Ruijie Cybrey RG-CNC105 Access Controller

Installation Guide

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Preface

Intended Audience

This document is intended for:

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

Technical Support

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Conventions

1. GUI Symbols

GUI Symbol	Description	Example
Boldface	1. Button names 2. Window names, tab name, field name and menu items 3. Link	1. Click **OK**. 2. Select **Config Wizard**. 3. Click the **Download File** link.
>	Multi-level menu items	Choose System > Time.

2. Signs

The signs used in this document are described as follows:

Danger

An alert that calls attention to safety operation instructions that if not understood or followed when operating the device can result in physical 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.

3. Note

This document provides the installation steps, troubleshooting, technical specifications, as well as the specifications and use guidelines of cables and connectors. It is intended for users who want to understand the above contents, and are familiar with the installation and maintenance of networking hardware. Users are assumed to have reasonable knowledge of relevant terms and concepts.

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1 Overview

1.1 About the RG-CNC105

The RG-CNC105 access controller (AC) is an all-in-one next-generation network manager. It integrates the functions of an AC, router, and PoE switch. The RG-CNC105 can be used as an AC in medium-sized projects and as an egress gateway in small-sized projects.

The RG-CNC105 can manage up to 32 wireless access points (APs) by default. Through powerful centralized and visualized management and control over wireless networks, the RG-CNC105 can significantly simplify construction and deployment of wireless networks. The RG-CNC105 can be used with same brand APs and Cloud — a unified management platform for wired and wireless networks, to achieve flexible control of APs, optimize RF coverage and performance, implement cluster management, and reduce the workload of device deployment.

1.2 Hardware Features

Figure 1-1 Appearance of the RG-CNC105



Note

Figure 1-1 is for illustrative purposes only. The actual product may vary.

1.2.1 Front Panel

Figure 1-2 Front View

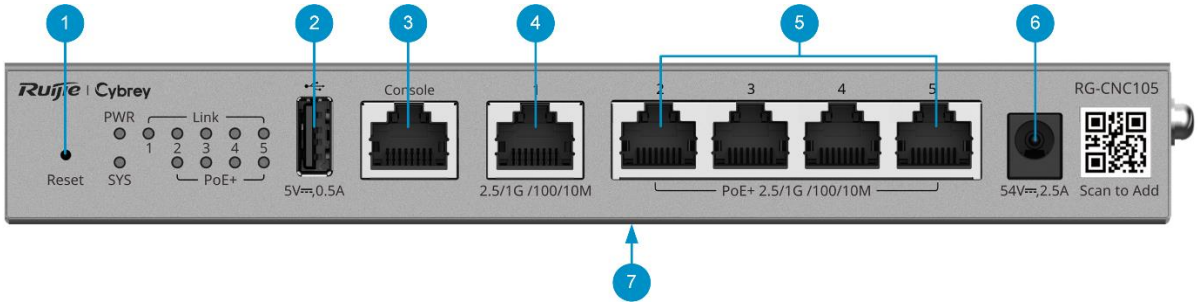


Table 1-1 Components on the Front Panel

No.	Silkscreen	Component	Description
1	Reset	Reset button	● Press and hold the Reset button for less than 3 seconds: Restart the AC. ● Press and hold the Reset button for at least 3 seconds: Restore the AC to factory settings.
2	5V⎓,0.5A	USB 2.0 port	Connected to a USB flash drive.
3	Console	Console port	Connected to a serial cable for device management.
4	1	RJ45 port	1 x 10/100/1000/2.5GBASE-T port
5	2~5	RJ45 port	4 x 10/100/1000/2.5GBASE-T ports, supporting IEEE 802.3af/at-compliant PoE output.
6	54V⎓,2.5A	DC power connector	Connected to a 54 V DC power adapter for power supply.
7	-	Nameplate	Located at the bottom of the AC. The model, power supply, and other information are provided.

Note

The network access license mark is on the packaging or equipment.

1.2.2 Right Panel

Figure 1-3 Right View

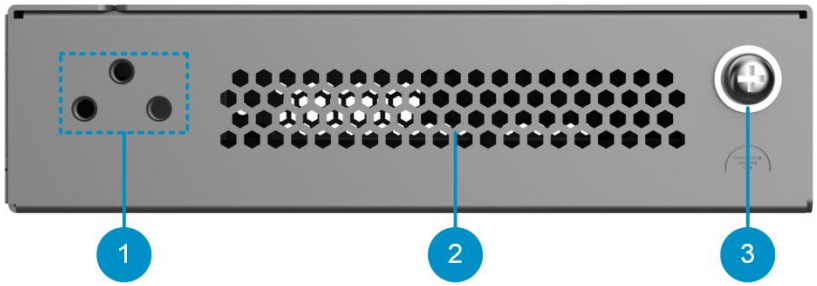


Table 1-2 Components on the Right Panel

No.	Silkscreen	Component	Description
1	-	Mounting holes	Used to install the rack-mount bracket.
2	-	Air exhaust vents	Used for heat dissipation.
3	-	Grounding stud	Connected to a protective earth with a grounding wire.

1.2.3 LEDs

Figure 1-4 Front View

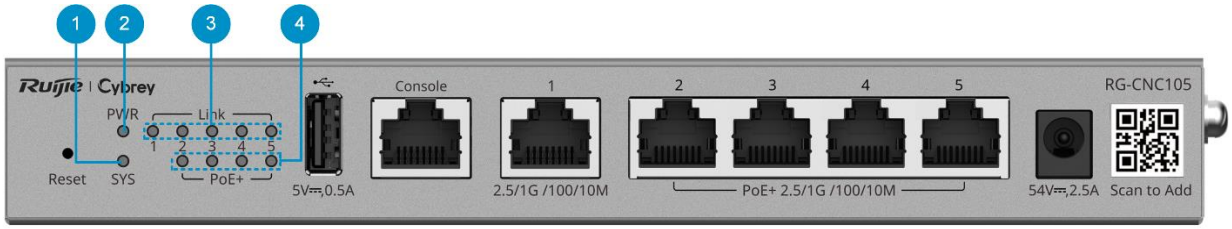


Table 1-3 LEDs

No.	Silkscreen	LED	Description
1	SYS	System LED	Off: ● The AC is not powered on. ● A system error occurs.
			Blinking green: The system is being initialized.
			Solid green: Initialization is completed.
2	PWR	Power LED	Off: The AC is not powered on.
			Solid green: The AC is powered on.
3	Link	Port LEDs	Off: The port is not connected.
			Solid green: The port is connected, but is not receiving or

No.	Silkscreen	LED	Description
			sending data.
			Blinking green: The port is connected and is receiving or sending data.
4	PoE+	PoE LEDs	Off: PoE is disabled on the Ethernet port.
			Solid green: PoE is enabled on the Ethernet port.

