tp-link | Omada Business Networking Solution

Installation Guide

Omada Easy Managed Switch

About this Installation Guide

This Installation Guide describes the hardware characteristics, installation methods and the points that should be attended to during the installation. This Installation Guide is structured as follows:

Chapter 1 Introduction

This chapter describes the external components of the switch.

Chapter 2 Installation

This chapter illustrates how to install the switch.

Chapter 3 Connection

This chapter illustrates how to do the physical connection of the switch.

Chapter 4 Configuration

This chapter illustrates how to configure the switch.

Appendix A Troubleshooting

Appendix B Specifications

Audience

This Installation Guide is for:

Network Engineer Network Administrator

Conventions

- Some models featured in this guide may be unavailable in your country or region. For local sales information, visit https://www.tp-link.com/business-networking/.
- The figures in Chapter 2, Chapter 3 and Chapter 4 are for demonstration purposes only. Your switch may differ in appearance from that depicted.
- PoE budget calculations are based on laboratory testing. Actual PoE power budget is not guaranteed and will vary as a result of client limitations and environmental factors.
- This guide uses the specific formats to highlight special messages. The following table lists the notice icons that are used throughout this guide.

	Remind to be careful. A caution indicates a potential which may result in device damage.
	Remind to take notice. The note contains the helpful information for a better use of the product.

Related Document

The User Guide of the product are provided on Download Center. To obtain the latest product information, visit the official website: https://www.tp-link.com/support/download/?type=smb.

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Chapter 1 Introduction

1.1 Product Overview

Designed for small business and home office scenarios, TP-Link Omada Easy Managed Switch provides wire-speed performance and abundant L2 management features. It provides a variety of service features and multiple powerful functions with high security.

The EIA-standardized framework and smart configuration capacity can provide flexible solutions for a variable scale of networks. QoS and IGMP snooping/filtering optimize voice and video application. Link aggregation increases aggregated bandwidth, optimizing the transport of business critical data. WEB offers abundant management policies. TP-Link Omada Easy Managed Switch integrates multiple functions with excellent performance, and is friendly to manage, which can fully meet the need of the users demanding higher networking performance.

ES220GMP/ES228GMP is also a Power Sourcing Equipment (PSE*). Some of the RJ45 ports on the switch support Power over Ethernet (PoE*) function, which can automatically detect and supply power to those powered devices (PDs*) complying with IEEE 802.3af and IEEE 802.3at.

*PSE: a device (switch or hub for instance) that provides power through an Ethernet cable.

*PoE: a technology describes a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet.

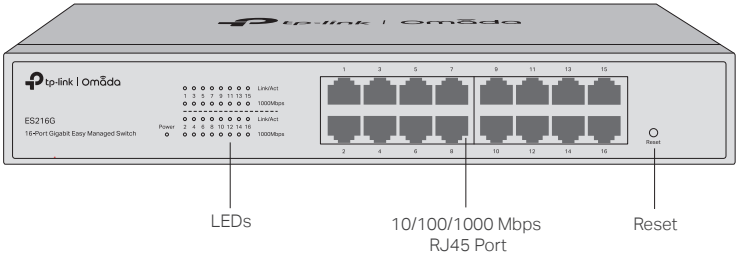
*PD: a device powered by a PSE and thus consumes energy. Examples include powering network cameras, wireless LAN access points, IP telephones, network hubs, embedded computers etc.

1.2 Appearance

- **Front Panel**

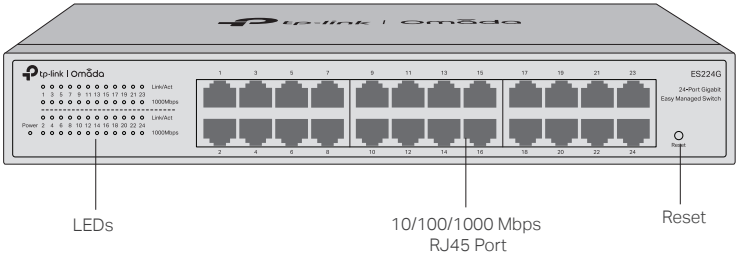
The front panel of ES216G is shown as the following figure.

