

Ruijie Reyee RG-EG105GW-X Router

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

- The official website of Ruijie Reyee: <https://www.ruijienetworks.com/products/reyee>
- Technical Support Website: <https://www.ruijienetworks.com/support>
- Case Portal: <https://caseportal.ruijienetworks.com>
- Community: <https://community.ruijienetworks.com>
- Technical Support Email: service_rj@ruijienetworks.com

Conventions

1. Signs


The signs used in this document are described as below:

 **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.

2. Note

This manual provides the device installation steps, hardware troubleshooting, module technical specifications, and specifications and usage guidelines for cables and connectors. It is intended for the users who have some experience in installing and maintaining network hardware. At the same time, it is assumed that the users are already familiar with the related terms and concepts.

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1 Product Overview

The RG-EG105GW-X is a high-performance enterprise-level wireless router designed for small business offices, small- and medium-sized stores, food and beverage industry, etc. The brushed aluminum top cover of the metal housing not only provides exquisite texture, but also shields external interference, thus improving the signal transmission quality and stability of the device.

The RG-EG105GW-X router provides five 10/100/1000 Mbps self-adaptive Ethernet ports, including three GE LAN/WAN switchable ports, one GE WAN ports and one GE LAN ports. The router supports up to four simultaneous broadband connections and up to 150 concurrent client connections, with 80 concurrent wireless clients recommended.

RG-EG105GW-X can work in the 2.4 GHz and 5 GHz bands at the same time. The router provides a combined data rate of about 3000 Mbps, with up to 574 Mbps in the 2.4 GHz band and 2402 Mbps in the 5 GHz band. Equipped with the 802.11ax RF chip, the router supports MU-MIMO which improves the user experience for multi-user access.

1.1 Package Contents

Table 1-1 Package Contents

Item	Quantity
RG-EG105GW-X Router (With Four Foot Pads)	1
Power Cord	1
User Manual	1
Warranty Card	1

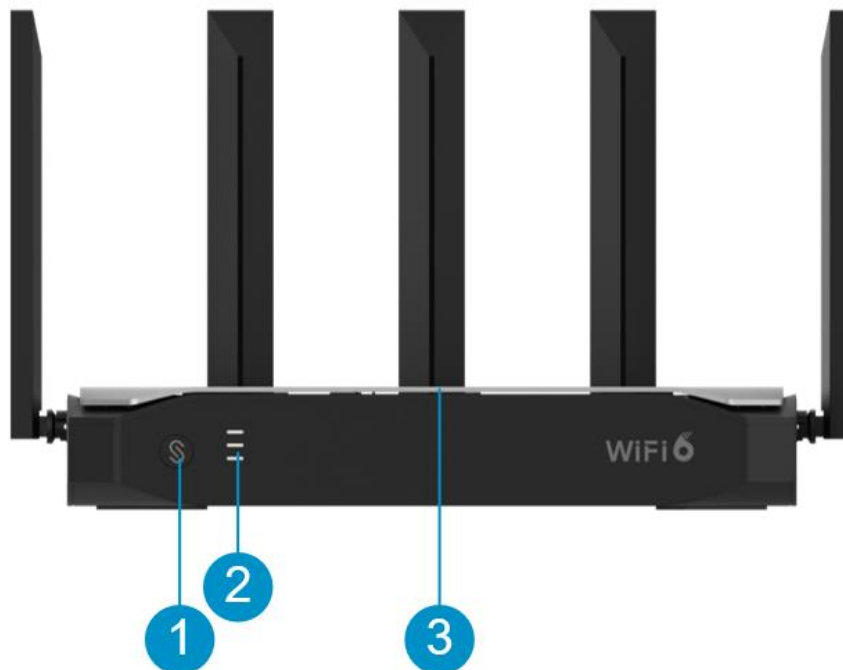
 **Note**

The package contents generally contain the above items. The actual delivery is subject to the order contract. And please check your goods carefully against the order contract. If you have any questions, please contact the distributor.

1.2 Product Appearance

1.2.1 Front Panel

Figure 1-1 Front Panel of a RG-EG105GW-X Router



Note

The CMIIT ID is printed on the product nameplate.

Table 1-2 Front Panel Specifications

No.	Item	Status	Description
1	Mesh Button	Press for less than 2 seconds	Perform Mesh pairing.
2	Mesh LED (White)	off	1. Mesh pairing is not implemented. 2. The Wi-Fi signal is not repeated.
		Flashing alternately	Mesh pairing is in progress.
		Three bars on	1. The Mesh signal strength is high. 2. The repeated Wi-Fi signal strength is high.
		Two bars on	1. The Mesh signal strength is medium. 2. The repeated Wi-Fi signal strength is medium.