1.3 Technical Specifications

Table 1-4 Technical Specifications

Category	Item	RG-CNC105
System specifications	RAM	1 GB DDR4
	Flash memory	512 MB
Dimensions and weight	Unit dimensions (W x D x H)	202 mm x 108 mm x 28 mm (7.95 in. x 4.25 in. x 1.10 in., without rack-mount brackets)
	Rack height	1 RU
	Packaging dimensions (W x D x H)	214 mm x 197 mm x 67 mm (8.43 in. x 7.76 in. x 2.64 in.)
	Unit weight	0.63 kg (1.39 lbs)
	Packaging weight	1.49 kg (3.28 lbs)
	Color	Gray
Port specifications	LED	1 x system LED 5 x port LEDs 4 x PoE LEDs 1 x power LED
	Reset button	1
	Fixed service port	5 x 10/100/1000/2.5GBASE-T ports, with ports 2–5 supporting IEEE 802.3af/at-compliant PoE output.
	Fixed management port	1 x RJ45 console port 1 x USB 2.0 port
	Power input option	DC power adapter
	DC connector dimensions	Outer diameter: 5.5 mm (0.22 in.)

Category	Item	RG-CNC105
Power supply and consumption		Inner diameter: 2.1 mm (0.08 in.) Depth: 10 mm (0.39 in.)
	Power input	DC adapter input: ● Rated input voltage: 100 V AC to 240 V AC, 50 Hz or 60 Hz ● Rated input current: 2.0 A DC adapter output: ● Rated output voltage: 54 V DC ● Maximum output current: 2.5 A
	Power output	Supported ● The Ethernet port provides 54 V/30 W power output. ● The USB port provides 5 V/0.5 A power output.
	Number of PoE-out ports	4
	PoE budget	120 W
	Maximum power consumption	132 W
Environment and reliability	Mounting options	Desktop placement, rack-mount, and wall-mount
	Operating temperature	0°C to 45°C (32°F to 113°F) Note: At altitudes ranging from 3,000 m (9,842.52 ft.) to 5000 m (16,404.20 ft.), the maximum temperature decreases by 1°C (1.8°F) for every 220 m (721.78 ft.) increase in elevation.
	Storage temperature	–40°C to +70°C (–40°F to +158°F) Note: At altitudes ranging from 3,000 m (9,842.52 ft.) to 5000 m (16,404.20 ft.), the maximum temperature decreases by 1°C (1.8°F) for every 220 m (721.78 ft.) increase in elevation.
	Operating humidity	10% RH to 90% RH (non-condensing)
	Storage humidity	5% RH to 95% RH (non-condensing)
	Altitude	Operating altitude: –500 m to +4,000 m (–1,640.42 ft. to +13,123.36 ft.) Storage altitude: –500 m to +5,000 m (–1,640.42 ft. to +16,404.20 ft.)
	MTBF	400,000 hours
	EMC compliance	EN 55032 EN 55035

Category	Item	RG-CNC105
Certification and regulatory compliance		EN 61000-3-3 EN 300386 EN IEC 61000-3-2
	Safety compliance	IEC 62368-1
	Certification	CE, CB

Warning

- In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.
- The fuse in the power module cannot be removed.

2 Preparing for Installation

2.1 Package Contents

Table 2-1 Package Contents

No.	Item	Quantity
1	RG-CNC105 access controller	1
2	Rubber pad	4
3	Rack-mount bracket	2
4	Power adapter	1
5	Power cord	1
6	M3 x 6 mm Phillips countersunk head machine screw	6
7	*User Manual*	1
8	*Warranty Card*	1

Note

The package contents are subject to the purchase contract, and actual delivery may vary. Please check the items carefully against the package contents or purchase contract. If you have any questions, please contact the distributor.

2.2 Safety Guidelines

Note

- To avoid injury to human body and equipment, carefully read the safety recommendations in this manual before installation.
- The following safety recommendations may not cover all possible hazardous situations.

2.2.1 General Precautions

- Install the equipment in a standard 19-inch rack.
- Cut off all power supplies and unplug all power cords before mounting the equipment in a rack or removing the equipment from a rack.
- Do not place the equipment in a wet position, and keep the equipment away from liquid. 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 walking areas.
- During installation and maintenance, do not wear loose clothing or ornament that may get caught in the chassis.
- Keep tools and components away from walking areas.

2.2.2 Chassis-Lifting Guidelines

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

2.2.3 Electric 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 trained and 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. In the case of an electrical accident, cut off the power supply immediately.
- Be sure to make a careful check before shutting down the power supply.
- Equip the power supply system with a leakage protector (also referred to as “leakage current switch” or “leakage current breaker”) to automate the power cut-off in the case of power leakage or shock. When selecting the leakage protector, observe the following rule:
  - The rated leakage action current of each leakage protector is greater than twice of the theoretical maximum leakage current of all the power supplies in the system.

    For example, if a system is equipped with 16 identical power supplies, the leakage current of each power supply is at most 3.5 mA, and the leakage current of the system totals 56 mA (maximum theoretical value). A leakage protector with 30 mA rated action current supports less than nine power supplies (that is, Action current of the leakage protector/2/Maximum leakage current of each power supply = 30/2/3.5 ≈ 4.28). In other words, the leakage protector with a rated action current of 30 mA supports up to four power supplies. In this case, the 16 power supplies in the system require at least four leakage protectors with a rated action current of 30 mA and each leakage protector supports four power supplies.

    If power supplies in a system differ in models, the rated leakage action current of each leakage protector divided by two is greater than the sum of maximum leakage currents of all the power supplies.
  - The rated leakage non-action current of a leakage protector shall be 50% of the leakage action current.

If the non-action current value is too small, the high sensitivity level may cause the circuit to break, causing power cut-off and service interruption even if the leakage current value is normal.

Take a leakage protector with a rated action current of 30 mA as an example. The rated leakage non-action current shall be 15 mA. When the leakage current is less than 15mA, the protector shall not act.

Caution

- To guarantee personal safety, the rated leakage action current of each leakage protector in the system must be equal to or less than 30 mA (human body safety current is 30 mA). When twice of the total leakage current of the system is greater than 30 mA, the system must be equipped with two or more leakage protectors.
- The leakage current values vary with products. For the leakage current value of each product model, see the technical specifications.

2.2.4 Static Electricity

- Ensure that the chassis is connected to earth ground.
- Keep the site as dust free as possible.
- Maintain appropriate humidity conditions.
- Before installing the various pluggable modules, please wear an anti-static wrist strap and make sure that it is well grounded.
- Avoid contact between the clothing and other items with the printed circuit board. The ESD wrist strap can only prevent damage to the printed circuit board caused by static electricity on the body. Static electricity on clothing cannot be prevented.

