

















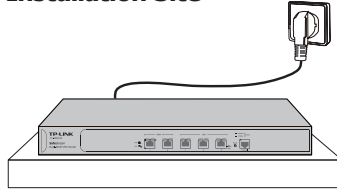


- Ensure the rack and device are well earthed.
- Make sure the power socket has a good contact with the ground.
- Keep a reasonable cabling system and avoid induced lightning.
- Use the signal SPD (Surge Protective Device) when wiring outdoor.



**Note:** For detailed lightning protection measures, please refer to **Chapter 3 Lightning Protection**.

### Installation Site



When installing the device on a rack or a flat workbench, please note the following items:

- The rack or workbench is flat and stable, and sturdy enough to support the weight of 5.5kg at least.
- The rack or workbench has a good ventilation system. The equipment room is well ventilated.
- The rack is well grounded. Keep the power socket less than 1.5 meters away from the device.

## 2.3 Installation Tools

- Phillips screwdriver
- ESD-preventive wrist wrap
- Cables



**Note:** These tools are not provided with our product. If needed, please self purchase them.

## 2.4 Product Installation

### ■ Desktop Installation

To install the device on the desktop, please follow the steps below:

1. Set the device on a flat surface strong enough to support the entire weight of the device with all fittings.
2. Remove the adhesive backing papers from the rubber feet.
3. Turnover the device and attach the supplied rubber feet to the recessed areas on the bottom at each corner of the device.

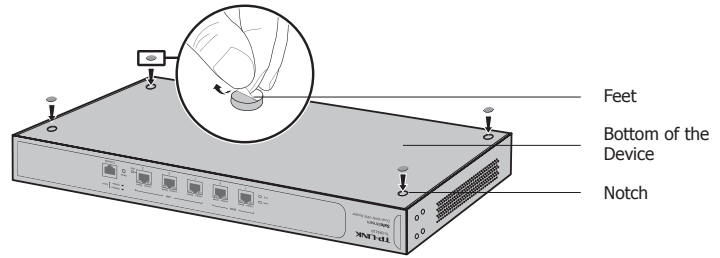


Figure 2-1 Desktop Installation

■ **Rack Installation**

To install the device in an EIA standard-sized, 19-inch rack, follow the instructions described below:

1. Check the grounding and stability of the rack.
2. Secure the supplied rack-mounting brackets to each side of the device with supplied screws, as illustrated in the following figure.

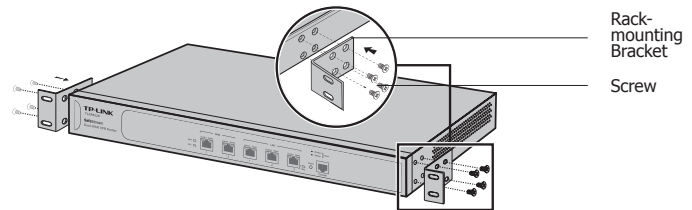


Figure 2-2 Bracket Installation

3. After the brackets are attached to the device, use suitable screws (not provided) to secure the brackets to the rack, as illustrated in the following figure.

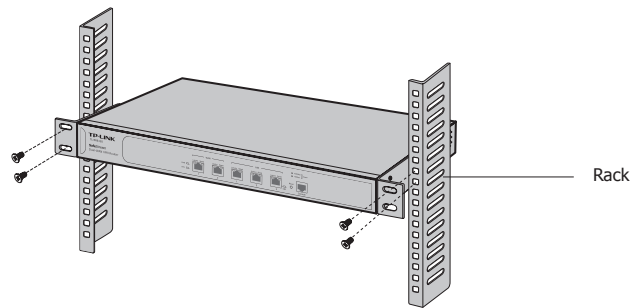


Figure 2-3 Rack Installation



**Caution:**

- Please set 5~10cm gaps around the device for air circulation.
- Please avoid any heavy thing placed on the device.
- Please mount devices in sequence from the bottom to top of the rack and ensure a certain clearance between devices for the purpose of heat dissipation.