No.	Item	Status	Description
		One bar on	<ol style="list-style-type: none"> The Mesh signal strength is low. The repeated Wi-Fi signal strength is low.
3	System Status LED (White)	Fast flashing (at 8 Hz)	The router is starting up.
		Slow flashing (at 0.5 Hz)	The network is unreachable.
		One long flash followed by three short flashes (at 0.8 Hz)	The router is faulty.
		Flashing twice in succession (at 0.8 Hz)	Possible cases: <ol style="list-style-type: none"> Restoring the router to factory settings. Upgrading the firmware. Handling alarms automatically. Note: Do not power off the router in this case.
		Solid on	The router is functioning properly.
		Off	The router is not receiving power.

1.2.2 Rear Panel

Figure 1-2 Rear Panel of a RG-EG105GW-X Router



Table 1-3 Rear Panel Specifications

No.	Item	Description
1	Power Plug	Connect the AC power cord to the power plug.
2	Nameplate	Nameplate on the bottom of the device
3	Reset Button	1. Press for less than 2 seconds to reboot the router. 2. Press for more than 5 seconds to restore the router to factory settings.
4	USB Port	Insert a USB drive into the USB port.
5	LAN0 Port	10/100/1000Base-T Ethernet port
6	LAN1/WAN3 Port	10/100/1000Base-T Ethernet port
7	LAN2/WAN2 Port	10/100/1000Base-T Ethernet port
8	LAN3/WAN1 Port	10/100/1000Base-T Ethernet port

No.	Item	Description
9	WAN0 Port	10/100/1000Base-T Ethernet port

Table 1-4 LED

LED	Status	Description
WAN0 Port LED (Green)	Flashing	The port has made a successful link and is sending/receiving traffic.
	Solid on	The port has made a successful link and is not sending/receiving traffic.
	Off	No link is detected for this port.
LAN0 Port LED (Green)	Flashing	The port has made a successful link and is sending/receiving traffic.
	Solid on	The port has made a successful link and is not sending/receiving traffic.
	Off	No link is detected for this port.
LAN1/WAN3 Port LED (Green)	Flashing	The port has made a successful link and is sending/receiving traffic.
	Solid on	The port has made a successful link and is not sending/receiving traffic.
	Off	No link is detected for this port.
LAN2/WAN2 Port LED (Green)	Flashing	The port has made a successful link and is sending/receiving traffic.
	Solid on	The port has made a successful link and is not sending/receiving traffic.
	Off	No link is detected for this port.
LAN3/WAN1 Port LED (Green)	Flashing	The port has made a successful link and is sending/receiving traffic.
	Solid on	The port has made a successful link and is not sending/receiving traffic.
	Off	No link is detected for this port.

1.3 Technical Specifications

Table 1-5 Technical Specifications

Radio Design	Dual-stream and dual-radio
--------------	----------------------------

Standard & Protocol	802.11ax, 802.11ac wave2/wave1 and 802.11a/b/g/n
Operating Radio	802.11b/g/n/ax: 2.4 GHz to 2.4835 GHz 802.11a/n/ac/ax: 5.1 GHz: 5.150 GHz to 5.350 GHz, 5.8 GHz: 5.725 GHz to 5.850 GHz Note: The operating band varies in different countries.
Antenna	External antenna (2.4 GHz: 5 dBi, 5 GHz: 5 dBi)
Max Data Rate	2.4 GHz: 574 Mbps 5 GHz: 2402 Mbps Combined: 2.976 Gbps
Modulation	OFDM: BPSK@6/9 Mbps, QPSK@12/18 Mbps, 16QAM@24 Mbps, 64QAM@48/54 Mbps DSSS: DBPSK@1 Mbps, DQPSK@2 Mbps, and CCK@5.5/11 Mbps MIMO-OFDM: BPSK, QPSK, 16QAM, 64QAM, 256QAM and 1024QAM OFDMA
Receive Sensitivity	11b: -91 dBm (1 Mbps), -90 dBm (5.5 Mbps), -87 dBm (11 Mbps) 11a/g: -89 dBm (6 Mbps), -82 dBm (24 Mbps), -78 dBm (36 Mbps), -72 dBm (54 Mbps) 11n: -85 dBm (MCS0), -67 dBm (MCS7), -62 dBm (MCS8) 11ac: 20 MHz: -85 dBm (MCS0), -62 dBm (MCS8) 11ac: 40 MHz: -82 dBm (MCS0), -59 dBm (MCS8) 11ac: 80 MHz: -79 dBm (MCS0), -53 dBm (MCS9) 11ac: 160 MHz: -76 dBm (MCS0), -50 dBm (MCS9) 11ax: 20 MHz: -85 dBm (MCS0), -62 dBm (MCS8), -58 dBm (MCS11) 11ax: 40 MHz: -82 dBm (MCS0), -59 dBm (MCS8), -54 dBm (MCS11) 11ax: 80 MHz: -79 dBm (MCS0), -53 dBm (MCS9), -52 dBm (MCS11) 11ax: 160 MHz: -76 dBm (MCS0), -49 dBm (MCS11)
Max Transmit Power	24GHz: ≤ 34 dBm (EIRP) 5GHz: ≤ 35.7 dBm (EIRP) Country-specific restriction apply: Myamar: 2400MHz~2483.5MHz: ≤ 20 dBm 5150MHz~5350MHz: ≤ 23 dBm 5470MHz~5850MHz: ≤ 25 dBm

