NETGEAR®

Hardware Installation Guide

M4300 Intelligent Edge Series
Fully Managed Stackable Switches

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

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Revision History

Publication Part Number	Publish Date	Comments
202-12073-01	January 2020	The CD is no longer shipped with product. Removed info on CD. Updated branding. Updated support and compliance section.
202-11995-02	November 2019	For all models, changed the Fan LED behavior for a faulty fan condition from blinking yellow to solid yellow. Made minor corrections to existing sections.
202-11995-01	September 2019	Added switch models M4300-16X, M4300-24XF, and M4300-48XF. Made minor corrections to existing sections. Published the guide in a new format.
202-11606-05	May 2018	Added information about the location of the SFP+ ports on model M4300-24X. Updated the *SFP+ Ports for 10GBASE-X and 1000BASE-X Transceiver Modules and Cables* section. Updated the *RJ-45 Ports, Including 10GBASE-T RJ-45 Ports* section, including information about some limitations for half-duplex mode for certain models. Added the *Cables and Speed* section. Made multiple corrections and refinements.
202-11606-04	January 2017	Updated Figure 17. Added notes to the *Install Two Half-width Switches in a Rack* section. Updated figures with model M4300-24X. Added the *Optional Step 11: Replace a Half-width switch in a Rack* section.
202-11606-03	July 2016	Added switch models M4300-24X and M4300-48X.

(Continued)

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202-11606-02	December 2015	Added information to the *Safety Instructions and Warnings* section.
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Introduction

The NETGEAR M4300 Intelligent Edge Series Fully Managed Stackable Switches are high-performance, IEEE-compliant, stackable, intelligent edge switches that support non-stop forwarding. In this manual, all models of the M4300 Intelligent Edge Series Fully Managed Stackable Switches are referred to as the switch.

Note: All non-modular M4300 switch models are described in this hardware installation guide. NETGEAR provides a separate hardware installation guide for modular model M4300-96X.

This hardware installation guide complements the installation guide that came with your switch.

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

- Overview
- Hardware features
- About stacking
- 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 netgear.com/business/products/switches/managed. For switch documentation, visit netgear.com/support/download/.

Overview

The NETGEAR M4300 Intelligent Edge Series Fully Managed Stackable Switches consists of a 16-port PoE+ full 10G model, 22-port, 24-port, 42-port, and 48-port full 10G models, and 28-port and 52-port 1G/10G models that can also support PoE+. All ports on the 10G models are stackable. On the 1G models with 10G uplinks, the two or four 10G ports are stackable. This installation guide is for the following models:

- Full 10G models:

    - **M4300-16X**. Full 10G switch model with sixteen 10G PoE+ copper ports in a half-width chassis

    - **M4300-8X8F**. Full 10G switch model with eight 10G copper ports and eight 10G fiber ports in a half-width chassis

    - **M4300-12X12F**. Full 10G switch model with twelve 10G copper ports and twelve 10G fiber ports in a half-width chassis

    - **M4300-24X24F**. Full 10G switch model with twenty-four 10G copper ports and twenty-four 10G fiber ports in a full-width chassis

- 1G models with 10G uplinks:

    - **M4300-28G**. Switch model with twenty-four 1G copper ports, two 10G copper ports, and two 10G fiber ports in a full-width chassis

    - **M4300-28G-POE**+. Switch model with twenty-four 1G PoE+ copper ports, two 10G copper ports, and two 10G fiber ports in a full-width chassis

    - **M4300-52G**. Switch model with forty-eight 1G copper ports, two 10G copper ports, and two 10G fiber ports in a full-width chassis

    - **M4300-52G-POE**+. Switch model with forty-eight 1G PoE+ copper ports, two 10G copper ports, and two 10G fiber ports in a full-width chassis

- 10G models with 10G RJ45/SFP+ combo ports:

    - **M4300-24X**. Switch model with twenty copper RJ45 ports and four 10G RJ45/SFP+ combo ports in a half-width chassis

    - **M4300-24XF**. Switch model with twenty-two 10G fiber ports and two 10G RJ45/SFP+ combo ports in a half-width chassis

    - **M4300-48X**. Switch model with forty-four copper RJ45 ports and four 10G RJ45/SFP+ combo ports in a full-width chassis

    - **M4300-48XF**. Switch model with forty-six 10G fiber ports and two 10G RJ45/SFP+ combo ports in a full-width chassis

With these switches, you can create high-speed connections to a server or network backbone. For example, you can do the following:

- Connect switches to each other with high-speed links

- Link to high-speed servers

- Provide 10G/1G/100M copper and 10G/1G fiber connectivity

- Connect up to eight switches in a stack to create a high-port-capacity solution with a single point of administration

The switch can be freestanding, stacked with other switches, or rack-mounted in a wiring closet or equipment room. The switch is IEEE compliant and offers low latency for high-speed networking. All ports can automatically negotiate to the highest speed, which makes the switch also suitable for environments with a mix of Ethernet, Fast Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet devices. For 10 and 100 Mbps speeds, the ports can operate in half-duplex or full-duplex mode. For 1G and 10G speeds, the ports always operate in full-duplex mode. For certain models, some limitations exist for half-duplex mode (see <u>RJ-45 ports, including 10GBASE-T RJ-45 ports</u> on page 40).

