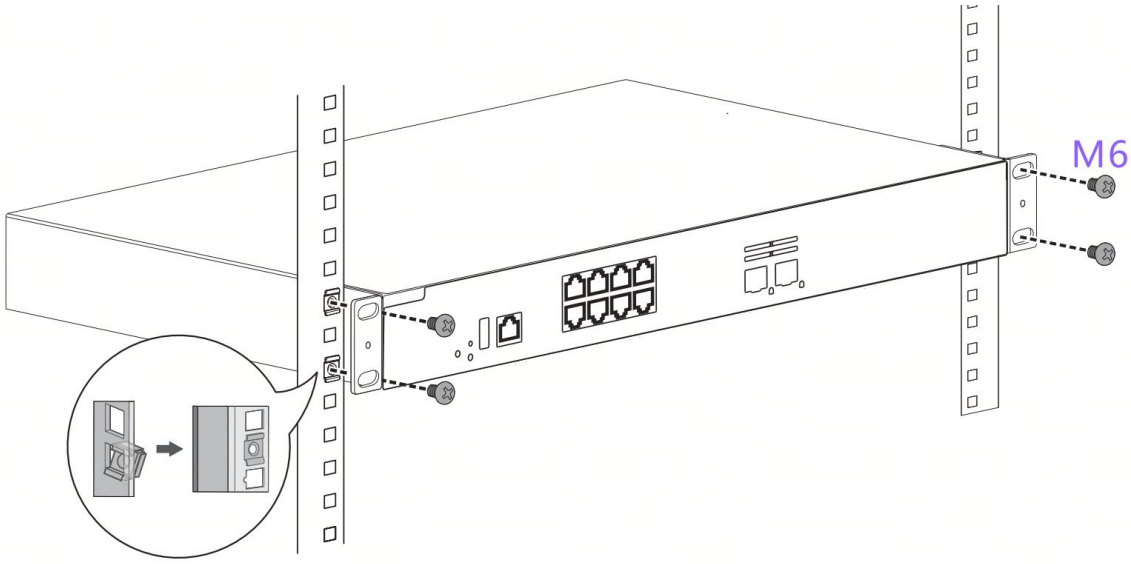


(3) Install cage nuts on both sides of the rack.



(4) Lift the equipment from both sides and slide it horizontally into the rack, ensuring that the front rack-mount brackets are flush with the front square holes of the rack.

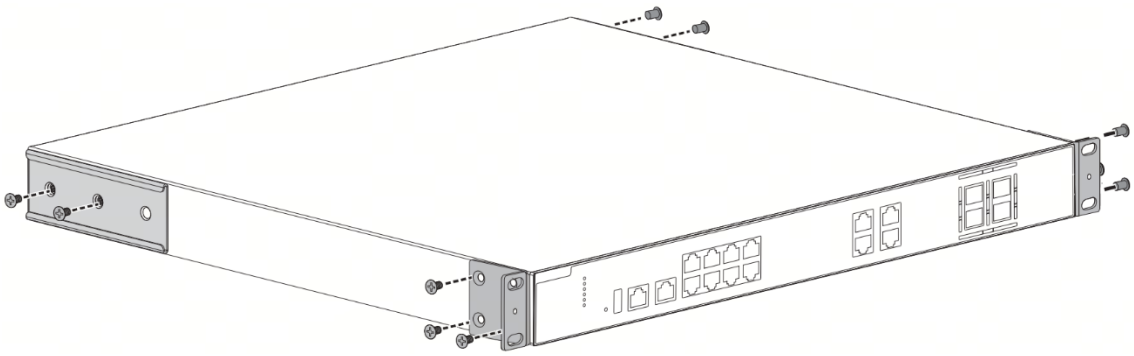
(5) Align the mounting holes on rack-mount brackets with the cage nuts in the front square holes, and use M6 screws to secure the left and right rack-mount brackets to the rack.



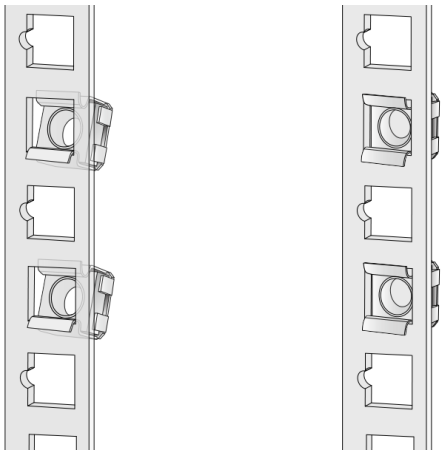
2. Installing the RG-CR5016XS in a Rack

(1) Take out the front and rear rack-mount brackets and the corresponding M4 countersunk screws delivered with the equipment.

(2) Place the long side of the front rack-mount bracket against the side panel of the equipment, and secure it with three M4 screws. Secure the rear rack-mount bracket to the side panel of the equipment with two M4 screws. The installation procedure is the same for both sides of the equipment.



(3) Install four cage nuts into the front mounting rails on both sides of the rack according to the planned installation position of the equipment, with two nuts on each side. The equipment is 1 RU high. Install the cage nuts with one hole space between them, as shown in the following figure.