	<p>Thailand:</p> <p>2400MHz~2483.5MHz: ≤ 20dBm</p> <p>5150MHz~5350MHz: ≤ 23dBm</p> <p>5470MHz~5725MHz: ≤ 25dBm</p> <p>5725MHz~5850MHz: ≤ 30dBm</p>
Power Adjustment	Configurable in increments of 1 dBm
Dimensions (W × D × H)	<p>283 mm × 172 mm × 46 mm (11.14 in. × 6.77 in. × 1.81 in.)</p> <p>Note: The value (46 mm/1.81 in.) only indicates the height of the main unit, excluding that of the antenna.</p>
Weight	≤ 2 kg (4.41 lbs)
Service Port	<p>One 10/100/1000Base-T WAN port</p> <p>One 10/100/1000Base-T LAN port</p> <p>Three 10/100/1000Base-T WAN/LAN switchable ports</p>
Management Port	N/A
Status LED	System status LED, Mesh LED and port LEDs
Power Supply	Local power supply: 100 V AC to 240 V AC
Max Power Consumption	20 W
Environment	<p>Operating temperature: 0°C to 40°C (32°F to 104°F)</p> <p>Storage temperature: -40°C to 70°C (-40°F to 158°F)</p> <p>Operating humidity: 5% to 95% (non-condensing)</p> <p>Storage humidity: 5% to 95% (non-condensing)</p>
Mounting Method	Workbench mounting and wall mounting
Safety Regulation Compliance	GB 4943.1
Shock and Vibration	IEC61373
Radio Standard	EN300 328, EN301 893
MTBF	> 400,000 hours

2 Preparing for Installation

2.1 Safety Precautions

 **Note**

- To avoid personal injury and device damage, carefully read the safety precautions before you install the device.
 - The following safety precautions may not cover all possible dangers.
-

2.2 General Safety Precautions

- Do not expose the device to high temperature, dusts, or harmful gases. Do not install the device in an inflammable or explosive environment. Keep the device away from EMI sources such as large radar stations, radio stations, and substations. Do not subject the router to unstable voltage, vibration, and noises.
- The installation site should remain dry. Keep the device at least 500 m (0.31 mile) away from the ocean and do not face it towards the sea breeze.
- The installation site should be free from water flooding, seepage, dripping, or condensation. The installation site should be selected subject to the features of network planning and communication equipment, taking into consideration the climate, hydrology, geology, earthquake, electrical power, and transportation.

 **Note**

Please follow the procedures described in the user manual to install and remove the device.

2.3 Handling Safety

- Prevent the device from being frequently handled.
- Cut off all the power supplies and unplug all power cords before moving or handling the device.

2.4 Electric Safety

- Observe local regulations and specifications during electric operations. Only personnel with relevant qualifications can perform such operations.
- Check whether there are potential risks in the work area. For example, check whether the power supply is grounded, whether the grounding is reliable, and whether the ground is wet.
- Learn about the position of the indoor emergency power switch before installation. Cut off the power switch in case of accidents.
- Make sure that the device is powered off when you cut off the power supply.
- Do not place the device in a damp/wet location. Do not let any liquid enter the chassis.
- Keep the device far away from grounding or lightning protection devices for power equipment.
- Keep the device away from radio stations, radar stations, high-frequency high-current devices, and microwave ovens.