Figure 1-1 Front Panel of ES216G



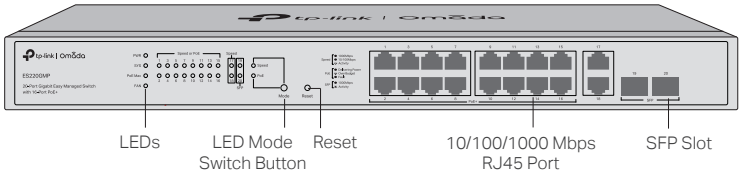
The front panel of ES224G is shown as the following figure.

Figure 1-2 Front Panel of ES224G



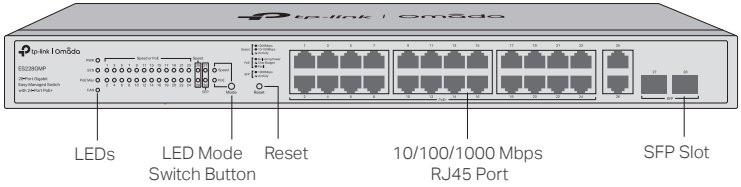
The front panel of ES220GMP is shown as the following figure.

Figure 1-3 Front Panel of ES220GMP



The front panel of ES228GMP is shown as the following figure.

Figure 1-4 Front Panel of ES228GMP



LEDs

For ES216G/ES224G

LED	Indication
Power	**On**: The switch is powered on. **Off**: The switch is powered off or power supply is abnormal.
Link/Act	**On**: A device is linked to the corresponding port and running properly. **Flashing**: Transmitting or receiving data. **Off**: No device is linked to the corresponding port.
1000Mbps	**On**: Running at 1000 Mbps. **Off**: Running at 10/100 Mbps or no device is linked to the corresponding port.

For ES220GMP/ES228GMP

LED	Indication
PWR	**On**: The switch is powered on. **Off**: The switch is powered off or power supply is abnormal.
SYS	**Flashing**: The switch works properly. **On or Off**: The switch works improperly.
PoE Max	**For ES220GMP**: **On**: 243 W ≤ Total power supply < 250 W. **Flashing**: Total power supply keeps ≥ 243 W for more than 2 minuites. **Off**: Total power supply < 243 W. **For ES228GMP:** **On**: 377 W ≤ Total power supply < 384 W. **Flashing**: Total power supply keeps ≥ 377 W for more than 2 minuites. **Off**: Total power supply < 377 W.
FAN	**Green**: All the fans work properly. **Yellow**: Not all the fans work properly.

LED	Indication
Speed or PoE (When the Speed LED is on)	**Green On**: Running at 1000 Mbps, but no activity. **Green Flashing**: Running at 1000 Mbps and transmitting or receiving data. **Yellow On**: Running at 10/100 Mbps, but no activity. **Yellow Flashing**: Running at 10/100 Mbps and transmitting or receiving data. **Off**: No device is linked to the corresponding port. Note: Speed or PoE for port 1–16 of ES220GMP and port 1–24 of ES228GMP.
Speed or PoE (When the PoE LED is on)	**Green On**: The port is supplying power normally. **Green Flashing**: The supply power exceeds the correponding port's maximum power. **Yellow On**: Overload or short circuit is detected. **Yellow Flashing**: Power-on self-test failed. **Off**: Not providing PoE power on the port. Note: Speed or PoE for port 1–16 of ES220GMP and port 1–24 of ES228GMP.
Speed	**Green On**: Running at 1000 Mbps, but no activity. **Green Flashing**: Running at 1000 Mbps and transmitting or receiving data. **Yellow On**: Running at 10/100 Mbps, but no activity. **Yellow Flashing**: Running at 10/100 Mbps and transmitting or receiving data. **Off**: No device is linked to the corresponding port. Note: Speed for port 17–18 of ES220GMP and port 25–26 of ES228GMP.
SFP	**Green On**: A 1000 Mbps device is linked to the corresponding port, but no activity. **Green Flashing**: A 1000 Mbps device is linked to the corresponding port and is transmitting or receiving data. **Off**: No device is linked to the corresponding port. Note: SFP for port 19–20 of ES220GMP and port 27–28 of ES228GMP.