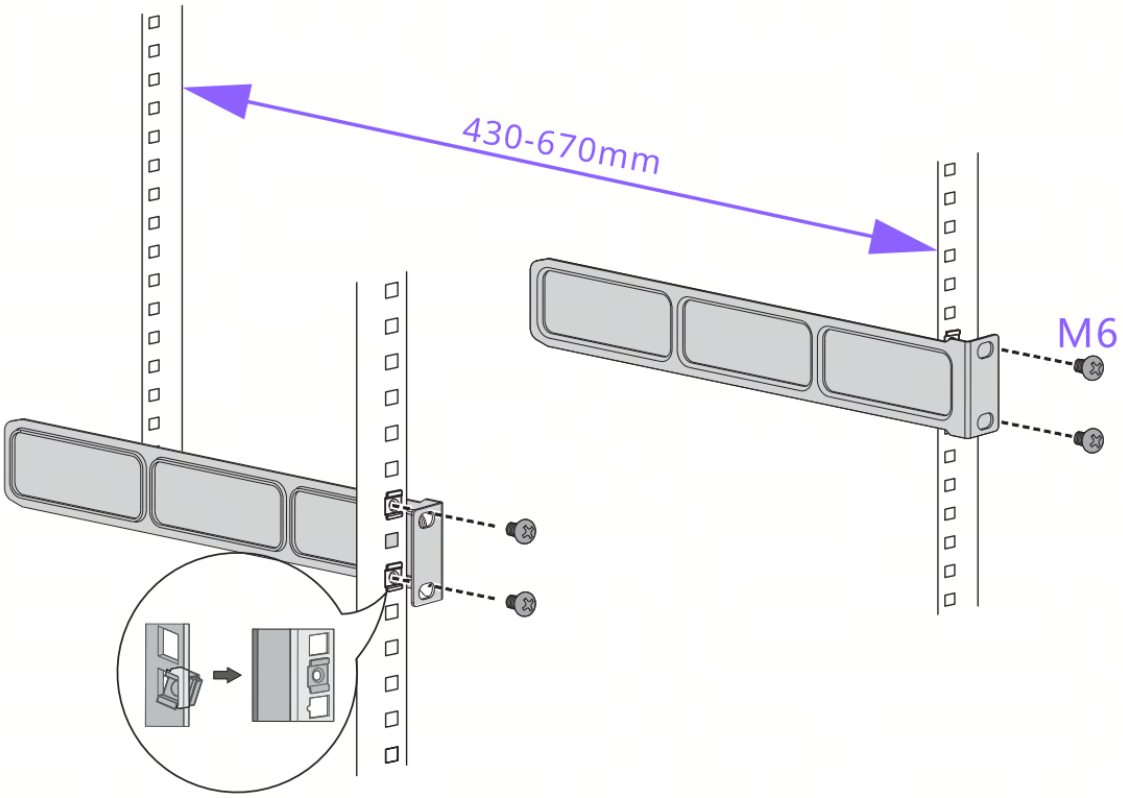


(4) Install the slide rails for the rear rack-mount brackets.

a Determine the installation positions of the slide rails for the rear rack-mount brackets according to the planned installation positions of the front rack-mount brackets. Ensure that the equipment is level after installation.

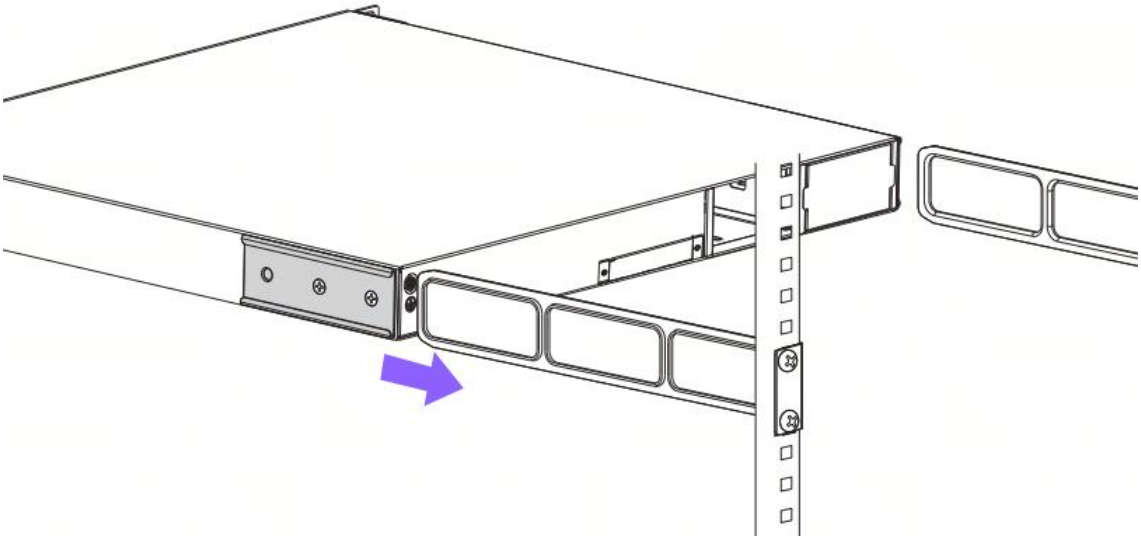
b Facing the rear of the rack, install the cage nuts used to secure the slide rails for the rear rack-mount brackets on the rear mounting rails.

c Align the mounting holes of the slide rails for the rear rack-mount brackets with the cage nuts installed on the rear mounting rails, and secure the slide rails to the rack using M6 screws. The installation procedure is the same for the slide rails on the left and right sides.