Warning

- Improper or incorrect electric operations may cause a fire, electric shock, and other accidents, and lead to severe and fatal personal injury and device damage.
- Direct or indirect contact with high voltage or mains power supply through wet objects may cause fatal dangers.

2.5 Installation Environment Requirements

The RG-EG105GW-X router must be used indoors. To ensure normal operation and prolong the service life of the device, the installation site must meet the following requirements.

2.5.1 Installation Requirements

- Install the device into an open environment. If the device is installed into a closed environment, ensure that the cabinet has proper ventilation and heat dissipation.
- You are advised to install the device on a standard workbench and maintain a proper clearance around the air vents for heat dissipation.

2.5.2 Ventilation Requirements

The RG-EG105GW-X router adopts natural cooling. Reserve sufficient space around the device to ensure normal heat dissipation.

2.5.3 Temperature and Humidity Requirements

To ensure the normal operation and prolonged service life of the device, maintain an appropriate temperature and humidity in the equipment room. The equipment room with too high or too low temperature and humidity for a long period may damage the device.

- In an environment with high humidity, the insulating material may have poor insulation or even leak electricity. Sometimes it is also prone to changes in the mechanical properties and causes rusting of metal parts.
- In an environment with low relative humidity, static electricity is prone to occur and damage the internal circuits of the device.
- Too high temperatures can accelerate the aging of insulation materials, greatly reducing the reliability of the device and severely affecting its service life.

2.5.4 EMI Requirements

- Keep the device away from the grounding equipment or lightning and grounding equipment of the power device as much as possible.
- Keep the device far away from radio stations, radar stations, high-frequency high-current devices, and microwave ovens.

2.6 Tools

Table 2-1 Tools

Common Tools	Phillips screwdrivers, power cords, and Ethernet cables
---------------------	---

Special Tools	Antistatic gloves, wire stripper, crimping pliers, crystal connector crimping pliers, and wire cutter
Meter	Multimeter, and bit error rate tester (BERT)

 **Note**

The router is delivered without a tool kit. The tool kit is customer-supplied.

2.7 Unpacking the Router

Table 2-2 Package Contents

Chassis Kit	Router, user manual, warranty card and power cord
--------------------	---

 **Note**

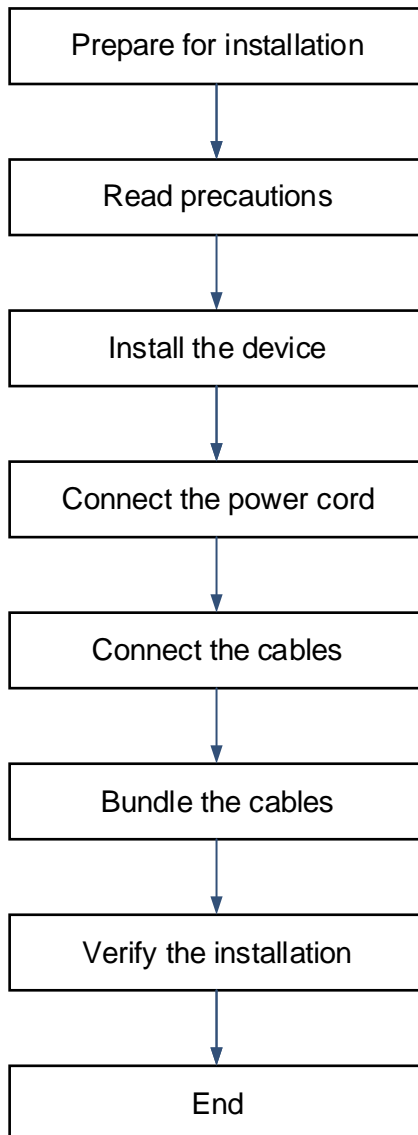
The packet contents generally contain the above items. The actual delivery is subject to the order contract. And please check your goods carefully against the order contract. If you have any questions, please contact the distributor.

3 Installing the Router

The RG-EG105GW-X router must be installed indoors.

3.1 Installation Procedure

To avoid damage to the router, please follow the steps for installation.



3.2 Installing the Router

3.2.1 Installing the Router on a Workbench

The RG-EG105GW-X router can be mounted on a clean workbench.

- (1) Attach the four rubber feet to the recessed areas on the bottom of the router.
- (2) Place the router on a clean and sturdy workbench.

