NETGEAR®

Hardware Installation Guide

8-port Ultra60 PoE++ Multi-Gigabit (2.5G) Ethernet Plus Switch

MS108EUP

Support and Community

Visit netgear.com/support to get your questions answered and access the latest downloads.

You can also check out our NETGEAR Community for helpful advice at community.netgear.com.

Regulatory and Legal

Si ce produit est vendu au Canada, vous pouvez accéder à ce document en français canadien à https://www.netgear.com/support/download/.

(If this product is sold in Canada, you can access this document in Canadian French at https://www.netgear.com/support/download/.)

For regulatory compliance information including the EU Declaration of Conformity, visit https://www.netgear.com/about/regulatory/.

See the regulatory compliance document before connecting the power supply.

For NETGEAR's Privacy Policy, visit https://www.netgear.com/about/privacy-policy.

By using this device, you are agreeing to NETGEAR's Terms and Conditions at https://www.netgear.com/about/terms-and-conditions. If you do not agree, return the device to your place of purchase within your return period.

Do not use this device outdoors. The PoE port is intended for intra building connection only.

Applicable to 6 GHz devices only: Only use the device indoors. The operation of 6 GHz devices is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet. Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

This switch is designed for indoor use only. If you want to connect to a device located outdoors, the outdoor device must be properly grounded and surge protected, and you must install an Ethernet surge protector inline between the switch and the outdoor device. Failure to do so can damage the switch.

WARNING: Before connecting this switch to outdoor cables or devices, see https://kb.netgear.com/000057103 for safety and warranty information.

Trademarks

© NETGEAR, Inc., NETGEAR, and the NETGEAR Logo are trademarks of NETGEAR, Inc. Any non-NETGEAR trademarks are used for reference purposes only.

Revision History

Publication Part Number	Publish Date	Comments
202-12574-01	October 2021	First publication.

Contents

1
Introduction

This hardware installation guide complements the installation guide that came with your switch and applies to the NETGEAR 8-port Ultra60 PoE++ Multi-Gigabit (2.5G) Ethernet Plus Switch Model MS108EUP.

The switch provides eight Multi-Gigabit Ethernet copper ports that each can support 2.5 Gbps, 1 Gbps, and 100 Mbps speed. Ports 1–4 support Ultra60 PoE++ (802.3bt) so that each port can deliver power of up to 60W PoE++ to devices such as WiFi 6 access points, security cameras, PoE speakers, and LED lighting. Ports 5–8 each can deliver power of up to 30W PoE+ (802.3at) to devices that do not require high power. The maximum PoE power budget of the switch across all active PoE+ and PoE++ ports is 230W.

This chapter serves as an introduction to the switch and includes the following sections:

- Overview
- Features
- Safety instructions and warnings

Note: For more information about the topics that are covered in this manual, visit the support website at netgear.com/support.

Note: For technical specifications, see the data sheet at https://www.netgear.com/business/wired/switches/plus. For switch documentation, including the installation guide and user manual, visit netgear.com/support/download.

Overview

The switch provides eight Multi-Gigabit Ethernet copper ports that support 2.5 Gbps, 1 Gbps, and 100 Mbps speed:

- **Ports 1-4**: Support Ultra60 PoE++ (802.3bt), allowing each port to deliver power up to 60W PoE++.
- **Port 5-8**: Support PoE+ (802.3at), allowing each port to deliver power up to 30W PoE+.

All copper ports use RJ-45 connectors. The switch supports a maximum PoE power budget of 230W across all active PoE+ and PoE++ ports.

Note: For information about application examples, see Applications on page 16.

You can install the switch freestanding or mounted to a wall. The switch is IEEE compliant and offers low latency. All ports can automatically negotiate to the highest speed, which makes the switch very suitable for a mixed environment with multispeed Gigabit Ethernet, Gigabit Ethernet, and Fast Ethernet.

For 2.5 Gbps and 1 Gbps Ethernet connections, use Category 5e (Cat 5e) or higher-rated Ethernet cables terminated with RJ-45 connectors.