2.3 Site Requirements

The equipment must be installed and used indoors for normal operation and prolonged service life of the equipment. The installation site must meet the following requirements.

2.3.1 Floor Loading

Assess the combined weight of the equipment and its accessories, such as rack, chassis, and power modules, and verify that the floor under the rack can bear the weight.

2.3.2 Airflow

Reserve the position for vent to ensure heat dissipation. After various cables are connected, bundle the cables or place them in the cable management arm to avoid blocking air inlets.

2.3.3 Space

- To have sufficient room for chassis handling, you are advised to maintain an indoor pathway of at least 800 mm (31.50 in.) wide.
- Do not install the equipment against the wall. Instead, maintain a minimum clearance of 400 mm (15.75 in.) around the device for proper ventilation.

2.3.4 Temperature and Humidity

To ensure the 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 a high relative humidity, insulating materials are prone to poor insulation or even electricity leakage.
- In an environment with a 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.

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.

2.3.5 Cleanliness

Dust poses a significant hazard to the equipment. The indoor dust takes on a positive or negative static electric charge when falling on the equipment, causing poor contact of the metallic joint. Such electrostatic adhesion may occur more easily when the relative humidity is low, 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

Dust	Unit	Concentration
Dust particles (diameter ≥ 0.5 μm)	Particles/m^3	≤ 3.5 x 10^6
Dust particles (diameter ≥ 5 μm)	Particles/m^3	≤ 3.5 x 10^4

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 machine room should be properly protected against the intrusion of harmful gases, such as sulfur dioxide, hydrogen sulfide, nitrogen dioxide, and chlorine gas. The following table lists limit values for harmful gases.

Table 2-3 Requirements for Gases

Gas	Average (mg/m^3)	Maximum (mg/m^3)
Sulfur dioxide (SO_2)	0.3	1.0
Hydrogen sulfide (H_2S)	0.1	0.5
Nitrogen dioxide (NO_2)	0.5	1.0
Chlorine gas (Cl_2)	0.1	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 one week, and the maximum value cannot last for more than 30 minutes every day.

2.3.6 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 device are securely grounded if the equipment uses the AC power supply. Otherwise, electric shock may occur when the insulation resistance between the power supply inside the equipment and the chassis becomes small.

Caution

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

- **Lightning Protection**

The lightning protection system of facilities is standalone, and is composed of a lightning rod, a down conductor, and a connector connected to the grounding system. The grounding system is usually 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**

Grounding required for electromagnetic compatibility includes shielded grounding, filter grounding, noise and interference suppression, and level reference, which contribute to the overall grounding requirements. The grounding resistance should be smaller than 1 ohm. Connect the grounding terminal to the ground before operating the equipment.

2.3.7 Preventing Electromagnetic Interference

- Take interference prevention measures for the power supply system.
- Keep the equipment far 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 a high-power radio transmitting stations and radar launchers.
- Take electromagnetic shielding measures when necessary.

2.3.8 ESD Prevention

The equipment is designed with ESD-preventive procedures during circuit design. However, excessive static electricity can still cause damage to its circuit board. Static electricity on the communication network connected to the equipment mainly originates from two sources:

- Outdoor high-voltage transmission lines, lightning, and other external electric fields
- Internal systems such as indoor flooring materials and overall structure of the equipment.

To prevent damage caused by static electricity, pay attention to the following:

- Ensure that the chassis is connected to earth ground.
- Keep the site as dust free as possible.
- Maintain appropriate temperature and humidity.
- Wear an anti-ESD wrist strap and clothes when you touch the circuit board of the equipment.
- Place the disassembled circuit board on an anti-ESD workbench or in an anti-ESD bag with its front panel facing upward.
- When observing or handling a disassembled circuit board, avoid directly touching the components on the circuit board with your bare hands.

2.3.9 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.

2.3.10 Installation Site Requirements

Regardless of whether the equipment is installed in a rack or on a desktop, observe the following conditions:

- Maintain a proper clearance around the air intakes and outlets for heat dissipation.
- The installation site has good cooling and ventilation.
- The installation site is sturdy enough to support the weight of the chassis and its accessories.
- The installation site is properly grounded.

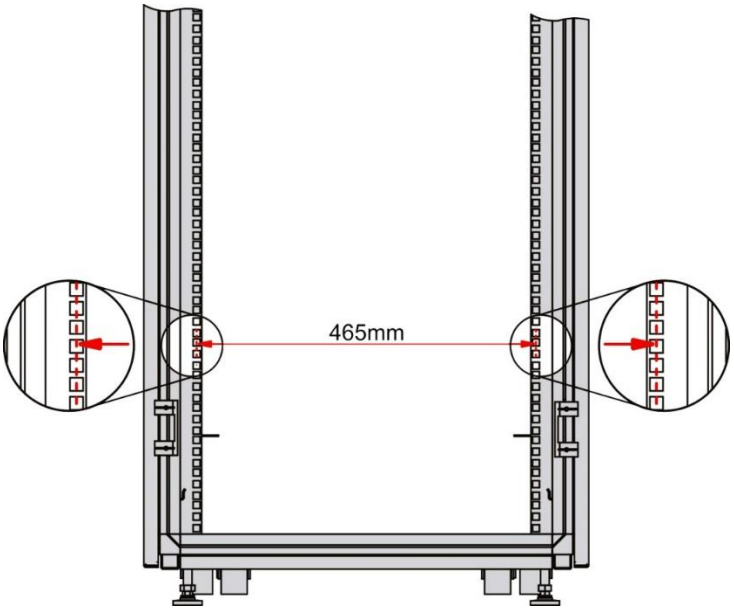
2.4 Rack Requirements

If you plan to install the equipment on a rack, ensure that the rack meets the following conditions.

(1) Use a four-post 19-inch rack.

(2) The left and right square hole rack posts are 465 mm (18.31 in.) apart.

Figure 2-1 19-Inch Rack



(3) The square hole rack post is at least 180 mm (7.09 in.) from the front door, and the front door is at most 25 mm (0.98 in.) thick. This ensures an available clearance of at least 155 mm (6.10 in.). The rack depth, the distance between front and rear doors, is at least 1000 mm (39.37 in.).

(4) The guide rails can bear the weight of the equipment and its accessories.

(5) The cabinet has a reliable grounding lug for the chassis to connect to earth ground.

(6) The rack has a good ventilation system. The open area of front and rear doors is greater than 50%.

2.5 Tools

Table 2-4 Tools

Common Tools	Phillips screwdriver, power cords, Ethernet cables, fastening bolts, diagonal plier, and cable ties
Dedicated Tools	ESD-preventive gloves, wire stripper, crimper, RJ45 connector crimping plier, and wire cutter
Meter	Multimeter
Related Equipment	PC, display, and keyboard

Note

The RG-CNC105 is delivered without a tool kit. The tool kit is customer-supplied.