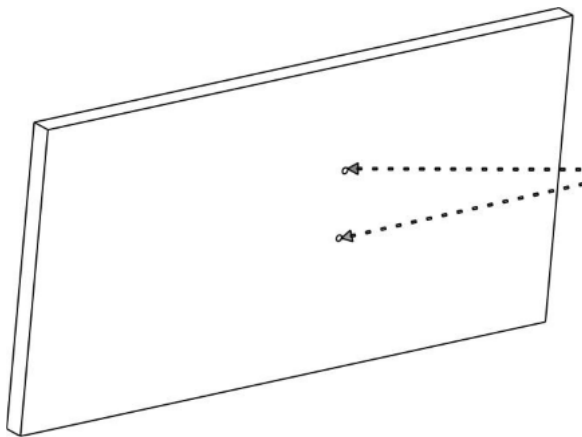
⚠ Caution

Maintain a minimum clearance of 100 mm (3.94 in.) around the router for heat dissipation.

Do not place heavy objects on the router.

3.2.2 Installing the Router on a Wall

- (1) Drill two holes on the wall. The holes should be level with each other and their centers should be 30 mm (1.18 in.) to 38 mm (1.50 in.) apart.



Drill two holes on the wall with the center-to-center distance of 30 mm (1.18 in.) to 38 mm (1.50 in.).

- (2) Secure the router on the wall by using a Phillips screwdriver to tighten the 25 x 4 mm screws.

3.3 Connecting the Cables

3.3.1 Connecting the Ethernet Cables

You can follow the steps to connect the Ethernet cables.

- Connect the AP to the LAN port on the router with an Ethernet cable. After power-on, the router will broadcast the SSID @Ruijie-XXXXX.
- Connect the PC to the LAN port of the router with an Ethernet cable. Enable **Automatic (DHCP)** on the PC to obtain an IP address automatically.

3.3.2 Connecting the Power Cord

Connect one end of the power cord to the power plug on the router, and the other end to the power socket.

⚠ Caution

- Learn about the position of the power switch before installation. Cut off the power switch in case of accidents.
 - Verify that the external power supply is cut off before the router is powered on.
-

3.4 Powering on the Router

3.4.1 Checklist before Power-on

Before power-on, check the following items:

- Check whether the power cord is properly connected.
- Check whether the power supply voltage meets the requirement.

Note

The router supports the AC power supply: 100 V AC to 240 V AC, 50/60 Hz. Ensure that power supply meets the requirement. For details, see [Chapter 1 Product Overview](#).

-
- Check whether the external power supply is cut off before powering on the router.
 - Check whether the cables are properly connected and whether the PC or other client is configured.

3.4.2 Powering on the Router

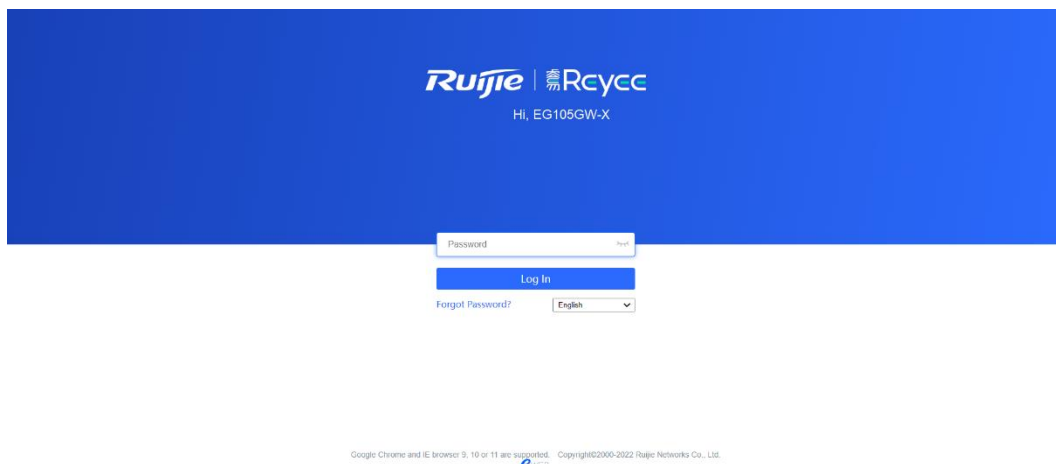
Turn on the power switch of the external power supply and then the device starts up.