Features

The switch supports the following key hardware features:

- Eight multispeed Ethernet ports (1–8), each of which supports 2.5G, 1G, and 100M.
- Four Ultra60 PoE++ (802.3bt) ports (1–4).
- Four PoE+ (802.3at) ports (5–8).
- Total PoE power budget of 230W for the switch.
- MAC table size of 16K.
- 40 Gbps line-rate, full-duplex, nonblocking switch fabric.
- Full compatibility with IEEE standards:
    - IEEE 802.3 Ethernet
    - IEEE 802.3u 100BASE-T
    - IEEE 802.3ab 1000BASE-T
    - IEEE 802.3bz NBASE-T

- IEEE 802.3x Full-duplex flow control

- IEEE 802.1Q VLAN tagging

- IEEE 802.3ad Link aggregation (LAG with LACP)

- IEEE 802.1p Class of Service (QoS)

- IEEE 802.3az Energy Efficient Ethernet (EEE)

- IEEE 802.1af (PoE)

- IEEE 802.1at (PoE+)

- IEEE 802.1bt (PoE++)

- AutoSensing and autonegotiating capabilities for all ports.

- Auto Uplink™ technology is supported on all ports.

- Automatic address learning function to build the packet-forwarding information table. The table contains up to 16K Media Access Control (MAC) addresses.

- Store-and-forward transmission to remove bad packets from the network.

- Active flow control to minimize packet loss and frame drops.

- Per-port status LEDs and system status LEDs.

- NETGEAR green power-saving features:

  - Energy efficiency mode that fully conforms to the IEEE802.3az standard

  - Per-port automatic change to a lower power mode when the port link is down

Safety instructions and warnings

Use the following safety guidelines to ensure your own personal safety and to help protect your system from potential damage.

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the following precautions:

- This product is designed for indoor use only in a temperature-controlled and humidity-controlled environment.
  Note the following:

  - For more information about the environment in which this product must operate, see the environmental specifications in the appendix or the data sheet.

  - If you want to connect the product to a device located outdoors, the outdoor device must be properly grounded and surge protected, and you must install an

Ethernet surge protector inline between the indoor product and the outdoor device. Failure to do so can damage the product.

WARNING: Before connecting the product to outdoor cables or devices, see https://kb.netgear.com/000057103 for additional safety and warranty information.

Failure to follow these guidelines can result in damage to your NETGEAR product, which might not be covered by NETGEAR's warranty, to the extent permissible by applicable law.

- Observe and follow service markings:

  - Do not service any product except as explained in your product documentation. Some devices should never be opened.

  - If applicable to your product, opening or removing covers that are marked with the triangular symbol with a lightning bolt can expose you to electrical shock. We recommend that only a trained technician services components inside these compartments.

- If any of the following conditions occur, unplug the product from the power outlet, and then replace the part or contact your trained service provider:

  - Depending on your product, the power adapter, power adapter cable, power cable, extension cable, or plug is damaged.

  - An object fell into the product.

  - The product was exposed to water.

  - The product was dropped or damaged.

  - The product does not operate correctly when you follow the operating instructions.

- Keep the product away from radiators and heat sources. Also, do not block cooling vents.

- Do not spill food or liquids on your product components, and never operate the product in a wet environment. If the product gets wet, see the appropriate section in your troubleshooting guide, or contact your trained service provider.

- Do not push any objects into the openings of your product. Doing so can cause fire or electric shock by shorting out interior components.

- Use the product only with approved equipment.

- If applicable to your product, allow the product to cool before removing covers or touching internal components.

- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.

- To avoid damaging your system, if your product uses a power supply with a voltage selector, be sure that the selector is set to match the power at your location:

    - 115V, 60 Hz in most of North and South America and some Far Eastern countries such as South Korea and Taiwan

    - 100V, 50 Hz in eastern Japan and 100V, 60 Hz in western Japan

    - 230V, 50 Hz in most of Europe, the Middle East, and the Far East

- Be sure that attached devices are electrically rated to operate with the power available in your location.

- Depending on your product, use only a supplied power adapter or approved power cable:
  If your product uses a power adapter:

    - If you were not provided with a power adapter, contact your local NETGEAR reseller.

    - The power adapter must be rated for the product and for the voltage and current marked on the product electrical ratings label.

    If your product uses a power cable:

    - If you were not provided with a power cable for your system or for any AC-powered option intended for your system, purchase a power cable approved for your country.

    - The power cable must be rated for the product and for the voltage and current marked on the product electrical ratings label. The voltage and current rating of the cable must be greater than the ratings marked on the product.

- To help prevent electric shock, plug the system and peripheral power cables into properly grounded power outlets.

- If applicable to your product, the peripheral power cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.

- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.

- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).

- Position system cables, power adapter cables, or power cables carefully. Route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.