3 Installing the Access Controller

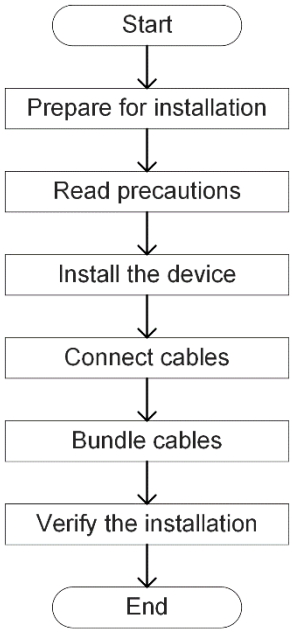
Caution

Ensure that requirements in Chapter 2 are all met.

3.1 Installation Flowchart

The installation flowchart is as follows.

Figure 3-1 Installation Flowchart



3.2 Before You Begin

Carefully plan and arrange the installation location, networking, power supply, and cabling before installing the equipment. Before installation, ensure that:

- The installation site provides enough space to meet the heat dissipation requirements.
- The installation site meets the temperature and humidity requirements of the equipment.
- The power supply is ready at the installation site and meets the current requirements.
- The network cables have been arranged at the installation site.
- The selected power supply meets the system power requirements.
- Locate the indoor emergency power switch before installation. Cut off the power in case of accidents.

3.3 Precautions

To ensure the normal operation of the equipment and extend its service life, follow the precautions below:

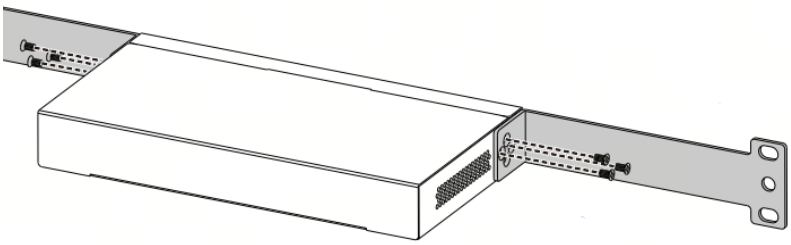
- Do not power on the equipment before you complete the installation.
- Place the equipment in a well-ventilated place.
- Do not place the equipment in high temperature environment.
- Keep the equipment far away from high-voltage cables.
- Install the equipment indoors.
- Keep the equipment far away from strong thunderstorms and strong electric fields.
- Keep the equipment clean and protect it against dust.
- Disconnect the power of equipment before cleaning it.
- Do not wipe the equipment with a wet cloth.
- Do not clean the equipment with liquids.
- Do not open the enclosure while the equipment is working.
- Secure the equipment properly.

3.4 Mounting the Chassis

3.4.1 Mounting the Chassis on the Rack

The chassis can be installed on a standard 19-inch EIA rack. The installation steps are as follows:

(1) Take six M3 x 6 mm Phillips screws out of the package. Attach one end of the rack-mount brackets to the chassis by using the screws.



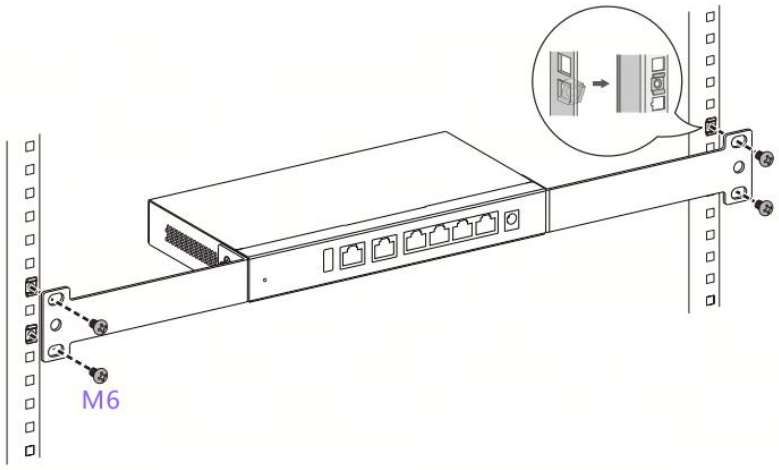
(2) Position the chassis at the desired level on the rack.

a. Install cage nuts on the square holes on the front rack posts.

b. Secure the other end of the rack-mount brackets to square hole rack posts by inserting M6 screws in each of the brackets and into the cage nuts.

Note

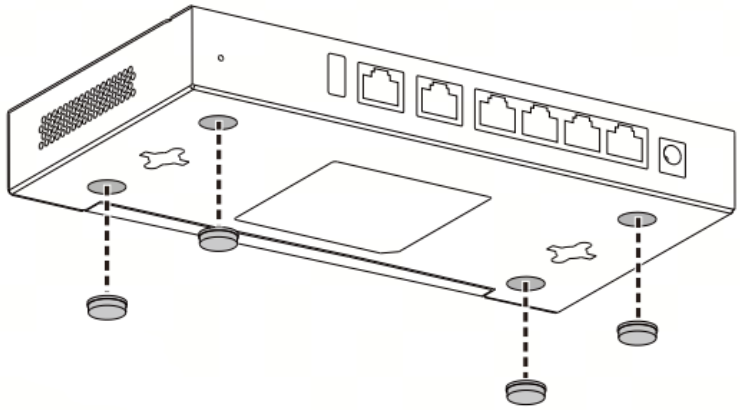
M6 screws and cage nuts are customer-supplied.



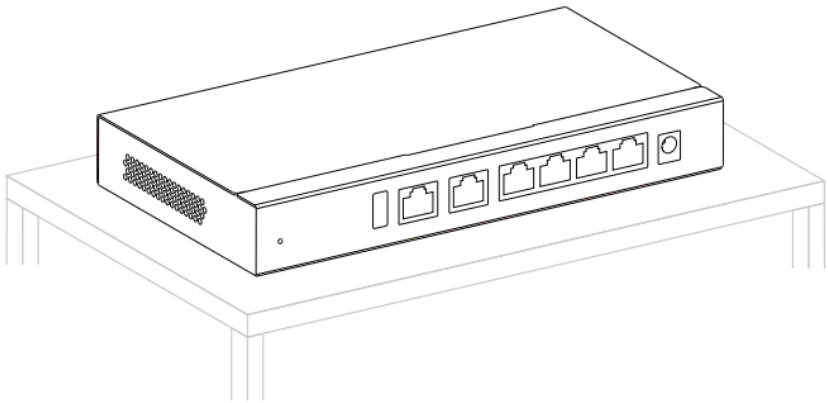
3.4.2 Mounting the Chassis on the Desktop

If a standard rack is not available, install the chassis on a clean desktop. The installation steps are as follows:

(1) Attach our rubber pads to the recessed areas on the bottom of the chassis.