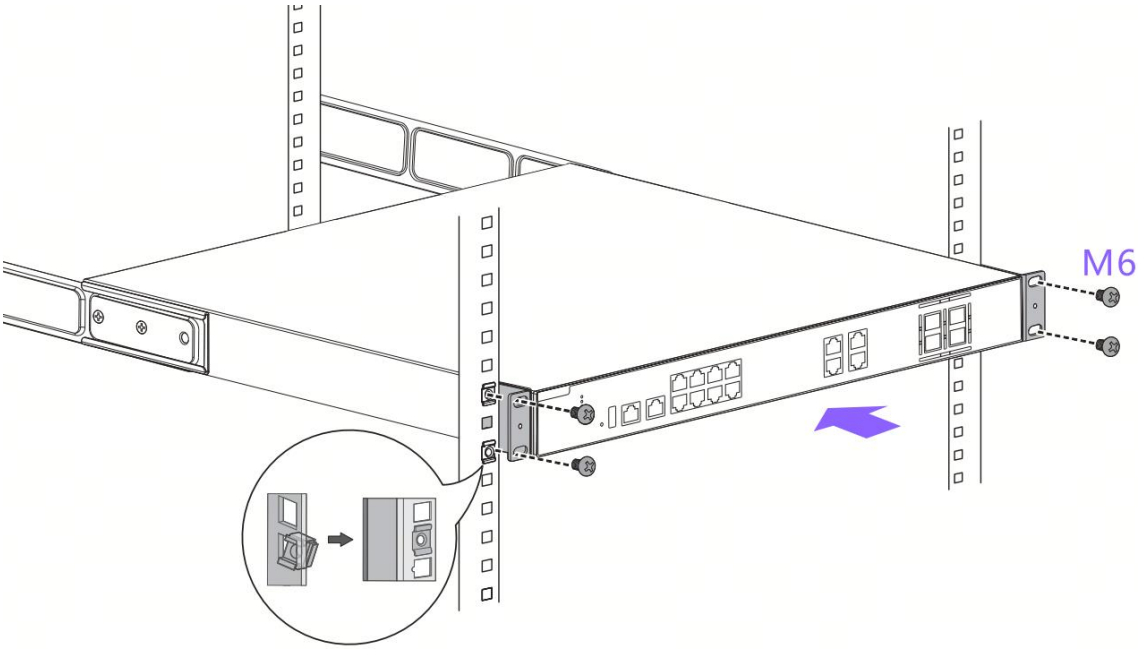


(5) Facing the front of the rack, support the bottom of the equipment with your hands. Align the rear rack-mount brackets on both sides of the equipment with the slide rails on the rear mounting rails, and push the equipment

horizontally until the rear rack-mount brackets slide smoothly into the slide rails and the front rack-mount brackets are flush with the front mounting rails.



(6) Align the grooves and mounting holes on the front rack-mount brackets with the cage nuts in the front square holes, and use M6 screws to secure the front rack-mount brackets to the rack.



3. Post-Installation Check

After the installation is complete, check the following items:

- The equipment is securely installed in the rack.
- Sufficient space is reserved on both sides of the equipment for heat dissipation.
- No objects around the equipment obstruct heat dissipation.

3.4.2 Installing the Equipment on a Workbench

Application Scenario

If a standard rack is unavailable in the installation environment, you can place the equipment horizontally on a clean workbench.

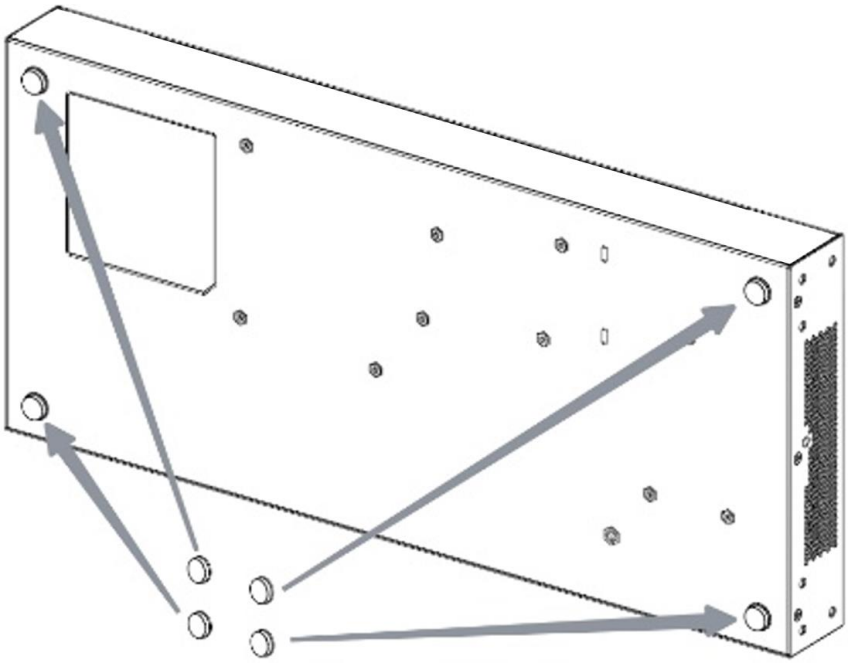
Prerequisites

Confirm the following items before installation:

- The workbench is reliably grounded.
- The workbench is clean, sturdy, and placed on a level surface.

Procedure

(1) Attach the four rubber pads delivered with the equipment to the round, recessed areas at the four corners on the bottom.



(2) Place the equipment horizontally on the workbench (with the rubber pads facing downward).

Follow-up Procedure

After the installation is complete, check the following items:

- The equipment is securely placed on the workbench.
- A minimum clearance of 10 cm (3.94 in.) is maintained around the equipment for heat dissipation, and no object blocks heat dissipation.
- No heavy objects are placed on the equipment.