- Do not modify power adapters, power adapter cables, power cables or plugs. Consult a licensed electrician or your power company for site modifications.

- Always follow your local and national wiring rules.

2

Hardware Overview

This chapter describes the switch hardware features.

The chapter includes the following sections:

- Front panel with ports and LEDs
- LEDs
- Back panel
- RJ-45 ports for 100/1000/2.5GBASE-T Ethernet connectivity
- Reset / Factory Defaults button

Front panel with ports and LEDs

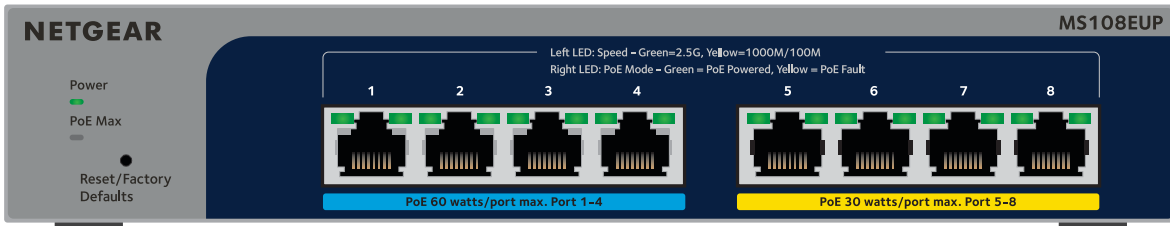The following figure shows the front panel of the switch.

Figure 1. Front panel

From left to right, the front panel provides the following components:

- Power LED (see <u>LEDs</u> on page 13).

- PoE Max LED (see <u>LEDs</u> on page 13).

- Recessed **Reset / Factory Defaults** button (see <u>Reset / Factory Defaults button</u> on page 15).

- Eight independent 100/1000/2.5GBASE-T RJ-45 ports, each with a left LED that functions as the combined link, speed, and activity LED and a right LED that indicates the PoE status (see <u>LEDs</u> on page 13).

  - **Ports 1-4 (blue label)**: Ultra60 PoE++ (802.3bt) ports. Each port can deliver power up to 60W PoE++.

  - **Port 5-8 (yellow label)**: PoE+ (802.3at) ports. Each port can deliver power up to 30W PoE+.

  For more information about the 100/1000/2.5GBASE-T RJ-45 ports, see <u>RJ-45 ports for 100/1000/2.5GBASE-T Ethernet connectivity</u> on page 14.

LEDs

This section describes the LED designations.

Table 1. LEDs on the front panel

LED	Description
Power LED	**Solid green**. The switch is powered on and operating normally. **Blinking green**. The switch is booting. **Off**. Power is not supplied to the switch.
PoE Max LED (The status of the switch's PoE budget.)	**Off**. Sufficient (more than 7W of) PoE power is available. **Solid yellow**. Less than 7W of PoE power is available. **Blinking yellow**. At least once during the previous two minutes, less than 7W of PoE power was available.
Ports 1–8 left LED Link, speed, and activity for Ethernet ports 1 to 8	**Solid green**. A valid 2.5 Gbps link is established. **Blinking green**. The port is transmitting or receiving packets at 2.5 Gbps. **Solid yellow**. A valid 1000 Mbps or 100 Mbps link is established. **Blinking yellow**. The port is transmitting or receiving packets at 1000 Mbps or 100 Mbps. **Off**. No port link is established.
Ports 1–8 right LED PoE status for Ethernet ports 1 to 8.	**Off**. The port is not delivering PoE power. **Solid green**. The port is delivering PoE power. **Solid yellow**. A PoE fault occurred.

Back panel

The back panel contains a Kensington lock slot for an optional security cable and an DC power receptacle for the DC power adapter cable that came in the switch package. The DC power receptacle is rated at 54V / 4.7A.
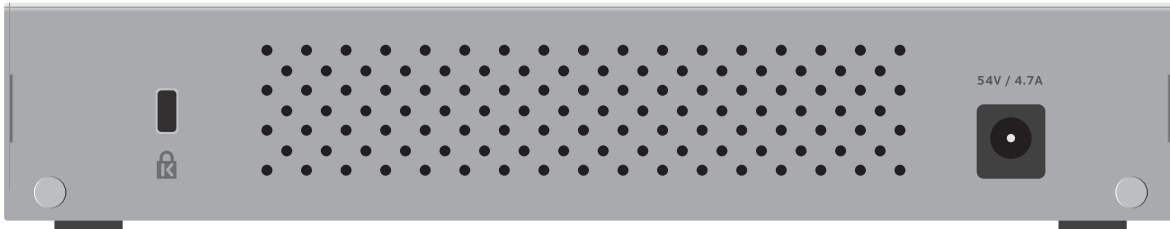
The following figure shows the back panel.