## Chapter 3 Lightning Protection

### 3.1 Cabling Reasonably

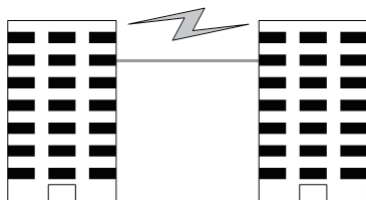
In the actual network environment, you may need cable outdoors and indoors, and the requirements for cabling outdoors and indoors are different. A reasonable cabling system can decrease the damage of induced lightning to devices.



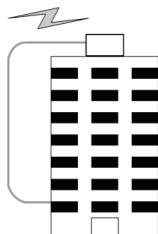
**Note:** It's not recommended using Ethernet cables outdoors. When cabling outdoors, please use a signal lightning arrester.

#### ■ Requirements for Cabling Outdoors

- Aerial cabling without safeguard is not allowed.



- It's not allowed cabling down the building to connect network devices in different floors.



- Outdoor cables should be buried and paved to the indoor through basement. A piece of steel wire should be paved underground along the pipe and connected to the lightning protection terminal of the building for shielding. Before connecting the cable to the device, install a signal lightning arrester on the corresponding port.
- When an aerial cable is set up, the cable should be through a metal pipe (15m long at least) before coming into the building. The two ends of this metal pipe should be grounded. Before connecting the cable to the device, install a signal lightning arrester on the corresponding port.
- It's not necessary to pave STP cables through pipes. The shielded layer of STP cable should be well grounded. Before connecting the cable to the device, install a signal lightning arrester on the corresponding port.

#### ■ Requirements for Cabling Indoors

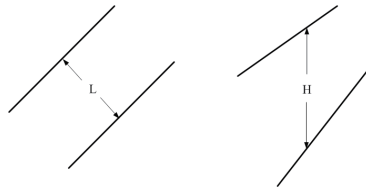
When cabling indoors, keep a certain distance away from the devices that may cause high-frequency interferences, such as down-conductor cable, powerline, power transformer and electromotor.

- The main cable should be paved in the metal raceway of the access shaft. When cabling, keep the loop area formed by the cable itself as small as possible.

- Requirements for the distance between Ethernet cable and other pipelines are shown in the table.

Other Pipelines	Ethernet Cable	
	Min Parallel Net Length L (mm)	Min Parallel-overlapping Net Height H (mm)
Down-conductor	1000	300
PE	50	20
Service pipe	150	20
Compressed air pipe	150	20
Thermal pipe (not wrapped)	500	500
Thermal pipe (wrapped)	300	300
Gas pipe	300	20

The two diagrams below demonstrate parallel net length and parallel-overlapping net height.



**Note:** The above minimum net length/height is required when metal raceway is not used. If any requirements cannot be met, you can add a steel tube or metal raceway for shielding.

- Requirements for the distance between Ethernet cable and high-power electric devices are in following tables.

Cable	Pave Way	Min Parallel Length (mm)
<2kVA powerline	Parallel cabling	130
	One is in the grounded metal raceway or metal pipe	70
	The both are in the grounded metal raceway or metal pipe	10
2~5kVA powerline	Parallel cabling	300
	One is in the grounded metal raceway or metal pipe	150
	The both are in the grounded metal raceway or metal pipe	80
>5kVA powerline	Parallel cabling	600
	One is in the grounded metal raceway or metal pipe	300
	The both are in the grounded metal raceway or metal pipe	150

Device	Min Distance (m)
Switch case	1.00
Transformer room	2.00
Elevator tower	2.00
Air-conditioner room	2.00

### 3.2 Connect to Ground

Connecting the device to ground is to quickly release the lightning over-voltage and over-current of the device, which is also a necessary measure to protect the body from electric shock.

In different environments, the device may be grounded differently. The following will instruct you to connect the device to the ground in two ways, connecting to the grounding bar or connecting to the ground via the power cord. Please connect the device to ground in the optimum way according to your specific operation environment.

#### ■ Connecting to the Grounding Bar

If the device is installed in the Equipment Room, where a grounding bar is available, you are recommended to connect the device to the grounding bar as shown in the following figure.