3.5 Connecting the Grounding Wire

Application Scenario

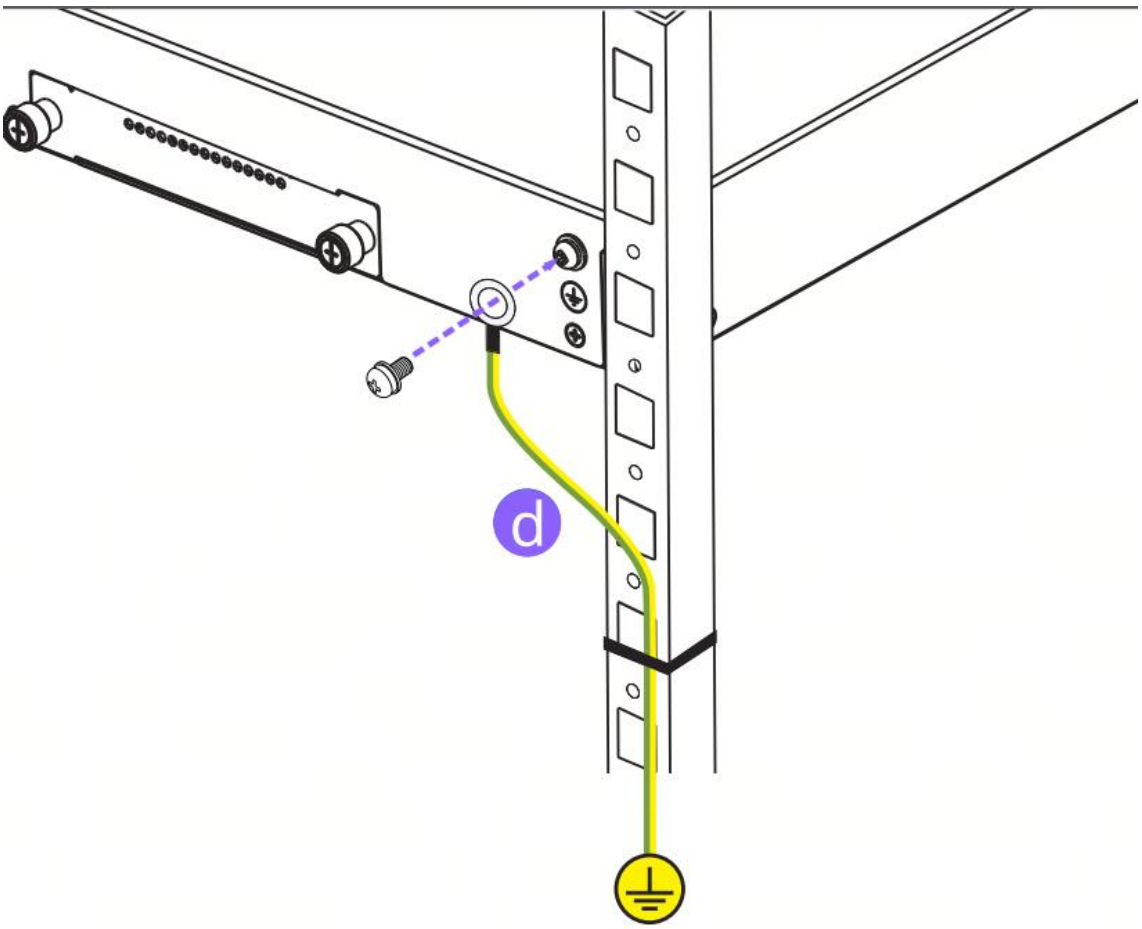
Properly connecting the grounding wire is an important measure for lightning protection and interference prevention.

This section uses the RG-CR2010XS as an example to describe how to connect the grounding wire.

Procedure

(1) On the rear panel of the equipment, loosen the grounding screw counterclockwise.

(2) Align the M4 end of the grounding wire with the grounding screw hole and tighten the grounding screw clockwise.



(3) Connect the M6 end of the grounding wire to the grounding point on the rack or workbench.

Follow-up Procedure

After connecting the grounding wire, check the following items:

- The grounding wire is securely connected to the grounding lug.
- Use a multimeter to measure the grounding resistance between the grounding lug and grounding point, and ensure that the resistance is less than 1 ohm.

3.6 Connecting the Power Cord

Application Scenario

After a power module is installed in the equipment and connected to an external power supply system, the system meets the power requirement of the equipment. If two power modules are installed, connect power cords to both of them.

Prerequisites

- The power supply system meets the power requirements of the equipment.
- The equipment is properly grounded.
- The power switch of the external power supply system is in the OFF position.

Warning

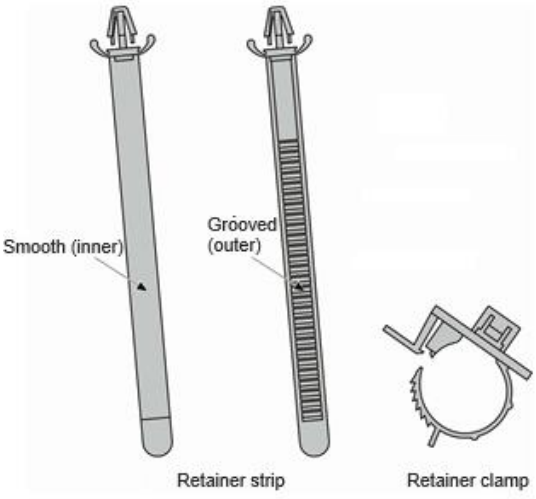
Use the delivered power cords. Otherwise, security accidents may occur.