Figure 2. Back panel

RJ-45 ports for 100/1000/2.5GBASE-T Ethernet connectivity

All RJ-45 copper (Ethernet) ports support autosensing. When you insert a cable into an RJ-45 port, the automatically ascertains the maximum speed (100 Mbps, 1 Gbps, or 2.5 Gbps) and duplex mode (half-duplex or full-duplex) of the attached device:

All ports support a Category 5e (Cat 5e) cable (or higher-rated Ethernet cable) terminated with an 8-pin RJ-45 connector.

To simplify the procedure for attaching devices, all RJ-45 ports support Auto Uplink technology. This technology allows you to attach devices to the RJ-45 ports with either straight-through or crossover cables.

When you insert a cable into one of the 's RJ-45 ports, the automatically performs the following actions:

- Senses whether the cable is a straight-through or crossover cable.

- Determines whether the link to the attached device requires a normal connection (such as when you are connecting the port to a computer) or an downlink connection (such as when you are connecting the port to a switch or WiFi access point).

- Automatically configures the RJ-45 port to enable communications with the attached device. The Auto Uplink technology compensates for setting uplink connections while eliminating concern about whether to use crossover or straight-through cables when you attach devices.

Reset / Factory Defaults button

The switch provides a recessed **Reset / Factory Defaults** button on the front panel so that you can either restart (power-cycle) the switch or return the switch to its factory default settings, causing all custom settings to be erased.

To restart the switch or return the switch to its factory default settings:

1. Insert a device such as a straightened paper clip into the opening.

2. Do one of the following:

   - **Restart the switch**. Press the **Reset / Factory Defaults** button for about two seconds. (Do not press the button for more than five seconds!)
     The switch restarts but retains its custom settings. During this process, the Power LED is blinking green.

   - **Return the switch to its factory default settings**. Press the **Reset / Factory Defaults** button for at least five seconds.
     The switch restarts and returns to its factory default settings. During this process, the Power LED is blinking green.

3

Applications

The switch is designed to provide flexibility in configuring network connections. The switch can be used as your only network traffic–distribution device for PoE and non-PoE devices or with 2.5 Gbps and 1 Gbps Ethernet distribution hubs, routers, access points, and other switches.

This chapter includes the following sections:

- PoE++ and PoE+ overview
- PoE++ and high-speed desktop switching

PoE++ and PoE+ overview

The PoE++ ports (1–4) support IEEE 802.3bt. These ports are also compatible with PoE+ (IEEE 802.3at) and PoE (IEEE 802.3af) and can support non-PoE devices. The maximum PoE power that an individual PoE++ port can supply is 60W.

The PoE+ ports (5–8) support IEEE 802.3at. These ports are also compatible with PoE (IEEE 802.3af) and can support non-PoE devices. The maximum PoE power that an individual PoE+ port can supply is 30W.

The maximum PoE power budget for the switch across all active PoE++ and PoE+ ports is 230W.

The PoE++ and PoE+ power supplied by the switch is prioritized in ascending port order (from port 1 to port 8), with a total power budget of 230W across all active PoE++ and PoE+ ports.

The following table shows the standard power ranges, calculated with the maximum cable length of 328 feet (100 meters). If a device receives insufficient PoE power from the switch, consider using a shorter cable.

Table 2. PoE classes and PoE power allocations

Device Class	Compatible PoE Standard	Class Description	Maximum Power Supplied by the Switch	Power Delivered to the Device
0	PoE, PoE+, and PoE++	Default power (full)	15.4W	0.44W–13.0W
1	PoE, PoE+, and PoE++	Very low power	4.0W	0.44W–3.84W
2	PoE, PoE+, and PoE++	Low power	7.0W	3.84W–6.49W
3	PoE, PoE+, and PoE++	Mid power	15.4W	6.49W–13.0W
4	PoE+ and PoE++	High power	30.0W	13.0W–25.5W
5	PoE++	Ultra high power	45.0W	25.5W–40.0W
6	PoE++	Ultra high power	60.0W	40.05W–51.0W

For more information about PoE, see the installation guide and user manual, both of which you can download from netgear.com/support/download/.