(2) Place the chassis on the desktop. Ensure proper ventilation and heat dissipation.

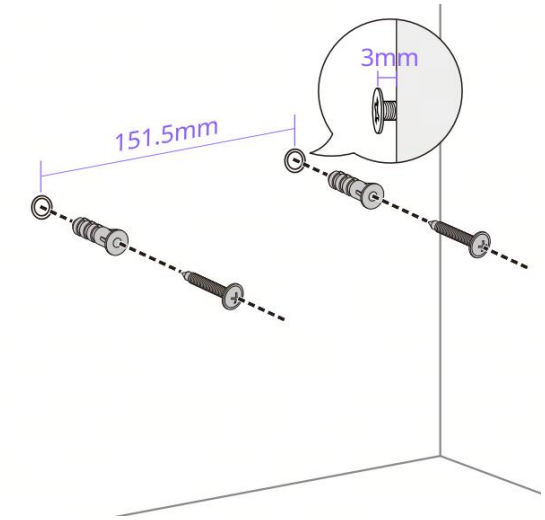


Caution

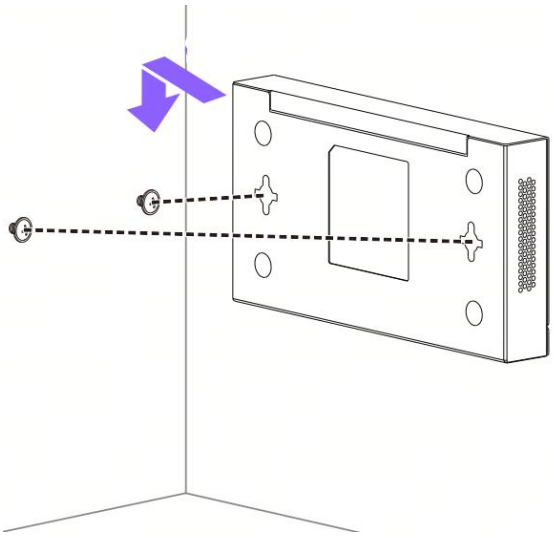
The chassis must be installed in a location where movement is restricted.

3.4.3 Mounting the Chassis on the Wall

(1) Determine the installation position. Drill two holes at 151.5 mm (5.96 in.) spacing on the wall. Insert the screws into the holes and secure them properly. Leave a 3 mm (0.12 in.) gap between the wall surface and the base of the screw's head.



(2) Align the mounting holes at the bottom of the chassis with the screws. Slide the chassis in the orientation indicated by the arrow onto the screws properly.

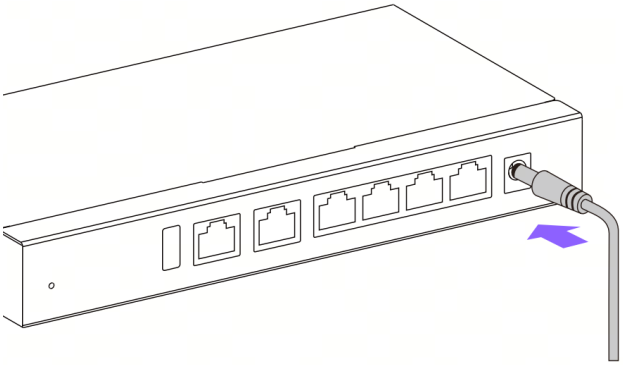


3.4.4 Connecting the Power Cord

The RG-CNC105 adopts a 54 V DC/2.5 A power supply. Make sure that the power supply meets the requirements. Perform the following steps to connect the power cord:

(1) Connect one end of the delivered power cord to the DC power connector on the RG-CNC105 and the other end to the power socket.

(2) Check whether the power LED on the front panel of the RG-CNC105 is on. If the LED is on, the power cord is connected properly.



3.4.5 Installing the Grounding Wire

The chassis has a grounding stud on its side panel. Install the grounding wire before using the chassis.

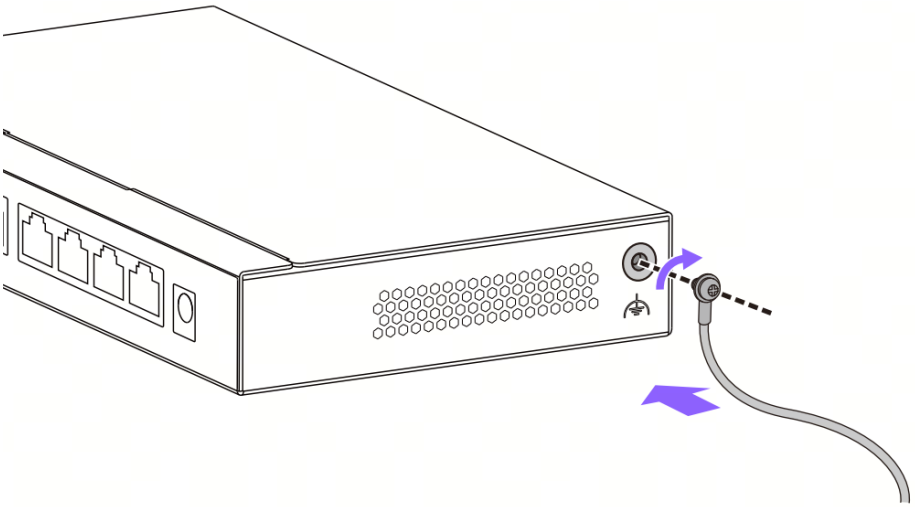
(1) Purchase a grounding wire of a suitable length and connect one end to the grounding screw on the rear panel of the equipment.

(2) Connect the other end of the grounding wire.

- Rack mount: Connect the other end to the grounding lug of the rack. Ensure that the grounding lug has been connected to the grounding bar of the equipment room.
- Desktop placement or wall mount: Connect the other end of the ground wire to the ground bar or protective ground near the installation position.

Caution

- To ensure personal and equipment safety, it is necessary to ground the equipment properly. The grounding resistance between the chassis and the ground must be less than 1 ohm.
- The maintenance personnel should check whether the AC power socket is reliably connected to the building's protective ground. If not, the maintenance personnel should use a protective grounding wire to connect the protective ground terminal of the AC power socket to the building's protective ground.
- The power socket must be installed near the equipment in an easily accessible location.
- When installing or replacing the chassis, the ground connection must always be made first and disconnected last.
- The sectional area of a grounding wire should be determined according to the possible maximum current. Grounding wires with good conductors should be used.
- Do not have bare wires exposed.