LED Mode Switch Button

Press this button to switch the LED status indication between Speed and PoE.

Reset

With the switch powered on, press Reset button for 5 seconds to reset the switch to its factory default settings.

10/100/1000 Mbps RJ45 Port

Designed to connect to the device with a bandwidth of 10 Mbps, 100 Mbps or 1000 Mbps.

SFP Slot

Designed to install the SFP module.

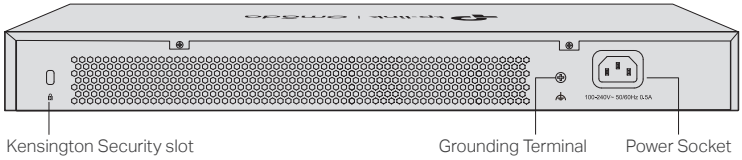
Port Feature

Model	100M/1000 M/10Gbps RJ45 Port	10/100/1000 Mbps RJ45 Port	10/100 Mbps RJ45 Port	SFP Slot	SFP+ Slot
ES216G	/	16	/	/	/
ES224G	/	24	/	/	/
ES220GMP	/	18	/	2	/
ES228GMP	/	26	/	2	/

- **Rear Panel**

The rear panel is shown as the following figure. The actual product may differ from the figure.

Figure 1-5 Rear Panel



Kensington Security Slot

Secure the lock (not provided) into the security slot to prevent the device from being stolen.

Grounding Terminal

The switch already comes with lightning protection mechanism. You can also ground the switch through the PE (Protecting Earth) cable of AC cord or with Ground Cable. For detailed lightning protection measures, refer to the Lightning Protection Guide: https://www.tp-link.com/us/configuration-guides/lightning_protection_guide/.

Power Socket

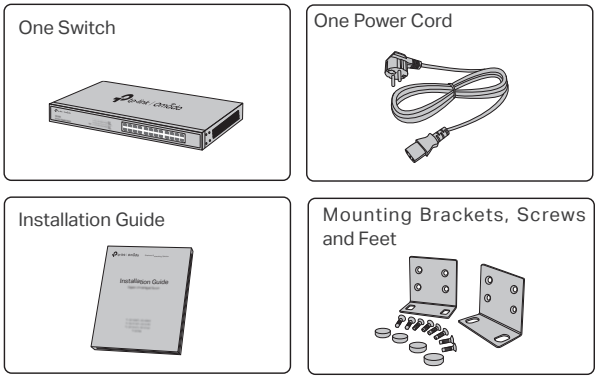
Connect the female connector of the power cord here, and the male connector to the AC power outlet. Make sure that the voltage of the power supply meets the requirement of the input voltage (100–240 V~ 50/60 Hz).

Caution:
You should use the provided power cord.

Chapter 2 Installation

2.1 Package Contents

Make sure that the package contains the following items. If any of the listed items is damaged or missing, please contact your distributor.



*Images are for demonstration only. The actual items may differ in appearance and quantity from the depicted.

2.2 Safety Precautions

To avoid any device damage and bodily injury caused by improper use, you should observe the following rules.

- **Safety Precautions**

- Keep the power off during the installation.
- Wear an ESD-preventive wrist strap, and make sure that the wrist strap has a good skin contact and is well grounded.
- Use only the power cord provided with the switch.
- Make sure that the supply voltage matches the specifications indicated on the rear panel of the switch.
- Ensure that the switch is installed in a well-ventilated environment and its ventilation hole is not blocked.
- Do not open or remove the cover of the switch.
- Before cleaning the device, cut off the power supply. Do not clean it by the waterish cloth, and never use any other liquid cleaning method.
- Place the device with its bottom surface downward.