PoE++ and high-speed desktop switching

The following figure shows a high-speed desktop switching configuration with PoE++, PoE+, and non-PoE devices in a mixture of 2.5G and 1G connections. In this sample configuration, port 8 functions as an uplink to a 2.5G router that is connected to the Internet.
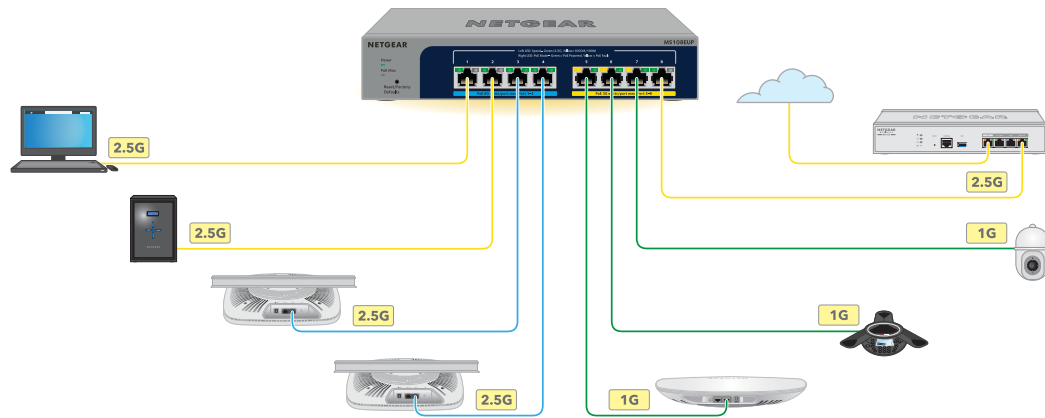
Figure 3. Sample PoE++ and high-speed desktop switching configuration

—— PoE++   —— PoE+   —— Non PoE

Port Number	Device	Port Number	Device
1	2.5G computer (non-PoE connection)	5	1G PoE+ AP (such as a WAC540)
2	2.5G ReadyNAS (non-PoE connection)	6	1G PoE+ IP conference phone
3	2.5G PoE++ AP (such as a WAX630)	7	1G PoE+ PTZ camera
4	2.5G PoE++ AP (such as a WAX630)	8	2.5G router (non-PoE connection)

4

Installation

This chapter describes the installation procedures for the switch. Switch installation involves the steps described in the following sections:

- Step 1: Prepare the site
- Step 2: Protect against electrostatic discharge
- Step 3: Unpack the switch
- Step 4: Install the switch
- Step 5: Connect devices to the switch
- Step 6: Check the installation
- Step 7: Apply power and check the LEDs
- Step 8: Manage the switch

Step 1: Prepare the site

Before you install the switch, make sure that the operating environment meets the site requirements that are listed in the following table.

Table 3. Site requirements

Characteristics	Requirements
Mounting	**Desktop installations**. Provide a flat table or shelf surface. **Wall installations**. Use the wall-mount screws that are supplied with the switch to attach the switch to a wall.
Access	Locate the switch in a position that allows you to access the front panel ports, view the front panel LEDs, and access the power connector on the back panel.
Power source	Use the DC power adapter and AC power cable that are supplied with the switch. Make sure that the AC outlet that you use for the power cable is not controlled by a wall switch, which can accidentally turn off power to the outlet and the switch.
Cabling	Route cables to avoid sources of electrical noise such as radio transmitters, broadcast amplifiers, power lines, and fluorescent lighting fixtures.
Environmental	**Temperature**. Install the switch in a dry area with an ambient temperature between 32°F and 104°F (0°C and 40°C) Keep the switch away from heat sources such as direct sunlight, warm-air exhausts, hot-air vents, and heaters. **Operating humidity**. The maximum relative humidity of the installation location must not exceed 95 percent, noncondensing. **Ventilation**. Do not restrict airflow by covering or obstructing air inlets on the sides of the switch. Keep at least 2 inches (5.08 centimeters) free on all sides for cooling. The room or wiring closet in which you install the switch must provide adequate airflow. **Operating conditions**. Keep the switch at least 6 feet (1.83 meters) away from the nearest source of electromagnetic noise, such as a photocopy machine.

Step 2: Protect against electrostatic discharge

WARNING: Static electricity can harm delicate components inside your switch. To prevent static damage, discharge static electricity from your body before you touch any of the electronic components. You can do so by periodically touching an unpainted metal surface on the switch.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, leave it in the antistatic package until you are ready to install it. Just before unwrapping the antistatic package, discharge static electricity from your body.