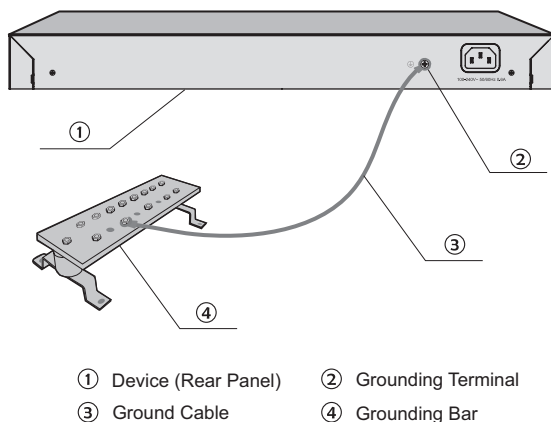


Figure 3-1 Connecting to the Grounding Bar



**Note:** The grounding bar and ground cable are not provided with our product. If needed, please self purchase them.

#### ■ Connecting to the Ground via the Power Supply

If the device is installed in the normal environment, the device can be grounded via the PE (Protecting Earth) cable of the AC power supply as shown in the following figure.

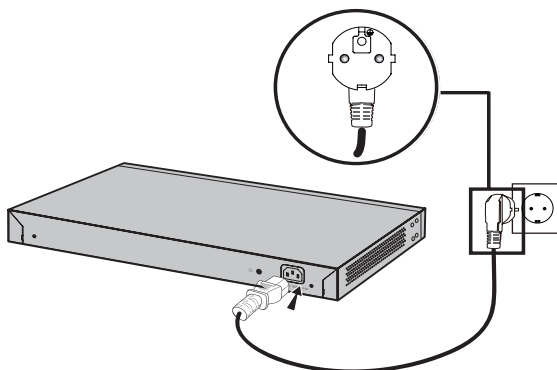


Figure 3-2 Connecting to the Ground

**Note:**

- The figure is to illustrate the application and principle. The power plug you get from the package and the socket in your situation will comply with the regulation in your country, so they may differ from the figure above.
- If you intend to connect the device to the ground via the PE (Protecting Earth) cable of AC power cord, please make sure the PE (Protecting Earth) cable in the electrical outlet is well grounded in advance.

### 3.3 Equipotential Bonding

Equipotential Bonding is the practice of intentionally electrically connecting all earthed systems to the same grounding grid or connecting the grounding grids of all the earthed systems together through the ground or overground metal so as to create an earthed equipotential zone. When lightning occurs, the high voltage produced by lightning current in all systems will meanwhile exist in their ground cables, and thus all ground cables have the same electrical potential and basically eliminate the electric strikes between the systems.

The figure below illustrates how to practice equipotential bonding in a network.

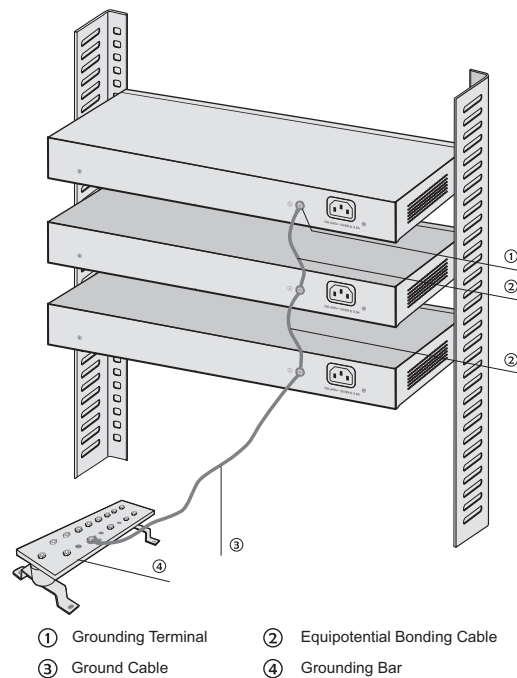


Figure 3-3 Equipotential Bonding

When equipotential bonding, please note that the cable should be copper wrapped Kelly with its area being  $6\text{mm}^2$  at least. The shorter cable the better, and use a grounding bar to establish an equipotential bonding point.