- **Site Requirements**

Temperature/Humidity

Keep the equipment room at an appropriate level of temperature and humidity. Too much or too little humidity may lead to bad insulation, leakage of electricity, mechanical property changes, and corrosion. High temperatures may accelerate aging of the insulation materials, significantly shortening the service life of the device. To find out the best temperature and humidity conditions for the device, check the following table.

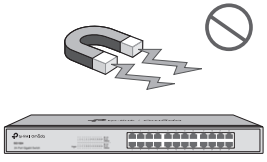
Environment	Temperature	Humidity
Operating	-5 °C to 45 °C (For ES228GMP) -5 °C to 50 °C (For other switches)	10% to 90%RH Non-condensing
Storage	-40 °C to 70 °C	5% to 90%RH Non-condensing

Clearness

The dust accumulated on the switch can be absorbed by static electricity and result in poor contact of metal contact points. Some measures have been taken for the device to prevent static electricity, but too strong static electricity can cause deadly damage to the electronic elements on the internal circuit board. To avoid the effect of static electricity on the operation of the switch, attach much importance to the following items:

- Dust the device regularly, and keep the indoor air clean.
- Keep the device well grounded and ensure that the static electricity has been transferred.

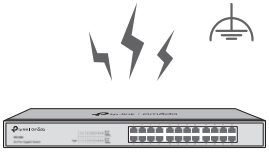
Electromagnetic Interference



Electronic elements including capacitance and inductance on the device can be affected by external interferences, such as conducted emission by capacitance coupling, inductance coupling, and impedance coupling. To decrease the interferences, make sure to take the following measures:

- Use the power supply that can effectively filter interference from the power grid.
- Keep the device far from high-frequency and strong-current devices such as radio transmitting station.
- Use electromagnetic shielding when necessary.

Lightning Protection



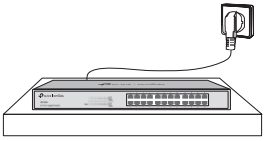
Extremely high voltage currents can be produced instantly when lightning occurs and the air in the electric discharge path can be instantly heated up to 20,000 °C. As this instant current is strong

enough to damage electronic devices, more effective lightning protection measures should be taken.

- Ensure that the rack and the 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, refer to the Lightning Protection Guide: https://www.tp-link.com/us/configuration-guides/lightning_protection_guide/.

Installation Site



When installing the device on a rack or a flat workbench, attach much importance to the following items:

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

2.3 Installation Tools

- Phillips screwdriver
- ESD-preventive wrist wrap
- Cables

Note:
These tools are not included with our product. If needed, you can purchase them separately.

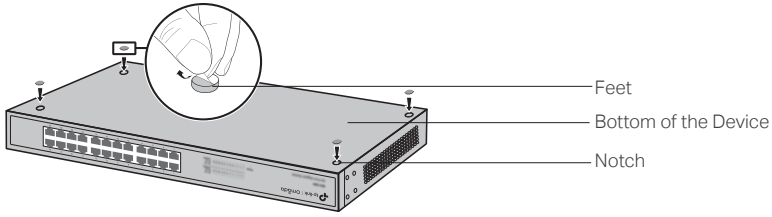
2.4 Product Installation

- **Desktop Installation**

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

1. Set the device on a flat surface which is strong enough to support the entire weight of the device with all fittings.
2. Remove the adhesive backing papers from the feet.
3. Attach the feet to the bottom of the device to prevent it from slipping when placed on a desktop.