- Before moving a sensitive component, place it in an antistatic container or package.

- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads, workbench pads, and an antistatic grounding strap.

Step 3: Unpack the switch

The following figure shows the package contents.

Figure 4. Switch package contents

Check the contents of the boxes to make sure that all items are present before installing the switch.

To check the package contents:

1. Place the container on a clean flat surface, and cut all straps securing the container.

2. Unpack the hardware from the boxes by carefully removing the hardware and placing it on a secure and clean surface.

3. Remove all packing material.

4. Verify that the package contains the following items:

    - Switch.

    - Power adapter and power cable (varies by region).

    - Rubber footpads for tabletop installation.

    - Wall-mount installation screws (2) and washers (2).

    - Installation guide.

5. If any item is missing or damaged, contact your local NETGEAR reseller for replacement.

Step 4: Install the switch

You can install the switch on a flat surface or attach it to a wall.

You can also use any off-the-shelf 3.94 in. (100 mm) VESA standard mount to secure the switch to a wall, a pole, or another surface.

Install the switch on a flat surface

The switch ships with four self-adhesive rubber footpads.

To install the switch on a flat surface:

Stick one rubber footpad on each of the four concave spaces on the bottom of the switch.

The rubber footpads cushion the switch against shock and vibrations. They also provide ventilation space between stacked switches.

Wall-mount the switch horizontally

The bottom panel of the switch provides two VESA mount holes at an exact distance of 3.94 in. (100 mm), center-to-center, so that you can mount the switch horizontally to a wall. The switch ships with wall-mount screws and anchors that you can secure to a wall and attach the switch to.
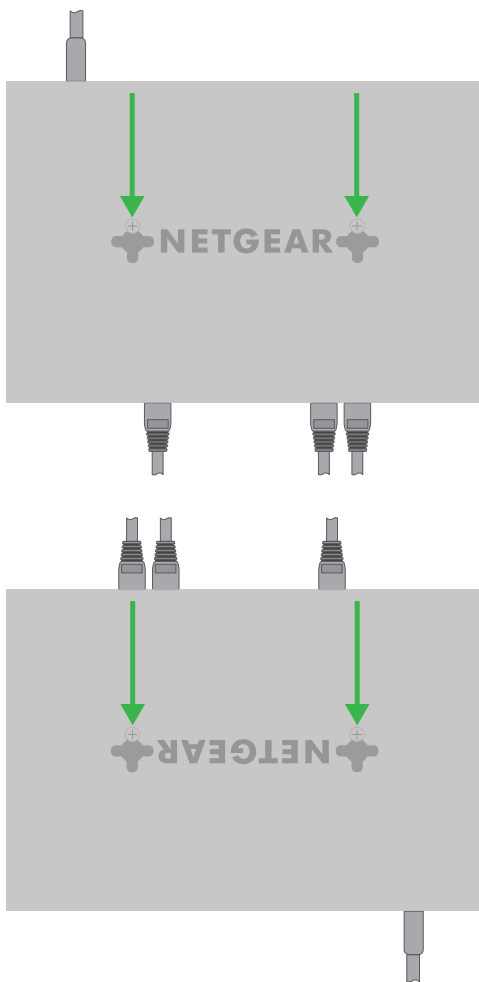
To mount the switch horizontally to a wall:

1. Locate the two VESA mount holes on the bottom panel of the switch.

2. Mark the holes on the wall where you want to mount the switch.

    The holes must be 3.94 in. (100 mm) apart, center-to-center.

3. Drill holes into the wall for four anchors in which you will insert M4 x L25 mm screws.

The screws and anchors are in the switch package.

4. Insert the anchors into the wall and tighten the screws with a No. 2 Phillips screwdriver.

    Leave about ¼ inch (6 mm) of each screw protruding from the wall so that you can insert the screws into the holes on the bottom of the switch.

5. Line up the holes on the bottom panel of the switch with the screws in the wall and mount the switch to the wall.

    You can mount the switch with the front panel facing down (the Ethernet cables will be at the bottom, see the upper figure) or facing up (the Ethernet cables will be at the top, see the lower figure).

Wall-mount the switch vertically

The bottom panel of the switch provides two VESA mount holes at an exact distance of 3.94 in. (100 mm), center-to-center, so that you can mount the switch vertically to a wall.