3.4.3 Checklist after Power-on

After power-on, check the following items:

- Check whether the LEDs function properly.
For details, see [Chapter 1 Product Overview](#).
- Check whether the Web management system of the device is available.

Please visit <http://192.168.110.1> by default to perform configuration on the Web management system.



3.5 Configuring the Router

To better use the router, please configure the device on the Web management system subject to specific needs. For details, see *Ruijie Reyee RG-EG-W Series Routers Web-based Configuration Guide, Release ReyeeOS 1.95*.

4 Troubleshooting

4.1 Power Troubleshooting

You can check whether the power supply is faulty by observing the system (SYS) status LED on the router. For the LED status, see [Chapter 1 Product Overview](#). If a fault occurs, check the following items:

- Check whether the power cord is connected properly.
- Check whether the power supply meets the requirements.

 **Caution**

Do not attempt hot swapping of the power cord. If the steps above did not solve your problem, contact your local distributor or technical support personnel.

4.2 System Troubleshooting

If the router is operational after power-on, you can visit the Web management interface.

If you fails to log in to the Web management system, check the following items:

- Check whether the power supply works normally.
- Check whether the Ethernet cable is connected properly.
- Check whether **Automatic (DHCP)** is enabled on the PC.

5 Appendix

5.1 Connectors and Media

2500BASE-T/1000BASE-T/100BASE-TX/10BASE-T

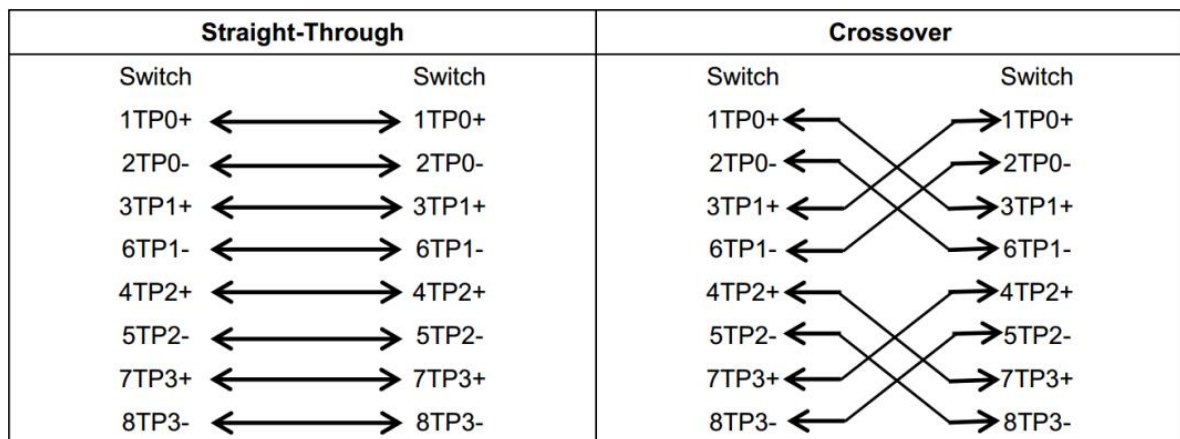
The 2500BASE-T/1000BASE-T/100BASE-TX/10BASE-T is a 10/100/1000/2500 Mbps self-adaptive port that supports auto MDI/MDIX Crossover.

Compliant with IEEE 802.3bz, 2500BASE-T requires Category 5e or better 100-ohm UTP or STP (STP is recommended) with a maximum distance of 100 meters (328 feet).

Compliant with IEEE 802.3ab, 1000BASE-T requires Category 5e or better 100-ohm UTP or STP (STP is recommended) with a maximum distance of 100 meters (328 feet).

The 2500BASE-T/1000BASE-T port uses four twisted pairs for data transmission. Twisted pairs for the 2500BASE-T/1000BASE-T port are connected as shown in the following figure.

Figure 5-1 Four Twisted Pairs Connection



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). 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 definitions of pin signals for the 100BASE-TX/10BASE-T port.