3.5 Connecting the Console Cable

The RG-CNC105 provides a console port that complies with the EIA/TIA-232 asynchronous serial standard. You can perform local configuration of the RG-CNC105 through this port. The following table describes the console port attributes. If you configure the RG-CNC105 through eWeb, you do not need to connect the console.

Connect one end of the console cable to the console port of the RG-CNC105, and the other end to the DB-9 male connector of the PC used for device configuration.

Table 3-1 Console Attributes

Parameter	Description
Connector	RJ-45
Interface Standard	Asynchronous EIA/TIA-232
Baud rate	9,600 bps (default), 57,600 bps, and 115,200 bps
Supported services	● Command line interface (CLI) ● Connected to a character terminal ● Used as an asynchronous interface to provide terminal access services.

3.6 Bundling Cables

3.6.1 Precautions

- The bundles of power cords and cables should be tidy and neat.
- When bundling twisted pairs, the twisted pairs at the plug should be in natural bending or large curvature.
- When bundling twisted pairs, do not tie them too tightly, avoiding too much stress on cables to affect the service life and transmission performance of the cables.

3.6.2 Steps

(1) Bundle the dropping parts of the twisted pair cables and route them to the port of the equipment.

(2) Fasten the twisted pairs to the cable trough of the rack-mount bracket.

(3) Extend the twisted pairs under the equipment and route them in a straight line.

3.7 Checklist After Installation

3.7.1 Checking the Chassis

- If the chassis is installed on the rack, verify that the installation angle iron of the cabinet and the equipment is secured properly. If the chassis is placed on the desktop, verify that there is enough space around the chassis for heat dissipation and whether the desktop is sturdy. If the equipment is installed on a wall, check whether there is sufficient space around the chassis for heat dissipation and whether the chassis is secured properly.
- Verify that the external power supply matches the equipment.
- Verify that the front and rear cabinet doors can be closed after installing the equipment.
- Check whether the cabinet is completely fixed and will not move or tilt.
- Check whether the equipment is installed and fixed in the cabinet, and whether all cables are fixed in the cabinet.
- Verify that the grounding cable is correctly connected.
- Verify that the equipment is correctly connected to other devices, such as the configuration terminal.

3.7.2 Checking Cable Connections

- Verify that the twisted pairs match the port type.
- Verify that cables are properly bundled.

3.7.3 Checking Power Supply

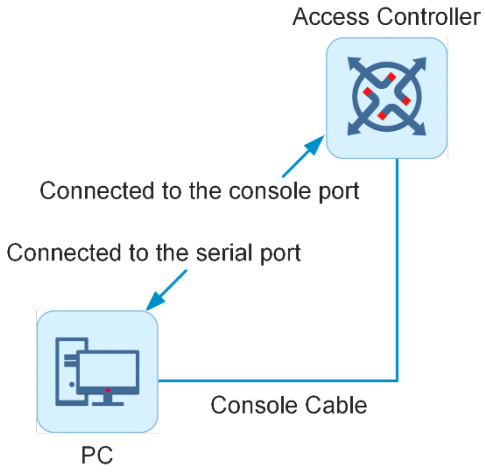
- Verify that the power cord is properly connected and meets safety requirements.
- Verify that the equipment works properly after power-on.

4 Commissioning

4.1 Setting Up the Configuration Environment

(1) Connect a PC to the console port of the RG-CNC105 using the console cable.

Figure 4-1 Connecting the Console Cable



(2) Connect the DB-9 connector of the console cable to the serial port of the PC.

(3) Connect the RJ-45 connector of the console cable to the console port of the RG-CNC105.

4.2 Powering On the Device

4.2.1 Checklist Before Power-on

- Verify that the power cord is properly connected and the power supply meets the requirements.
- Verify that the input voltage meets the requirement and the console cable is properly connected.
- Verify that the PC or terminal is powered on and properly set up for commissioning.

4.2.2 Checklist After Power-on

After power-on, you are advised to check the following to ensure the normal operation of the device:

- Verify that there are system logs printed on the configuration interface of the device.
- Verify that the LEDs work normally.
- Verify that the main program is loaded properly.
- Verify that the device time is consistent with Beijing time.
- Verify that service ports can forward data properly.

5 Monitoring and Maintenance

5.1 Monitoring

5.1.1 LEDs

Observe the LEDs to monitor the equipment status.

5.1.2 CLI Commands

You can run related commands to remotely monitor the device status, including:

- Port configuration and status
- System logs

Note

For details, see the configuration guide.

5.2 Remote Maintenance

You can run commands on the CLI or log in to eWeb for device maintenance.

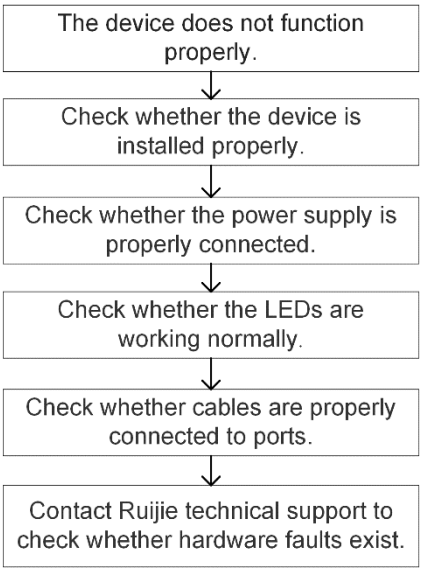
5.3 Hardware Maintenance

If the hardware is faulty, please contact Ruijie technical support.

6 Troubleshooting

6.1 Troubleshooting Flowchart

Figure 6-1 Troubleshooting Flowchart



6.2 Common Faults

6.2.1 Ethernet Port Is Not Working After the Ethernet Cable Is Plugged In

Verify that the device at the other end of the Ethernet cable is working properly. And then verify that the Ethernet cable is capable of providing the required data rate and is properly connected.

6.2.2 LED Is Off for a Long Time

Check whether the mains input is normal and whether the power supply is working properly.

6.2.3 System LED Blinks Green for a Long Time

The device performs initialization after power-on. During the initialization, the LED blinks green. The LED turns solid green only after the initialization is completed.

Caution

If the LED keeps blinking green for an hour, the device initialization fails and the device is faulty.

6.2.4 Troubleshooting Power Failures

You can determine whether the power system of the RG-CNC105 is faulty based on the PWR LED on the front panel. For the status description of the LED, see 1.2.3 LEDs. If an exception occurs, check the following:

- Check whether the power switch is on.
- Check whether the power source is turned on.
- Check whether the power cord is properly connected.
- Check whether the power supply meets the requirements.

Caution

Do not hot swap the power cord. If the PWR LED is still off after the check, contact Ruijie technical support.