Figure 2-1 Desktop Installation

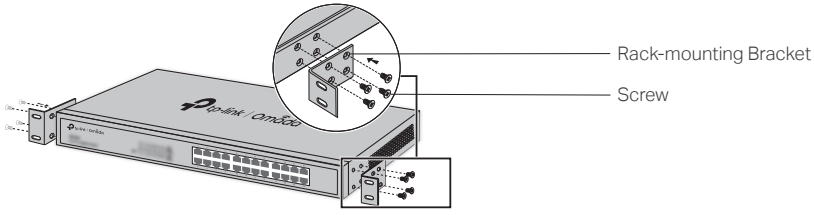


- **Rack Installation**

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

1. Check the efficiency of the grounding system and the 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.

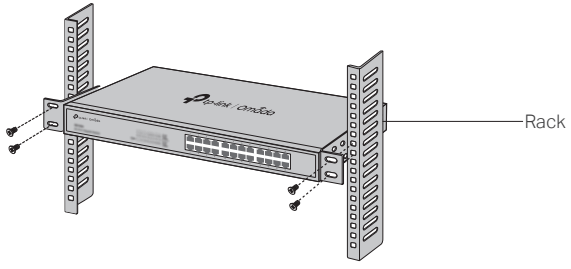
Figure 2-2 Bracket Installation



*This image is for demonstration only

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:

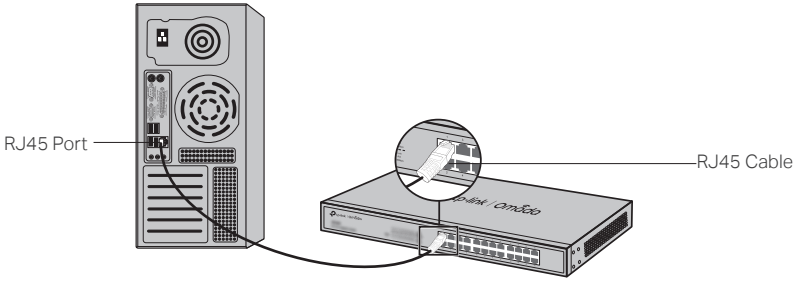
- Leave 5 to 10 cm gaps around the devices for air circulation.
- Avoid placing heavy things on the device.
- Place the device with its bottom facing downwards.
- Mount devices in sequence from the bottom to top of the rack and ensure a certain clearance between devices for the purpose of heat dissipation.

Chapter 3 Connection

3.1 Ethernet Port

Connect an Ethernet port of the switch to the computer by RJ45 cable as the following figure shows.

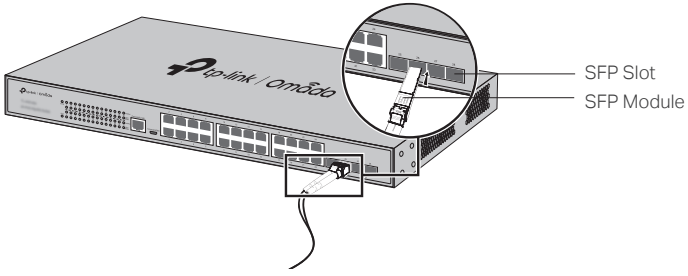
Figure 3-1 Connecting the RJ45 Port



3.2 SFP Slot

The following figure demonstrates the connection of SFP module to an SFP slot.

Figure 3-2 Inserting the SFP Module



3.3 Verify Installation

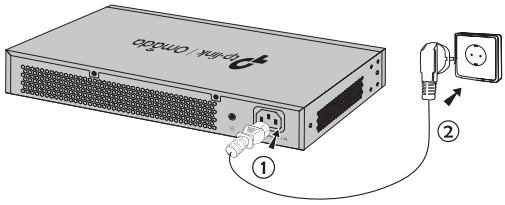
After completing the installation, verify the following items:

- There should be 5 to 10 cm of clearance around the device for ventilation and make sure 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.

3.4 Power On

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

Figure 3-3 Connecting to Power Supply



Note:
The figure is to illustrate the application and principle. The provided plug and the socket in your region may differ from the figures above.

3.5 Initialization

After the device is powered on, the Power LED indicator lights on. After about 10 seconds, all LED indicators turns on and the device begins the Power-On Self-Test. According to different device models, the LED indicators may light on or flash. After the test, the following LED statuses represent a successful initialization:

Model	LED Status
ES216G / ES224G	The Power LED indicator is on.
ES220GMP / ES228GMP	The Power LED indicator is on, the SYS LED indicator flashes, and the FAN and Mode-Speed LED indicators are on.