Hardware features

The switch includes the following key hardware features:

- Traffic ports in various configurations:

  - **Full 10G models**:

    - Eight, twelve, or twenty-four independent 10GBASE-T autosensing ports and eight, twelve, or twenty-four independent 10GBASE-X SFP+ ports

    - Sixteen independent 10GBASE-T *PoE+* autosensing ports

  - **1G/10G models with 10G uplinks**:

    - Twenty-four or forty-eight 1000BASE-T autosensing ports, two dedicated 10GBASE-T ports, and two dedicated 10GBASE-X SFP+ ports

    - Twenty-four or forty-eight 1000BASE-T *PoE+* autosensing ports, two dedicated 10GBASE-T ports, and two dedicated 10GBASE-X SFP+ ports

- **Full 10G models with combo ports**:

  - Twenty or forty-four independent 10GBASE-T autosensing ports and four 10G RJ45/SFP+ combo ports

  - Twenty-two or forty-six independent 10G fiber ports and two 10G RJ45/SFP+ combo ports

- Support from 128G to 960G switching fabric (all ports line-rate), depending on the model.

- One out-of-band 1G Ethernet port.

- One RJ-45 RS232 console port.

- One mini USB console port.

- One regular USB port for connection to a storage device.

- One or two power supply unit (PSU) bays for small form-factor modular PSUs. For the dual PSU bay models, the second PSU can support 1+1 redundancy.

- Support for stacking on any 10G port.

- Half-width or full-width model.

- Full compatibility with IEEE standards:

  - IEEE 802.3i (10BASE-T)

  - IEEE 802.3u (100BASE-TX)

  - IEEE 802.3ab (1000BASE-T)

  - IEEE 802.3an (10GBASE-T)

  - IEEE 802.3z (1000BASE-X)

  - IEEE 802.3 Clause 49 (10GBASE-LR and 10GBASE-SR)

  - IEEE802.3ae (10GBASE Ethernet)

  - IEEE802.3az (Energy Efficient Ethernet)

  - IEEE 802.3x (Full-duplex flow control)

  - IEEE 802.1af (PoE)

  - IEEE 802.1at (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.
- Full-duplex IEEE 802.3x pause frame flow control.
- Active flow control to minimize packet loss and frame drops.
- Half-duplex backpressure control.
- Per-port status LEDs and system status LEDs.
- Nonstop Forwarding Failover (NSF) support for the master in a stack.
- NETGEAR green power-saving features:
  - Energy efficiency mode that fully conforms to the IEEE802.3az standard
  - For 1GBASE-T ports, per-port automatic change to a lower power mode when the port link is down

- Support for Power over Ethernet plus (PoE+) on models M4300-16X, M4300-28G-POE+, and M4300-52G-POE+.
- Support for an APS1000W PSU to provide a larger power budget on model M4300-28G-POE+ and model M4300-52G-POE+.
- Support for an external redundant power supply (RPS) on model M4300-52G-POE+.

About stacking

A single switch can control and manage a stack. This switch is referred to as the stack master, or simply, the master. Any other members in the stack are referred to as slaves. All switches in a stack are stack members.

Slaves can download firmware from the master and the master can push firmware to the slaves.

The master runs the fully operational software of a switch. In addition, the master runs the master software of the distributed switching application that configures and manages all slaves. Generally, the master operates the remote slave's low-level drivers through the distributed switching application part that is running in the context of the slave.

During stacking setup, the switches autoselect one switch as the master. All other switches become slaves and are assigned unique stack IDs. One of the slaves is designated as the backup master. The backup master functions as a slave but can become the master if the original master fails. In the default configuration, the master and backup master are assigned unit IDs of 1 and 2, respectively. You can use the local browser–based management interface to configure different ID assignments. The master provides a single point of control and management as well as a single interface through which to control and manage the stack.

Switch software is downloaded separately for each stack member. However, all stack members must be running the same software version.

A stack unit can operate in one of the following modes:

- A standalone switch runs as a general switch. The standalone unit does not run the stacking application until it is connected to a stack.

- A master manages the entire stack and is responsible for the entire stack configuration. All protocols run in the context of the master, which updates and synchronizes the backup master.

- A backup master runs as a slave until it must take over from the master. In addition, the backup master continuously monitors the existence and operation of the master. If the master fails, the backup master assumes the role of master through a switchover.

- A slave runs only a slave version of the distributed switching software, which allows the applications running on the master to control and manage the resources of the slave.

A stack can contain a mix of up to eight switches. All models support stacking. The master supports Nonstop Forwarding Failover (NSF).

For information about how to configure stacking through the software, see the software administration guide and user manual, which you can download by visiting netgear.com/support/download/.

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. For more information, see the environmental specifications in the appendix or the data sheet.
  Any device that is located outdoors and connected to this product must be properly grounded and surge protected.
  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 system documentation. Some devices should never be opened.