**Note:** The equipotential bonding cable is not provided with our product. If needed, please self purchase it.

### 3.4 Use Lightning Arrester

Power lightning arrester and signal lightning arrester are used for lightning protection.

Power lightning arrester is used for limiting the voltage surge due to a lightning. If an outdoor AC power cord should be directly connected to the device, please use a power lightning arrester.



**Note:** Power lightning arrester is not provided with our product. If needed, please self purchase it.

Signal lightning arrester is used to protect RJ45 ports of the device from lightning. When cabling outdoors, please install a signal lightning arrester before connecting the cable to the device.

When purchasing or using a signal lightning arrester, please observe the following rules:

- The port rate of the signal lightning arrester should match the rate of the desired port on the device. If it is not matched, this signal lightning arrester will not work. Purchase a standard lightning arrester.
- Install signal lightning arrester near the protected device and connect it to the ground via a shorter ground cable.

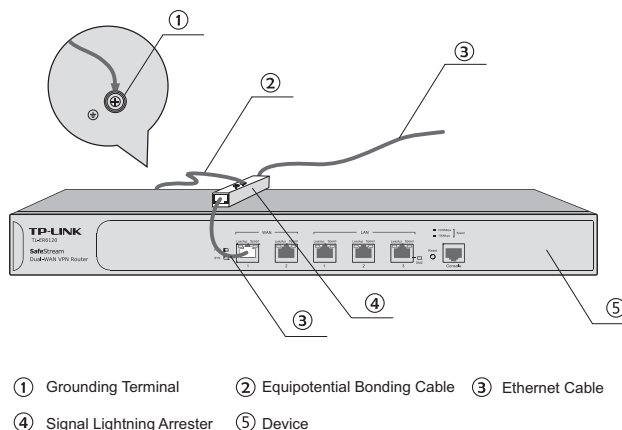


Figure 3-4 Lightning Arrester Connection



**Note:** Signal lightning arrester is not provided with our product. If needed, please self purchase it.

## Chapter 4 Connection

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### 4.1 WAN Port

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Please connect the WAN port of the router to the interface provided by ISP via Ethernet cable.

### 4.2 LAN Port

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Connect a LAN port of the router to the computer by RJ45 cable as the following figure shows.

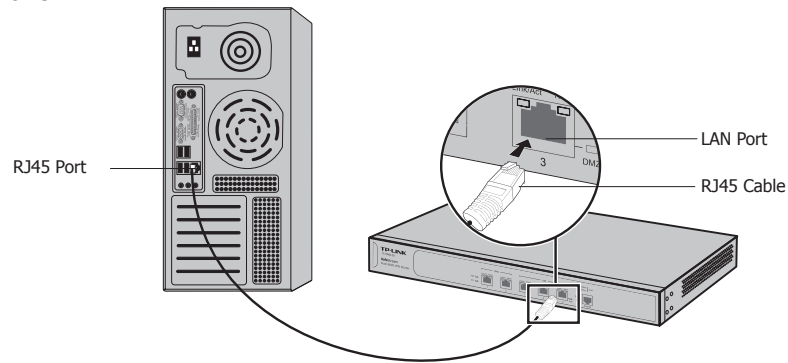


Figure 4-1 Connecting the LAN Port



**Note:** If the router is connecting with Server/Switch or other Ethernet devices, please make sure the RJ45 cable is less than 100m.

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### 4.3 Console Port

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CLI (Command Line Interface) enables you to do some simple operations to the router, thus you can load the CLI after connecting the PCs or Terminals to the console port on the router via the provided cable.

Connect the console port of the device with your computer by the console cable as the following figure shows.