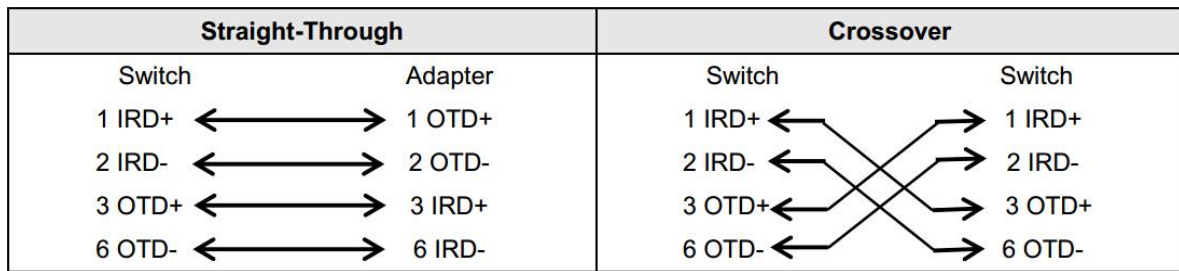
Table 5-1 100BASE-TX/10BASE-T Pin Assignments

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

Pin	Socket	Plug
6	Output Transmit Data-	Input Receive Data-
4, 5, 7, 8	Not Used	Not Used

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

Figure 5-2 100BASE-TX/10BASE-T Twisted Pair Connection



5.2 Cabling

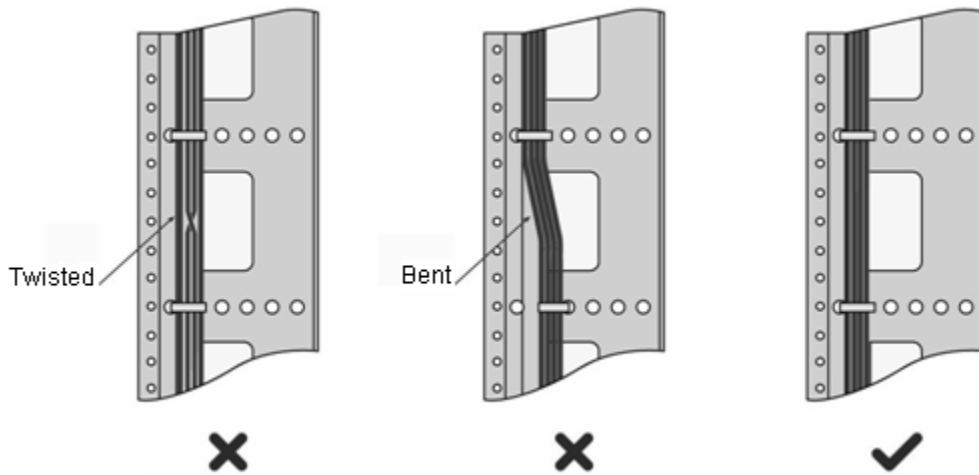
5.2.1 Requirements for Cable Bend Radius

- The bend radius of a fixed power cord, network 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 the common coaxial cable that is often bent or plugged should be over 10 times greater than its diameter.
- The bend radius of a fixed high-speed cable (such as SFP+ cable) should be over five times greater than its diameter. The bend radius of the fixed high-speed cable that is often bent or plugged should be over 10 times greater than its diameter.

5.2.2 Precautions for Bundling Cables

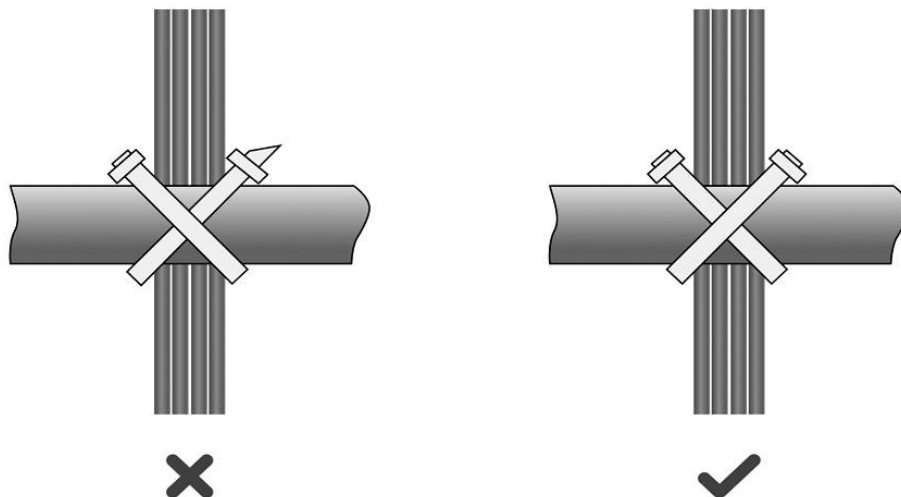
- Before cables are bundled, mark labels and stick the labels to cables wherever appropriate.
- Cables should be neatly and properly bundled in the cabinet without twisting or bending.