Chapter 4 Configuration

4.1 Configuration Overview

The switch supports two configuration options:

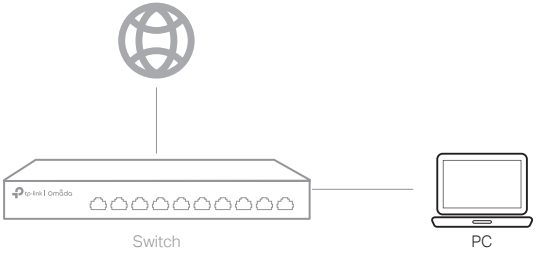
- Standalone Mode: Configure and manage the switch singly.
- Controller Mode: Configure and manage the network devices centrally. It is recommended in the large-scale network, which consists of mass devices such as access points, switches, and gateways.

Note:
ES216G, ES224G, ES220GMP and ES228GMP support both Standalone Mode and Controller Mode. When the switch is changed from Standalone Mode to Controller Mode, you should reconfigure the switch.

4.2 Standalone Mode

In Standalone Mode, use a computer to configure and manage the switch.

Figure 4-1 Topology for Standalone Mode



- **Using the GUI**

1. To access the management page of the switch, make sure the switch and computer are in the same subnet. Open a browser and type the switch's IP address in the address field, then press the Enter key.
   - If the switch obtains IP address from the DHCP server (typically a router), find the switch's IP address on the DHCP server.
   - If not, use the default IP address 192.168.0.1 to launch the switch's management page.
2. The first time you log in, set the username and password to better protect your network and devices.
3. After a successful login, the main page will appear. You can click the menus on the top side and left side to configure the corresponding functions.

For the detailed configurations, refer to the User Guide. The guide can be found on the download center of our official website: https://www.tp-link.com/support/download/?type=smb.

Note:
For certain devices, you may need to change the password the first time you log in, which will better protect your network and devices.

4.3 Controller Mode

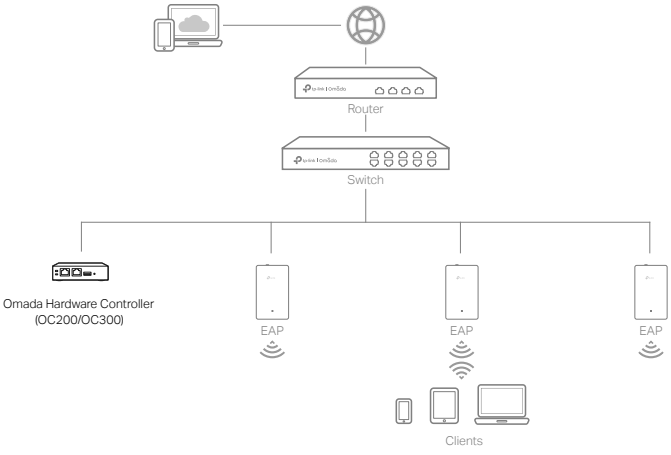
Controller Mode applies to the large scale network with mass devices. All devices can be centrally configured and monitored via Omada Hardware Controller or Omada Software Controller.

Note:
Before the following configurations, make sure the switch can access the internet. When using Omada Software/Hardware Controller, make sure the switch and the controller are in the same subnet.
Typically, the switch obtains IP address from the DHCP server. You can check the switch's IP address on the DHCP server.

- **Via Omada Hardware Controller**

Omada Hardware Controller is a good alternative if you have no spare PC to keep running Omada Software Controller in the network. It needs to be purchased additionally. Follow the steps below to configure the Omada Hardware Controller.

Figure 4-2 Manage the network via Omada Hardware Controller



Note:

- Before you start, be sure to power up and connect your devices according to the topology figure.
- A DHCP server (typically a router with DHCP function enabled) is required to assign IP addresses to the EAPs and clients in your local network.
- Omada Controller must have network access to your Omada devices (the router, switch, or EAPs) in order to find, adopt, and manage them.