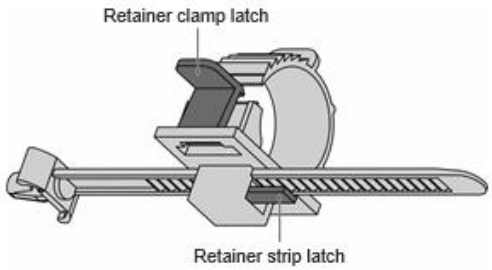
1. Connecting the Power Cord to the RG-CR510XS or RG-CR2010XS

(1) Install the power cord retainer.

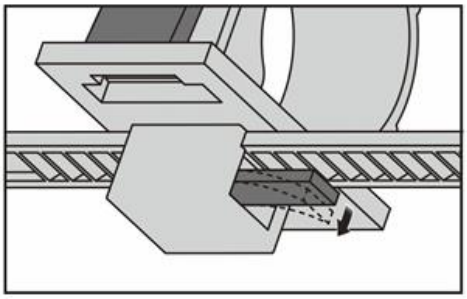
a Remove the power cord retainer from its packaging. The power cord retainer consists of a retainer strip and a retainer clamp. The retainer strip has two sides, one side smooth and the other side grooved. The retainer clamp is adjustable in size, with a smooth inner side and a grooved outer side.

b The retainer clamp has two latches. If you want to adjust the position of the retainer strip on the clamp, press the retainer strip latch. If you want to adjust the tightness of the retainer clamp, press the retainer clamp latch.





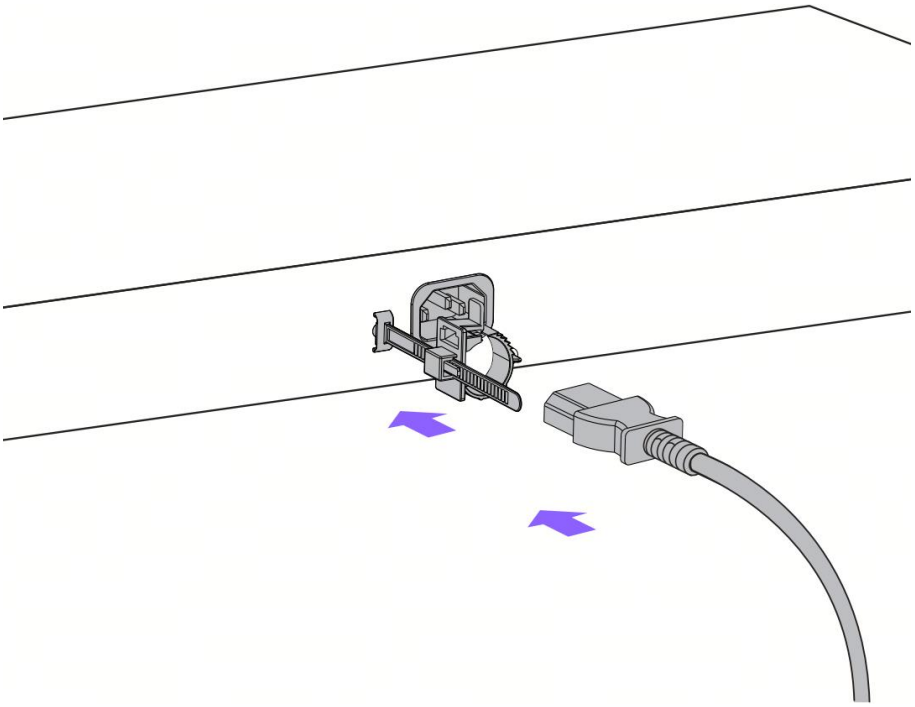
c To assemble the power cord retainer, thread the retainer strip through the hole at the bottom of the retainer clamp. During the process, you can hear a click as the teeth engage. If you cannot pull out the retainer strip without pressing the retainer strip latch, the power cord retainer is properly assembled. To remove the retainer strip, push the retainer strip latch down in the direction shown in the following figure.



(2) Insert the assembled power cord retainer into the installation hole on the rear panel of the equipment and ensure that the power cord retainer is securely installed.

(3) Route the power cord through the retainer clamp, and insert the power plug into the power connector on the rear panel of the equipment.

(4) Slide the retainer clamp to an appropriate position along the retainer strip, and adjust the retainer clamp latch to lock the power cord in place.