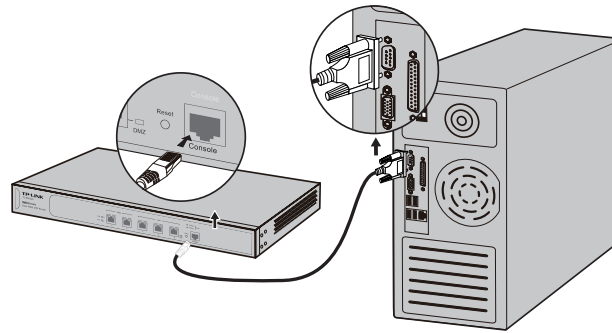


Figure 4-2 Connecting the Console Port

You can also manage the device through the console port, for details please refer to the User Guide on the resource CD.



**Note:**

- The console port is the first port on the right of the front panel.
- Please keep the device power off when plugging the console cable.
- Do not connect the console port with other ports by RJ45 cable.

#### 4.4 Verify Installation

After completing the installation, please verify the following items:

- There are 5~10cm of clearance around the sides of the device for ventilation and the air flow is adequate.
- The voltage of the power supply meets the requirement of the input voltage of the device.
- The power socket, device and rack are well grounded.
- The device is correctly connected to other network devices.

#### 4.5 Power On

Plug the negative connector of the provided power cord into the power socket of the device, and the positive connector into a power outlet as the following figure shows.

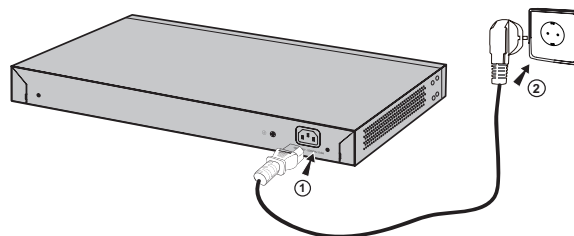


Figure 4-3 Connecting to Power Supply



**Note:** The figure is to illustrate the application and principle. The power plug you get from the package and the socket in your situation will comply with the regulation in your country, so they may differ from the figure above.

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## 4.6 Initialization

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After the device is powered on, it begins the Power-On Self-Test. A series of tests run automatically to ensure the device functions properly. During this time, its LED indicators will respond as follows:

- The PWR LED will light on all the time.
- All LEDs except PWR LED will flash momentarily and then turn off.
- The SYS LED flashes every second continuously, which means the initialization is finished.

## Chapter 5 Configuration

### 5.1 Preparations

1. Connect a PC to a LAN port of the router with a RJ45 cable properly.
2. Set the Internet Protocol (TCP/IP) properties of the PC as the following figure shows.

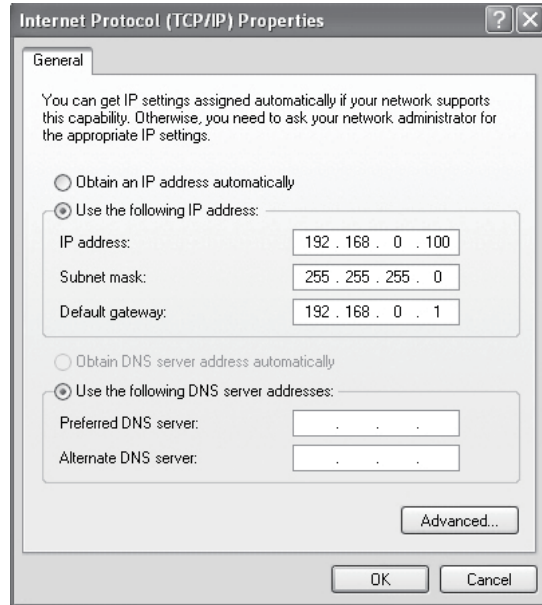


Figure 5-1 Internet Protocol (TCP/IP) Properties

### 5.2 Login

1. To access the GUI (Graphical User Interface) of the router, open a web browser and type the default management address `http://192.168.0.1` in the address field of the browser, then press the Enter key.



Figure 5-2 Web Browser

2. Enter `admin` for the default User Name and Password, both in lower case letters. Then click the Login button or press the Enter key.



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Figure 5-3 Login

3. After a successful login, the main page will appear as the following figure, and you can configure the function by clicking the setup menu on the left side of the screen.