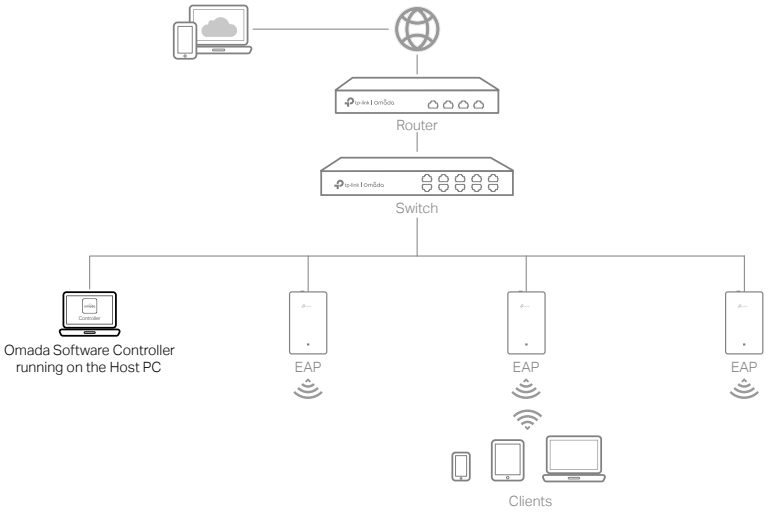
1. Find the IP address of the router. Open the command line on your PC and enter **ipconfig**. In the result list, find the Default Gateway, which is also the IP address of the router.
2. Launch a web browser and enter the IP address of the router. Log into the router's web page. Then go to **Network** > **LAN** > **DHCP Client List** to find the IP address of your controller according to its MAC address.
3. Enter the IP address of the your controller in the address bar to open its web page.
4. On the Omada Controller's web page, follow the wizard to complete the quick setup.
5. After the quick setup, the login page appears. Enter the username and password you have created and click **Log in**. Then you can further configure the controller.
6. If you want to manage the devices reomotely, follow the next steps:
   a. Make sure that Cloud Access is enabled on your controller. By default, Cloud Access is enabled. Make sure that the Cloud LED is flashing slowly.
   b. Launch a web browser and enter **https://omada.tplinkcloud.com** in the address bar. Enter your TP-Link ID and password to log in. Click **+ Add Controller** and choose **Hardware Controller** to add your controller. Then you can further configure the controller.

For more details, refer to the Installation Guide of Omada Hardware Controller.

Via Omada Software Controller

On a PC with Windows OS or Linux OS, download the Omada Software Controller from **https://www.tp-link.com/support/download/omada-software-controller/**. Then run the file and follow the wizard to install the Omada Software Controller. Follow the steps below to configure the Controller.

Figure 4-3 Manage the network via Omada Software Controller



Note: To manage your devices, Omada Software Controller needs to keep running on your computer.

1. Launch the Omada Software Controller on your PC. After the initiation process, the controller automatically opens its web page. If not, click **Launch a Browser to Manage the Network**.
2. On the Omada Controller's web page, follow the wizard to complete the quick setup.
3. After the quick setup, the login page appears. Enter the username and password you have created and click **Log in**. Then you can further configure the controller.
4. If you want to manage the devices reomotely, follow the next steps:
   a. Make sure that Cloud Access is enabled on your controller and your controller has been bound with your TP-Link ID. On the Omada Controller's web page, go to **Settings** > **Cloud Access** to enable **Cloud Access** and bind your TP-Link ID. If you have set it up in the quick setup, skip this step.
   b. Launch a web browser and enter **https://omada.tplinkcloud.com** in the address bar. Enter your TP-Link ID and password to log in. A list of controllers that have been bound with your TP-Link ID will appear. Then you can click **Launch** to further configure the controller.

* Omada App

With the Omada App, you can also manage your controller at a local site or a remote site via your mobile device.

For the detailed configurations, refer to the User Guide of the controller. The guide can be found on the download center of our official website: https://www.tp-link.com/support/download/?type=smb.