Figure 5-3 Binding Cables



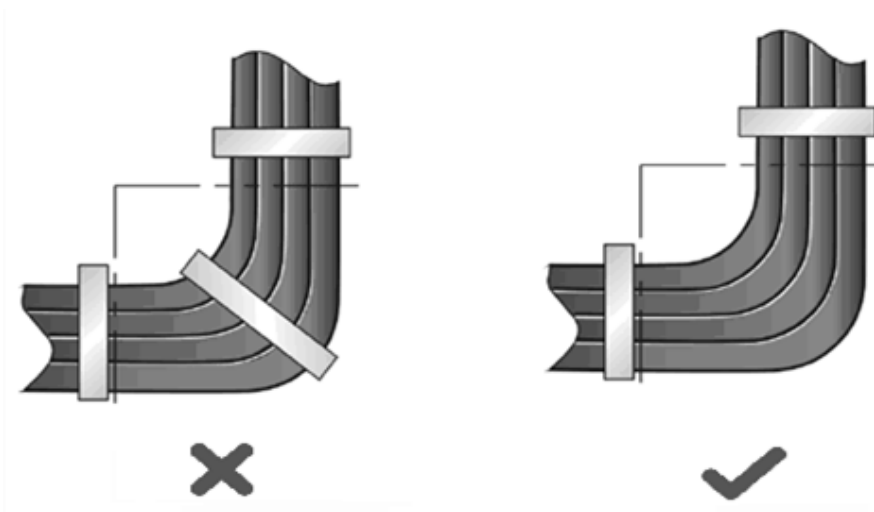
- Cables of different types (such as power cords, signal cables, and ground cables) should be separated in cabling and bundling. Mixed bundling is not allowed. When they are close to each other, it is recommended to adopt crossover cabling. In the case of parallel cabling, maintain a minimum distance of 30 mm (1.18 in.) between power cords and signal cables.
- The cable management brackets and cabling troughs inside and outside the cabinet should be smooth without sharp corners.
- The metal hole traversed by cables should have a smooth and fully rounding surface or an insulated lining.
- Use cable ties to bundle up cables properly. Please 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.

Figure 5-4 Binding Cables



- When cables need to be bent, please bundle them up but do not tie them where the cables will be bent. Otherwise, considerable stress may be generated in cables, breaking cable cores.

Figure 5-5 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 router or cable.
- 220 V and -48 V power cords must not be bundled on the guide rails of moving parts.
- The power cords connecting moving parts such as door grounding wires should be reserved with some access 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. If heat sources cannot be avoided, high-temperature cables should be used.
- When screw threads are used to fasten cable terminals, the bolt or screw must be tightly fastened, and anti-loosening measures should be taken.

Figure 5-6 Cable Fastening

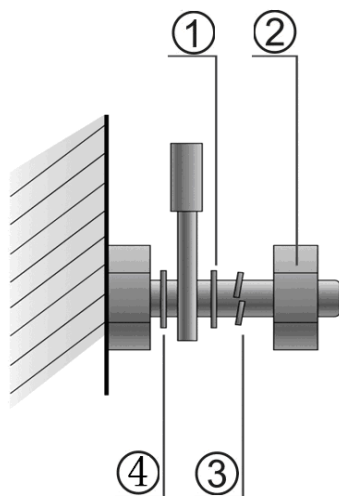


Table 5-2 Cable Fastening Components

No.	Components
1	Flat washer
2	Nut
3	Spring washer
4	Flat washer

- Hard power cords should be fastened in the terminal connection area to prevent stress on terminal connection and cable.
- Do not use self-tapping screws to fasten terminals.
- Power cords of the same type and in the same cabling direction should be bundled up into cable bunches, with cables in cable bunches clean and straight.
- Bundle up cables by using cable ties based on the following table.

Cable Bunch Diameter	Distance between Every Binding Point
10 mm (0.39 in.)	80 mm to 150 mm (3.15 in. to 5.91 in.)
10 mm to 30 mm (0.39 in. to 1.18 in.)	150 mm to 200 mm (5.91 in. to 7.87 in.)
30 mm (1.18 in.)	200 mm to 300 mm (7.87 in. to 11.81 in.)

- No knot is allowed in cabling or bundling.
- For wiring terminal blocks (such as circuit breakers) with cord end terminals, the metal part of the cord end terminal should not be exposed outside the terminal block when assembled.