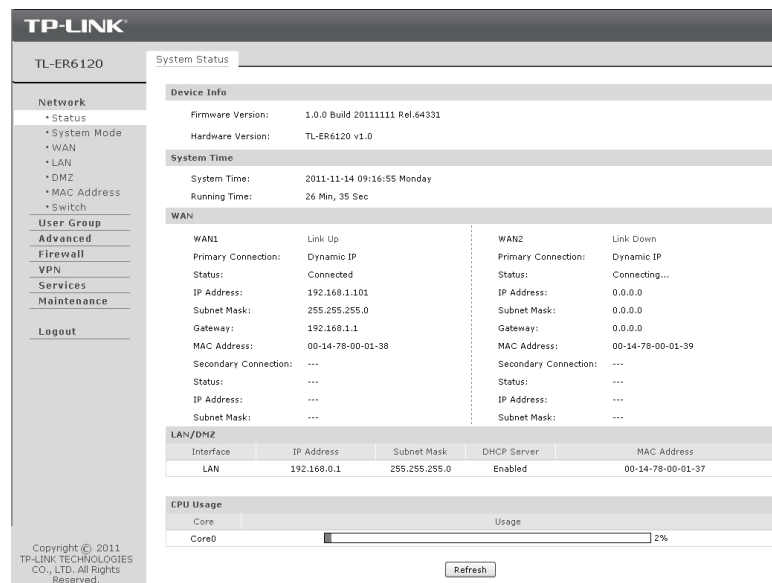


Figure 5-4 Main Page of the router

## Appendix A Troubleshooting

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### Q1. What could I do if I forgot the username and password of the router?

Connect the console port and log in the user mode of CLI. Run the command "user get", as following:

```
TP-LINK > user get
```

```
Username: admin
```

```
Password: admin
```

```
TP-LINK >
```

For the method of how to log in the CLI, please refer to the User Guide on the resource CD.

Furthermore, you can also restore the router to factory defaults, Please refer to **1.2 Appearance** of this Installation Guide for detail. The default management address of the router is http://192.168.0.1, default username and password are both admin. All your current settings will be cleared after the router is restored. If you have backup configuration, please import it now.

### Q2. Why does the PWR LED work abnormally?

The PWR LED should be lit up when the power system works normally. If the PWR LED worked abnormally, please check as follows:

1. Make sure that the power cable is connected properly, and the power contact is normal.
2. Make sure the voltage of the power supply meets the requirement of the input voltage of the router.

### Q3. What could I do if I could not access the web-based configuration page?

You are recommended to check the following items:

1. Check every port LED on the router and make sure the cable is installed properly.
2. Try another port on the router and make sure the cable meets the requirement and works normally.
3. Turn off the power. After a while, turn on the power again.
4. Make sure the IP address of your PC is set within the subnet of the router.
5. If you still cannot access the configuration page, please restore the router to its factory defaults. Then the IP address should be set as 192.168.0.x ("x" is any number from 2 to 254) and Subnet Mask as 255.255.255.0.

### Q4. Why does the page display abnormally?

Please check as follows:

1. Update your browser or replace it with another browser, and try again.
2. If the pop-up is blocked, please lower the security level of the browser.

## Appendix B Hardware Specifications

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Item	Content
Standards	IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3x, TCP/IP, DHCP, ICMP, NAT, PPPoE, SNTP, HTTP, DNS, L2TP, PPTP, IPSec
Transmission Medium	10Base-T: UTP/STP of Cat. 3 or above( $\leq 100\text{m}$ ) 100Base-TX: UTP/STP of Cat. 5 or above( $\leq 100\text{m}$ ) 1000Base-T: UTP/STP of Cat.5e or above( $\leq 100\text{m}$ )
LEDs	PWR, SYS, Link/Act, Speed, DMZ
Power	100-240V~ 50/60Hz 0.6A
Operating Temperature	0°C~40°C
Storage Temperature	-40°C~70°C
Operating Humidity	10%~90%RH Non-condensing
Storage Humidity	5%~90%RH Non-condensing

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