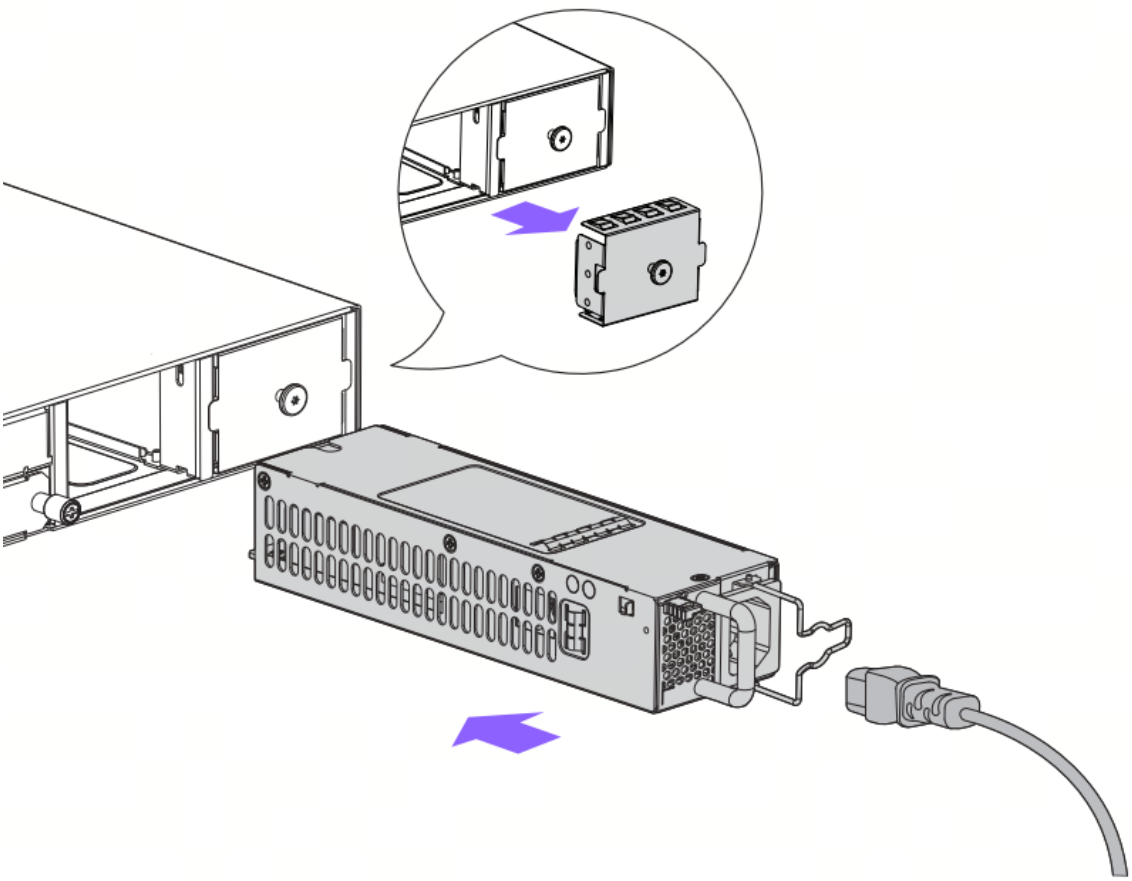
(5) Insert the other end of the power cord into an external AC power socket.

2. Installing the Power Module and Connecting a Power Cord to the RG-CR5016XS

(1) On the rear panel of the equipment, remove the power module cover and place it properly.

(2) Insert the power module slowly and horizontally into the slot until it is fully seated.

(3) Insert one end of the power cord into the three-pin power connector on the power module, and fasten the power cord retention clip to prevent the power cord from coming loose.



(4) Insert the other end of the power cord into an external AC power socket.

3.7 Verifying Installation

After installation, check the following items before powering on the equipment to ensure normal operation.

- If the equipment is installed in a rack, verify that it is securely mounted and that sufficient clearance is provided around it for heat dissipation. If the equipment is installed on a workbench, verify that sufficient clearance is provided around it for heat dissipation and that the workbench is stable.
- The specifications of the external power supply system meet requirements of the equipment.
- The grounding wire of the equipment is properly connected.
- The power cord is correctly and reliably connected. The power cord is long enough to avoid being tightened, which reduces its service life.
- The equipment is correctly connected to other equipment, such as a configuration endpoint.

4 Commissioning

4.1 Setting Up the Configuration Environment

Prerequisites

Table 4-1 lists the default settings for the equipment.

Table 4-1 Factory Settings

DHCP	The DHCP service is enabled on vswitch0 by default.
Login Interface and Address	● RG-CR510XS and RG-CR2010XS ○ vswitch0: 10.20.48.1/20 ● RG-CR5016XS ○ MGMT: 10.20.30.42/24 ○ vswitch0: 10.20.48.1/20 By default, all LAN ports on the equipment work in switching mode and are added to vswitch0.
Username and Password	Default username: admin Default password: admin

Procedure

(1) Connect any LAN port (for example, LAN0) on the equipment to an Ethernet port on the management PC using an Ethernet cable.



(2) Configure the PC to obtain an IP address automatically, or manually assign an IP address that is in the same subnet as vswitch0 and does not conflict with any existing IP addresses.

4.2 Power-on

4.2.1 Checklist Before Power-on

- The equipment is properly grounded.
- The power cord is reliably connected.
- The input voltage meets the requirement.
- The Ethernet cables are correctly connected.

4.2.2 Power-on

Turn on the power switch of the power supply system.

4.2.3 Checklist After Power-on

Check whether the equipment is working properly based on its LEDs.

Table 1-1 LED Status After Power-on

LED Name	Normal Status
System status LED (SYS)	Solid green
Fan status LED (FAN)	Solid green
Hard disk status LED (SATA)	Solid green
HA active/standby LED (HA)	Solid green (active equipment) or blinking green (standby equipment)

4.3 Configuring the Equipment

Open a browser on the management PC, enter https://10.20.48.1 in the address bar, and press Enter to log in to the eWeb management page of the equipment for service configuration. For details about the device configuration, see the *User Manual* of the corresponding version.

5 Troubleshooting

5.1 Optical Port Is Down

5.1.1 Issue Description

The system operates properly. After an optical transceiver is inserted into the optical port and an optical cable is properly connected, the optical port is still Down.

5.1.2 Solution

Troubleshoot the fault according to the following steps:

(1) Check whether the receive and transmit ends of the optical fibers are reversed. The transmit end of the local optical port must be connected to the receive end of the peer optical port. Swap the connections of the two fibers in the optical transceiver and try again.