6.2.5 Troubleshooting System Failures

If the system works normally after power-on, system startup logs are displayed on the terminal. If the configuration system is faulty, no information is displayed or garbled characters are displayed on the terminal. If the terminal does not display any information, check the following:

- Check whether the power system is normal.
- Check whether the console port cable is properly connected.

If no information is displayed after the preceding check, the console cable may be incorrectly connected or terminal parameters may be configured incorrectly, modify the parameters of the terminal. Check the terminal parameters:

- Baud rate: 9600 bps
- Data bit: 8
- Parity check: N/A
- Stop bit: 1
- Flow control: None
- Terminal emulation: VT100

Note

If the console port parameters of the device have been modified, information may be not displayed on the terminal.

7 Appendix

7.1 Connectors and Media

7.1.1 2.5GBASE-T/1000BASE-T/100BASE-TX/10BASE-T Port

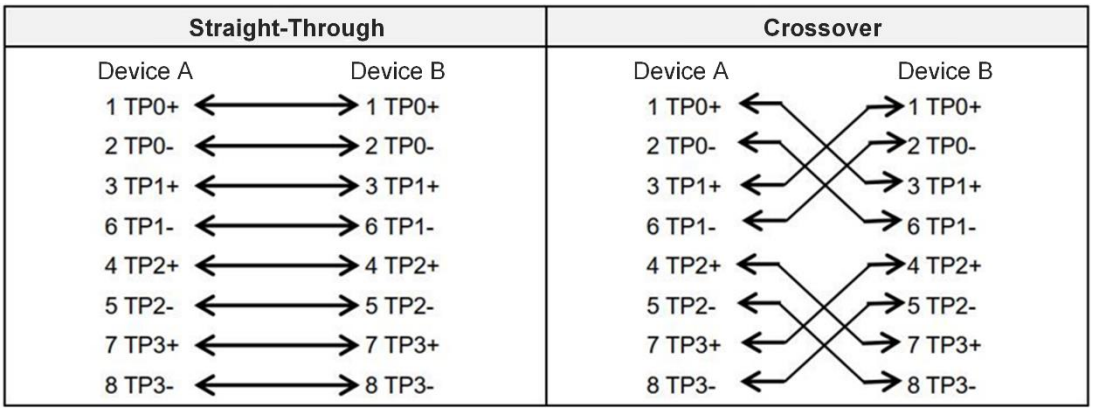
The 2.5GBASE-T/1000BASE-T/100BASE-TX/10BASE-T is a 10/100/1000/2500 Mbps auto-negotiation port that supports auto MDI/MDIX Crossover.

Compliant with IEEE 802.3bz, the 2.5GBASE-T port requires Cat5e or higher 100-ohm unshielded twisted pair (UTP) or shielded twisted pair (STP) cables with a maximum distance of 100 m (328.08 ft.).

Compliant with IEEE 802.3ab, the 1000BASE-T port requires Cat5/5e or higher 100-ohm unshielded twisted pair (UTP) or shielded twisted pair (STP) cables with a maximum distance of 100 m (328.08 ft.).

The 2.5GBASE-T/1000BASE-T port requires all four pairs of wires to be connected for data transmission. Figure 7-1 shows the connection of four twisted pairs of a 2.5GBASE-T/1000BASE-T port.

Figure 7-1 2.5GBASE-T/1000BASE-T Twisted Pair Connections



The 100BASE-TX/10BASE-T port can also be connected by cables of the preceding specifications. Besides, the 10BASE-T port can be connected by 100-ohm Category 3, Category 4, and Category 5 cables with a maximum distance of 100 meters (328.08 feet). The 100BASE-TX port can be connected by 100-ohm Category 5 cables with a maximum distance of 100 meters (328.08 feet). The following table lists 100BASE-TX/10BASE-T pin assignments.

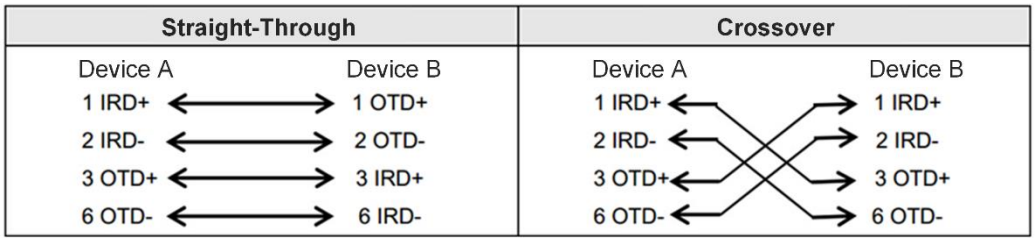
Table 7-1 100BASE Pin Assignments

Pin	Socket	Plug
1	Input Receive Data+	Output Transmit Data+
2	Input Receive Data-	Output Transmit Data-
3	Output Transmit Data+	Input Receive Data+
6	Output Transmit Data-	Input Receive Data-

Pin	Socket	Plug
4, 5, 7, 8	Not Used	Not Used

The following figure shows feasible connections of the straight-through and crossover twisted pairs for a 100BASE-TX/10BASE-T port.

Figure 7-2 100BASE-TX/10BASE-T Twisted Pair Connections



7.2 Recommended Cabling

During installation, route cable bundles upward or downward along the sides of the rack depending on the actual situation in the equipment room. All cable connectors should be placed at the bottom of the cabinet rather than be exposed outside of the cabinet. Power cords are routed beside the cabinet, and top cabling or bottom cabling is adopted according to the actual situation in the equipment room, such as the positions of the DC power distribution box, AC socket, or lightning protection box.

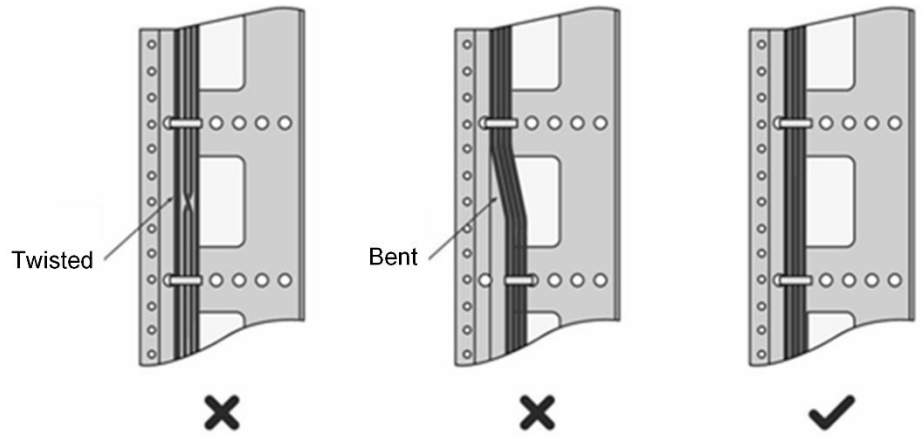
7.2.1 Requirements for the Minimum Bend Radius of Ethernet Cables

- The bend radius of a fixed power cord, Ethernet cable, or flat cable should be over five times greater than their respective diameters. The bend radius of these cables that are often bent or plugged should be over seven times greater than their respective diameters.
- The bend radius of a fixed common coaxial cable should be over seven times greater than its diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective diameters.
- The minimum bend radius of a high-speed cable, such as an SFP+ cable, should be over five times greater than its diameter. The bend radius of these cables that are often bent or plugged should be over 10 times greater than their respective diameters.