The switch ships with wall-mount screws and anchors that you can secure to a wall and attach the switch to.

To mount the switch vertically to a wall:

1. Locate the two VESA mount holes on the bottom panel of the switch.

2. Mark the holes on the wall where you want to mount the switch.
   The holes must be 3.94 in. (100 mm) apart, center-to-center.

3. Drill holes into the wall for four anchors in which you will insert M4 x L25 mm screws.
   The screws and anchors are in the switch package.

4. Insert the anchors into the wall and tighten the screws with a No. 2 Phillips screwdriver.
   Leave about ¼ inch (6 mm) of each screw protruding from the wall so that you can insert the screws into the holes on the bottom of the switch.

5. Line up the holes on the bottom panel of the switch with the screws in the wall and mount the switch to the wall.
   You can mount the switch with the front panel facing left (the Ethernet cables will be on the left, see the left figure) or facing right (the Ethernet cables will be on the right, see the right figure).
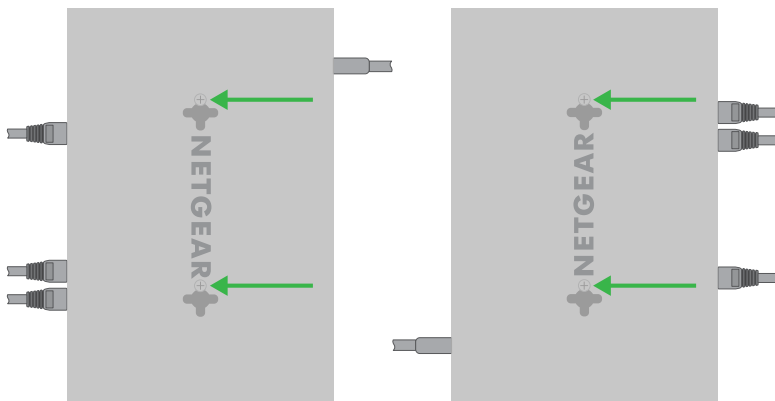
Mount the switch to a pole or another surface

You can use an off-the-shelf 100 mm VESA standard mount to secure the switch to a pole or another surface.

Step 5: Connect devices to the switch

This switch is designed for indoor use only. If you want to connect to a device located outdoors, the outdoor device must be properly grounded and surge protected, and you must install an Ethernet surge protector inline between the switch and the outdoor device. Failure to do so can damage the switch.

WARNING: Before connecting this switch to outdoor cables or devices, see https://kb.netgear.com/000057103 for safety and warranty information.

The following procedure describes how to connect devices to the switch's RJ-45 ports. The switch supports Auto Uplink technology, which allows you to attach devices using either straight-through or crossover cables. Use a Category 5e (Cat 5e) or Cat 6 cable that is terminated with an RJ-45 connector.

To connect devices to the switch's RJ-45 ports:

1. Connect a PoE or non-PoE device to an RJ-45 network port on the switch.

   Ethernet specifications limit the cable length between the switch and the attached device to 328 feet (100 meters).

2. Verify that all cables are installed correctly.

Step 6: Check the installation

Before you apply power to the switch, perform the following steps.

To check the installation:

1. Inspect the equipment thoroughly.
2. Verify that all cables are installed correctly.
3. Check cable routing to make sure that cables are not damaged or creating a safety hazard.
4. Make sure that all equipment is mounted properly and securely.

Step 7: Apply power and check the LEDs

The switch does not provide an on/off power switch. The power cable connection controls the power.

Before connecting the power cable, select an AC outlet that is not controlled by a wall switch, which can turn off power to the switch.

To apply power:

1. Connect the plug of the DC power adapter to the DC power receptacle on the back of the .

2. Connect the AC power cable receptacle to the power adapter.

3. Connect the AC power cable plug to a power source such as a wall socket or power strip.

4. Check to see that the LEDs on the switch light correctly.

    When you apply power, the Power LED on the switch front panel lights and the port LEDs for attached devices light. For more information, see <u>LEDs</u> on page 13.

    Note: After you apply power, the Power LED is blinking green while the switch starts. When the switch completes its startup process, the Power LED turns solid green.

    If the Power LED does not light, check to see that the power cable is plugged in correctly and that the power source is good.

Step 8: Manage the switch

The switch contains built-in web browser–accessible software for viewing, changing, and monitoring the way it functions. This management software, which we call the device user interface (UI), is not required for the switch to work. You can use the ports without using the device UI. However, the device UI enables the setup of VLAN and trunking features and also improves the efficiency of the switch, which results in the improvement of its overall performance as well as the performance of the network.