(2) Check whether the optical transceivers on both ends work at the same wavelength. For example, an optical transceiver working at 1,310 nm cannot be connected to an optical transceiver working at 1,550 nm.

(3) Check whether the distance between the two ends exceeds the length marked on the optical transceivers.

(4) Check whether the rates of the interconnected optical transceivers are consistent and whether the fiber type meets the requirements.

(5) For equipment whose optical ports support multiple rates, check whether the port rate mode is configured correctly, that is, the rates on both ends are consistent.

If the fault still persists, contact Ruijie technical support.

Appendix A 1GE SFP Transceivers

We provide matching SFP transceivers (Mini-GBIC) according to the port types. You can purchase the transceivers to meet your specific needs. In addition to the following optical transceivers, a 1GE SFP port also supports the 1GE SFP copper transceivers (Mini-GBIC-GT). This appendix provides models and technical specifications of some 1GE SFP transceivers for reference. For details about the technical specifications, see *Ruijie Optical Transceiver Hardware Installation and Reference Guide*.

Table 5-1 1GE Mini-GBIC (SFP) Models and Technical Specifications

Model	Wavelength (nm)	Fiber Type	DDM Supported (Yes/No)	Transmit Power (dBm)		Receive Power (dBm)	
				Min	Max	Min	Max
MINI-GBIC-LX-SM1310	1310	SMF	Yes	–11	–3	< –19	–3
MINI-GBIC-LH40-SM1310	1310	SMF	Yes	–5	0	< –23	–3
MINI-GBIC-SX-MM850	850	MMF	Yes	–9.5	0	< –17	0
MINI-GBIC-ZX80-SM1550	1550	SMF	Yes	0	5	< –27	–3
GE-SFP-LX03-SM1310-BIDI-I	1310TX/1550RX	SMF	Yes	–9	–3	< –22	–3
GE-SFP-LX03-SM1550-BIDI-I	1550TX/1310RX	SMF	Yes	–9	–3	< –22	–3
GE-SFP-LX10-SM1310-I	1310nm-FP	SMF	Yes	–9	–3	< –20	–3
GE-SFP-LX20-SM1310-BIDI	1310TX/1550RX	SMF	Yes	–9	–3	< –20	–3
GE-SFP-LX20-SM1550-BIDI	1550TX/1310RX	SMF	Yes	–9	–3	< –20	–3
GE-SFP-LH40-SM1310-BIDI	1310TX/1550RX	SMF	Yes	–5	0	< –24	–1
GE-SFP-LH40-SM1550-BIDI	1550TX/1310RX	SMF	Yes	–5	0	< –24	–1
GE-SFP-LR-SM1310-I	1310	SMF	Yes	–11	–3	< –19	–3
GE-SFP-SR-MM850-I	850	MMF	Yes	–9.5	–3	< –17	0

Table 5-2 1GE SFP Copper Transceivers

Standard	1000BASE-T SFP Model	DDM Supported (Yes/No)
1000BASE-T	Mini-GBIC-GT	No

Table 5-3 Cabling Specifications of SFP Transceivers

SFP Transceiver Model	Port Type	Fiber Type	Core Size (μm)	Max Cabling Distance
MINI-GBIC-SX-MM850	LC	MMF	62.5/125	275 m (902.23 ft.)
			50/125	550 m (1,804.46 ft.)
MINI-GBIC-LX-SM1310	LC	SMF	9/125	10 km (32,808.40 ft.)
MINI-GBIC-LH40-SM1310	LC	SMF	9/125	40 km (131,233.60 ft.)
MINI-GBIC-ZX80-SM1550	LC	SMF	9/125	80 km (262,467.19 ft.)
GE-SFP-LX03-SM1310-BIDI-I	LC	SMF	9/125	3 km (9,842.52 ft.)
GE-SFP-LX03-SM1550-BIDI-I	LC	SMF	9/125	3 km (9,842.52 ft.)
GE-SFP-LX10-SM1310-I	LC	SMF	9/125	10 km (32,808.40 ft.)
GE-SFP-LX20-SM1310-BIDI	LC	SMF	9/125	20 km (65,616.80 ft.)
GE-SFP-LX20-SM1550-BIDI	LC	SMF	9/125	20 km (65,616.80 ft.)
GE-SFP-LH40-SM1310-BIDI	LC	SMF	9/125	40 km (131,233.60 ft.)
GE-SFP-LH40-SM1550-BIDI	LC	SMF	9/125	40 km (131,233.60 ft.)
GE-SFP-LR-SM1310-I	LC	SMF	9/125	10 km (32,808.40 ft.)
GE-SFP-SR-MM850-I	LC	MMF	62.5/125	275 m (902.23 ft.)
			50/125	550 m (1,804.46 ft.)

Caution

- For optical transceivers with a cabling distance of no less than 40 km (24.85 miles), install an optical attenuator to avoid overload on an optical receiver when using short-distance SMFs.
- An optical transceiver is a laser transmitter. Do not look into the light source to prevent it from burning your eyes.
- To keep the optical transceiver clean, make sure that the unused ports remain capped.

Appendix B 10GE SFP+ Transceivers

Ruijie provides matching 10GE SFP+ transceivers according to the port types. You can purchase the transceivers to meet your specific needs. This appendix provides models and technical specifications of some 10GE SFP+ transceivers for reference. For details about the technical specifications, see *Ruijie Optical Transceiver Hardware Installation and Reference Guide*.