Appendix A Troubleshooting

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

Press the Reset button for at least 5 seconds to reset the system. The system will be reset to the factory default settings, and you can set a new login username and password.

Q2. Why does the PWR/Power LED work abnormally?

The PWR/Power LED should be lit up when the power system works normally. If the PWR LED worked abnormally, try the following:

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 switch.

Q3. What should I do if I cannot access the web management page?

Try the following:

1. Check every port LED on the switch and make sure the Ethernet cable is connected properly.
2. Try another port on the switch and make sure the Ethernet cable is suitable and works normally.
3. Power off the switch and, after a while, power it on again.
4. Make sure the IP address of your PC is set within the subnet of the switch.
5. If you still cannot access the configuration page, please reset the switch to its factory defaults. Then the IP address of your PC should be set as 192.168.0.x ("x" is any number from 2 to 254) and subnet mask as 255.255.255.0.

Appendix B Specifications

Item	Content
Standards	IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab
	IEEE 802.3z (For ES220GMP/ES228GMP)
	IEEE 802.3x, IEEE 802.1p, IEEE 802.1q
	IEEE 802.3af, IEEE 802.3at (For ES220GMP/ES228GMP)
Transmission Medium	10Base-T: UTP/STP of Cat. 3 or above
	100Base-TX: UTP/STP of Cat. 5 or above
	1000Base-T: 4-pair UTP (≤ 100 m) of Cat. 5e, and Cat. 6 or above
	1000Base-SX/LX/LX10/BX10: MMF or SMF SFP Module (For ES220GMP/ES228GMP)
LEDs	ES216G: Power, Link/Act, 1000Mbps ES224G: Power, Link/Act, 1000Mbps ES220GMP: PWR, SYS, PoE MAX, FAN, Speed or PoE, Speed, PoE, SFP ES228GMP: PWR, SYS, PoE MAX, FAN, Speed or PoE, Speed, PoE, SFP
Operating Temperature	-5 °C to 45 °C (23 °F to 113 °F) (For ES228GMP) -5 °C to 50 °C (23 °F to 122 °F) (For other switches)
Storage Temperature	-40 °C to 70 °C (-40 °F to 158 °F)
Operating Humidity	10% to 90%RH Non-condensing
Storage Humidity	5% to 90%RH Non-condensing

CE Mark Warning

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

EU declaration of conformity

TP-Link hereby declares that the switch is in compliance with the essential requirements and other relevant provisions of directives 2014/30/EU, 2014/35/EU, 2011/65/EU and (EU)2015/863.

The original EU declaration of conformity may be found at https://www.tp-link.com/en/support/ce/

UK declaration of conformity

TP-Link hereby declares that the switch is in compliance with the essential requirements and other relevant provisions of the Electromagnetic Compatibility Regulations 2016 and Electrical Equipment (Safety) Regulations 2016.

The original UK declaration of conformity may be found at https://www.tp-link.com/support/ukca/

Продукт сертифіковано згідно с правилами системи УкрСЕПРО на відповідність вимогам нормативних документів та вимогам, що передбачені чинними законодавчими актами України.

Safety Information

- Keep the device away from water, fire, humidity or hot environments.
- Do not attempt to disassemble, repair, or modify the device. If you need service, please contact us.
- Place the device with its bottom surface downward.
- The plug on the power supply cord is used as the disconnect device, the socket-outlet shall be easily accessible.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.
- Plug the product into the wall outlets with earthing connection through the power supply cord.
- The PoE ports shall not be used to charge lithium batteries or devices supplied by lithium batteries.

Please read and follow the above safety information when operating the device. We cannot guarantee that no accidents or damage will occur due to improper use of the device. Please use this product with care and operate at your own risk.

To ask questions, find answers, and communicate with TP-Link users or engineers, please visit **https://community.tp-link.com/business** to join TP-Link Community.

For technical support, the user guide and other information, please visit **https://www.tp-link.com/support/download/?type=smb**, or simply scan the QR code.

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