7.2.2 Precautions for Cable Bundling

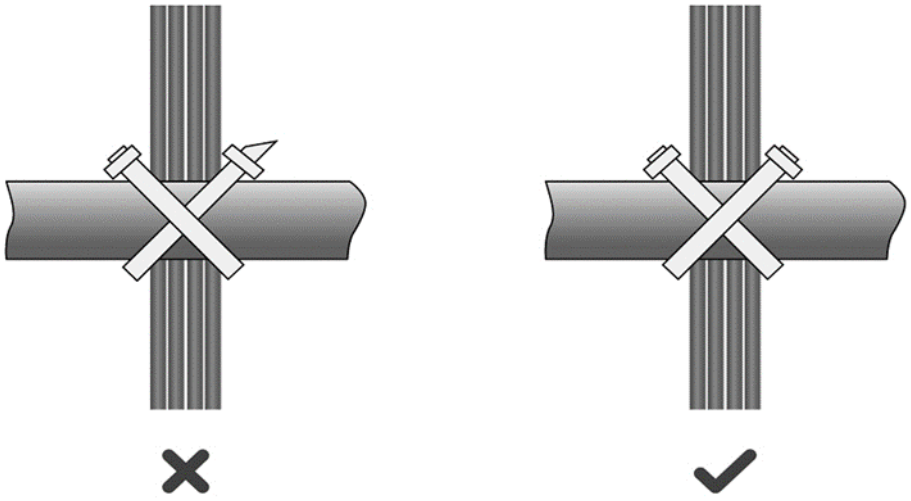
- Before cables are bound, mark labels and stick them to cables wherever appropriate.
- Cables should be neatly and properly bundled in the rack without twisting or bending, as shown in the following figure.

Figure 7-3 Bundling Cables (1)



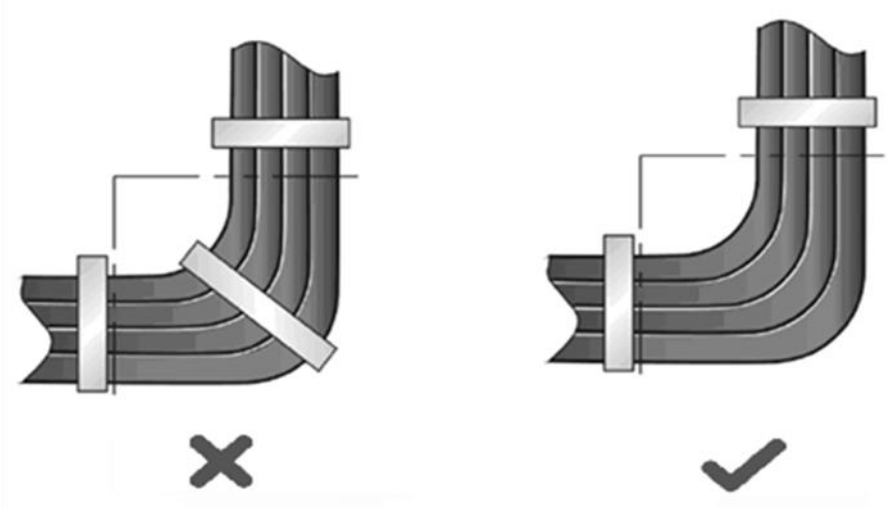
- Route and bundle power, signal, ground cables separately. Mixed bundling is not allowed. When the cables are close to each other, crossover cabling is recommended. In the case of parallel cabling, maintain a minimum distance of 30 mm (1.18 in.) between power cords and signal cables.
- The cable management brackets and cabling troughs inside and outside the rack should be smooth without sharp corners.
- The metal holes traversed by cables should have a smooth and fully rounded surface or an insulated lining.
- Use cable ties to bundle up cables properly. Do not connect two or more cable ties to bundle up cables.
- After bundling up cables with cable ties, cut off the remaining part. The cut should be smooth and trim without sharp corners, as shown in the following figure.

Figure 7-4 Bundling Up Cables (2)



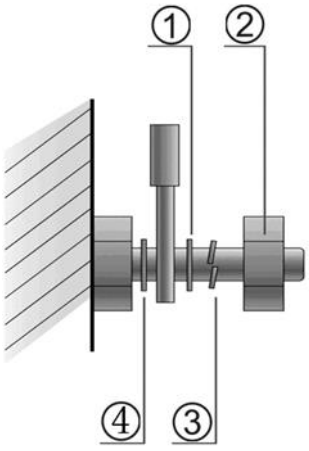
- When cables need to be bent, bind them first, but do not tie cable ties within the bend. Otherwise, stress may be generated on the cables and causes the wires inside to break, as shown in the following figure.

Figure 7-5 Binding Cables



- Cables not to be assembled or remaining parts of cables should be folded and placed in a proper position of the cabinet or cable trough. The proper position refers to a position that does not affect device running or damage the device or cable.
- Do not bind power cords to the guide rails of moving parts.
- The power cords connecting moving parts such as door grounding wires should be reserved with some excess after being assembled to avoid suffering tension or stress. After the moving part is installed, the remaining cable part should not touch heat sources, sharp corners, or sharp edges. If heat sources cannot be avoided, high-temperature cables should be used.
- When using screw threads to secure a cable lug, ensure that the bolt or screw is properly tightened and take measures to prevent it from loosening, as shown in the following figure.

Figure 7-6 Cable Fastening



Note:	1. Flat washer	3. Spring washer
	2. Screw nut	4. Flat washer

- Hard power cords should be secured near the cable termination area to prevent stress on the cable termination area and cables.
- Do not use tapping screws to secure cable lugs.
- Power cords of the same type and in the same cabling direction should be bundled up into bunches, with the cables arranged neatly and straight.
- Bundle up cables by using cable ties.

Cable Bunch Diameter (mm)	Distance Between Every Binding Point (mm)
10	80–150
10–30	150–200
30	200–300

- Do not tie cables or bundles in a knot.
- For terminal blocks (such as air switches) with cord end terminals, the metal part of the cord end terminal should not be exposed outside the terminal block when assembled.