Table 5-4 Models and Technical Specifications of 10GE SFP+ Transceivers

Model	Wavelength (nm)	DDM Supported (Yes/No)	Fiber Type	Transmit Power (dBm)		Receive Power (dBm)	
				Min	Max	Min	Max
XG-SFP-LR-SM1310	1310	Yes	SMF	–8.2	0.5	–12.6	0.5
XG-SFP-ER-SM1550	1550	Yes	SMF	–4.7	4	–14.1	–1
XG-LR-SM1310	1310	Yes	SMF	–7.3	–1	–11	–1
XG-SFP-ZR-SM1550	1550	Yes	SMF	0	4	–24	–7
SFP-S1-R1000P1	1310	Yes	SMF	–8.2	0.5	–12.6	0.5
SFP-M3-R1000P1	850	Yes	MMF	–8.2	0.5	–12.6	0.5
SFP+SM1310	1310	Yes	SMF	–8.2	0.5	–12.6	0.5
SFP-S4-R1000P1 v2	1310	Yes	SMF	–8.2	0.5	–12.6	0.5

Table 5-5 Cabling Specifications of SFP+ Transceivers

Model	Port Type	Fiber Type	Core Size (μm)	Modal Bandwidth (MHz·km)	Max Cabling Distance
XG-SFP-LR-SM1310	LC	SMF	9/125	N/A	10 km (6.21 miles)
XG-SFP-ER-SM1550	LC	SMF	9/125	N/A	40 km (24.85 miles)
XG-SFP-ZR-SM1550	LC	SMF	9/125	N/A	80 km (49.71 miles)
XG-LR-SM1310	LC	SMF	9/125	N/A	10 km (6.21 miles)
SFP-S1-R1000P1	LC	SMF	9/125	N/A	10 km (6.21 miles)
SFP-M3-R1000P1	LC	MMF	50/125	2000 (OM3)	300 m (984.25 ft.)

Model	Port Type	Fiber Type	Core Size (μm)	Modal Bandwidth (MHz·km)	Max Cabling Distance
SFP+SM1310	LC	SMF	9/125	N/A	10 km (6.21 miles)
SFP-S4-R1000P1 v2	LC	SMF	9/125	N/A	10 km (6.21 miles)

Caution

- For the XG-SFP-ER-SM1550, do not use short-distance optical cables for connection to avoid overloading the optical receiver of the optical transceiver. If the optical power at the receive end of the optical transceiver is greater than or equal to –1 dBm, an appropriate optical attenuator should be installed at the receive end to reduce the optical power below –1 dBm.
- An optical transceiver is a laser transmitter. Do not look into the light source to prevent it from burning your eyes.
- To keep the optical transceiver clean, make sure that the unused ports remain capped.

Table 5-6 Models and Specifications of 10GE SFP+ Active Optical Cables

Model	Cable Type	Connector Type	Cable Length	Conductor Diameter (AWG)	Data Speed (Gbps)	DDM Supported (Yes/No)
XG-SFP-AOC1M	Active optical cable	SFP+	1 m (3.28 ft.)	\	10.3125	No
XG-SFP-AOC3M	Active optical cable	SFP+	3 m (9.84 ft.)	\	10.3125	No
XG-SFP-AOC5M	Active optical cable	SFP+	5 m (16.40 ft.)	\	10.3125	No

Note

No additional cable needs to be connected when an SFP+ active optical cable is used. You only need to plug both ends of the cable into the corresponding ports of the equipment.

Appendix C Formatting Hard Disks from Other Vendors

As shown in the following table, the RG-CR2010XS and RG-CR5016XS support the hard disks from other vendors.

Table 5-7 Device Compatibility with Hard Disks from Other Vendors

Model	Hard Disks from Other Vendors
RG-CR2010XS, RG-CR5016XS	● Western Digital: WD10SPZX ● Seagate: ST1000LM048 ● Transcend: TS1TSSD470P

The system handles the disk as follows:

- Empty disk: The system automatically creates one primary partition and formats it as an ext4 file system. No additional operation is required.
- Non-empty disk (with multiple primary partitions): The system does not automatically format the disk and uses only the first primary partition. To format a non-empty disk, perform the following steps:

  a Connect the management PC to the device's Ge0/0 port at 10.20.48.1/20, and log in to eWeb through SSH using account **admin/admin**.

```
C:\Users\admin>ssh 10.20.48.1
admin@10.20.48.1's password:
```

  b Run the **show sata** command to check the hard disk capacity. If the displayed capacity differs greatly from the actual capacity, it indicates that the inserted hard disk is non-empty. In this case, perform step c.

```
Hostname> show sata

 sata0
    Status:        ONLINE, MOUNTED
    Mount Point:    /mnt/sata0
    Device:        /dev/sda1
    Model:         M.2 (S80) 3TS9-P
    SN:           A5302511060010005
    Firmware:      G12T5A
    Device Type:    ssd
    Fs Type:       ext4 rw
    Total Size:     439GB
    Usage:         90%
    Total Written:  31113GB
    Lifetime Used:  3.8%
```

  c Run the **cmd disk format slot sata0** command to format the hard disk.

```
Hostname> cmd disk format slot sata0

sata0 is being formated, please wait...
```

```
!!!!!!!!!!!!!!!!!
The mount point /mnt/sata0 for slot sata0 has been successfully formated.
Format sata0 success!

Hostname>
```

d After the formatting is successful, run the **show sata** command again to check whether the hard disk capacity meets expectations. You can also log in to eWeb and go to the home page to check the hard disk capacity.