For more information about the device UI, see the user manual, which you can download by visiting <u>netgear.com/support/download</u>.

Note: By default, the DHCP client of the switch is enabled. If the switch cannot get an IP address from a DHCP server, the switch's default IP address is 192.168.0.239 and the default subnet mask is 255.255.255.0.

5

Troubleshooting

This chapter provides information about troubleshooting the switch.

The chapter includes the following sections:

- Troubleshooting chart
- PoE troubleshooting suggestions
- Additional troubleshooting suggestions

Troubleshooting chart

The following table lists symptoms, possible causes, and possible solutions for problems that might occur.

Table 4. Troubleshooting chart

Symptom	Possible Cause	Possible Solution
The Power LED is off.	Power is not supplied to the switch.	• Check the power cable connections at the switch and the power source. • Make sure that all cables are used correctly and comply with the Ethernet specifications.
The left and right port LEDs for a port are off although the port is connected to a powered-on device.	The port connection is not working.	• Check the crimp on the connectors and make sure that the plug is properly inserted and locked into the port at both the switch and the connecting device. • Make sure that all cables are used correctly and comply with the Ethernet specifications. • Check for a defective port, cable, or module by testing them in an alternate environment where all products are functioning.
A file transfer is slow or performance is degraded.	One possible cause is that a network loop (redundant path) was created and that a broadcast storm occurred.	Break the loop by making sure that only one path exists from any networked device to any other networked device. After you connect to the switch device UI, you can configure the Spanning Tree Protocol (STP) to prevent network loops.
A segment or device is not recognized as part of the network.	One or more devices are not properly connected, or cabling does not meet Ethernet guidelines.	• Verify that the cabling is correct. • Make sure that all connectors are securely positioned in the required ports. It is possible that equipment was accidentally disconnected.
The left and right port LEDs for all connected ports are blinking continuously and the network is disabled.	A network loop (redundant path) was created.	Break the loop by making sure that only one path exists from any networked device to any other networked device. After you connect to the switch device UI, you can configure the Spanning Tree Protocol (STP) to prevent network loops.

PoE troubleshooting suggestions

Here are some tips for correcting PoE problems that might occur:

- Make sure that the PoE Max LED is off. If the PoE Max LED is solid yellow, disconnect one or more PoE devices to prevent PoE oversubscription. Start by disconnecting the device from the highest-numbered port.

- Make sure that the Ethernet cables are plugged in correctly. For each powered device (PD) that is connected to the switch, the right port LED on the switch lights solid green. If the right port LED lights solid yellow, a PoE fault occurred and PoE halted because of one of the conditions that are listed in the following table.

Table 5. PoE fault conditions and possible solutions

PoE Fault Condition	Possible Solution
A PoE-related short circuit occurred on the port.	The problem is most likely with the attached PD. Check the condition of the PD or restart the PD by disconnecting and reconnecting the PD.
The PoE power demand of the PD exceeded the maximum level that the switch permits. The maximum level is 15.4W for a PoE connection, 30W for a PoE+ connection, and 60W for a PoE++ connection.	
The PoE current on the port exceeded the classification limit of the PD.	
The PoE voltage of the port is outside the range that the switch permits.	Restart the switch to see if the condition resolves itself.

Additional troubleshooting suggestions

If the suggestions in the troubleshooting chart do not resolve the problem, see the following troubleshooting suggestions:

- **Network adapter cards**: Make sure that the network adapters that are installed in the computers are in working condition and the software driver was installed.

- **Configuration**: If problems occur after you alter the network configuration, restore the original connections and determine the problem by implementing the new changes, one step at a time. Make sure that cable distances, repeater limits, and other physical aspects of the installation do not exceed the Ethernet limitations.

- **Switch integrity**: If necessary, verify the integrity of the switch by restarting it. To restart the switch, disconnect the power from the switch and then reconnect the power. If the problem continues, contact NETGEAR technical support. For more information, visit the support website at netgear.com/support/.

- **Autonegotiation**: The RJ-45 ports negotiate the correct duplex mode, speed, and flow control if the device at the other end of the link supports autonegotiation. If the device does not support autonegotiation, the switch determines only the speed correctly, and the duplex mode defaults to half-duplex.
  The Ethernet ports negotiate speed, duplex mode, and flow control if the attached device supports autonegotiation.