  - If applicable to your device, 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 electrical outlet and replace the part or contact your trained service provider:

  - Depending on your device, 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 your system away from radiators and heat sources. Also, do not block cooling vents.

- Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system 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 system. Doing so can cause fire or electric shock by shorting out interior components.

- Use the product only with approved equipment.

- If applicable to your device, 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 device 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 device, use only a supplied power adapter or approved power cable:
  If your device uses a <u>power adapter</u>:

  - 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 device uses a <u>power cable</u>:

  - 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 electrical outlets.

- If applicable to your device, 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:

- Hardware descriptions, M4300 series full 10G models
- Hardware descriptions, M4300 series 1G models with 10G uplinks
- Hardware descriptions, M4300 series full 10G models with RJ45/SFP+ combo ports
- Switch hardware interfaces
- Power supply units
- PoE power budgets

Hardware descriptions, M4300 series full 10G models

This section describes the switch hardware features for the following full 10G models:

- **M4300-16X**. Switch model with sixteen 10G PoE+ copper ports
- **M4300-8X8F**. Switch model with eight 10G copper ports and eight 10G fiber ports
- **M4300-12X12F**. Switch model with twelve 10G copper ports and twelve 10G fiber ports
- **M4300-24X24F**. Switch model with twenty-four 10G copper ports and twenty-four 10G fiber ports

Front panel, M4300 series full 10G models

The full 10G models provide either a port configuration of sixteen independent 10GBASE-T autosensing ports or a port configuration of eight, twelve, or twenty-four independent 10GBASE-T autosensing ports and eight, twelve, or twenty-four independent 10GBASE-X SFP+ ports.

Model M4300-16X

The following figure illustrates the front panel of half-width model M4300-16X.
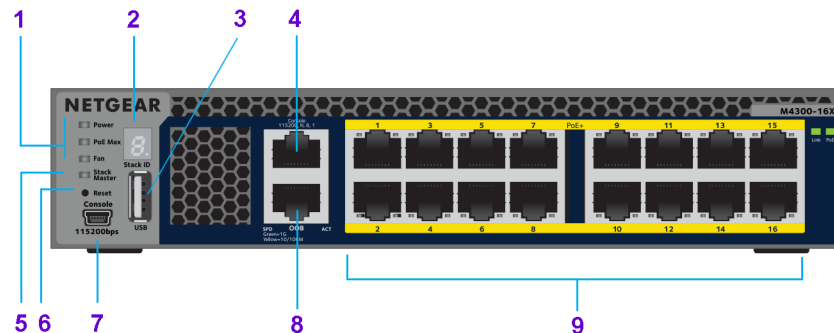

Figure 1. Front panel model M4300-16X

Number	Description
1	Power, PoE Max, and Fan LEDs
2	Stack ID LED
3	USB port
4	RJ-45 RS232 console port
5	Stack Master LED

Number	Description
6	Reset button
7	Mini USB console port
8	OOB port with port LEDs
9	10GBASE-T PoE+ ports, each with two port LEDs. The left port LED indicates the link status. The right port LED indicates the PoE status.

Model M4300-8X8F

The following figure illustrates the front panel of half-width model M4300-8X8F.
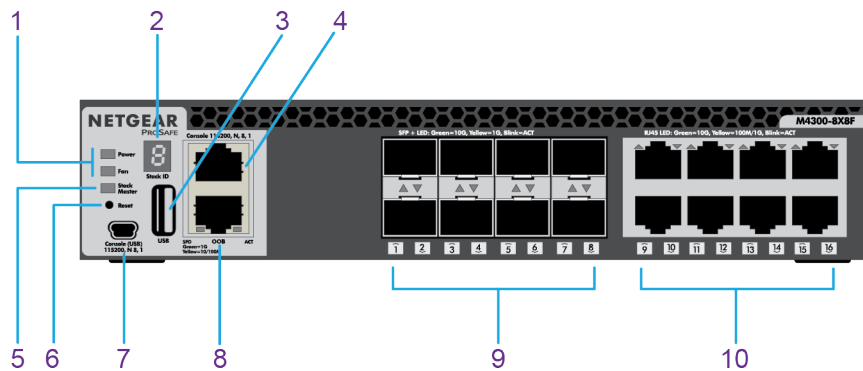
Figure 2. Front panel model M4300-8X8F

Number	Description
1	Power and Fan LEDs
2	Stack ID LED
3	USB port
4	RJ-45 RS232 console port
5	Stack Master LED
6	Reset button
7	Mini USB console port
8	OOB port with port LEDs
9	10GBASE-X SFP+ ports, each with a port LED
10	10GBASE-T ports, each with a port LED

Model M4300-12X12F

The following figure illustrates the front panel of half-width model M4300-12X12F.

Figure 3. Front panel model M4300-12X12F

Number	Description
1	Power and Fan LEDs
2	Stack ID LED
3	USB port
4	Stack Master LED
5	Reset button
6	Mini USB console port
7	10GBASE-X SFP+ ports, each with a port LED
8	10GBASE-T ports, each with a port LED

Model M4300-24X24F

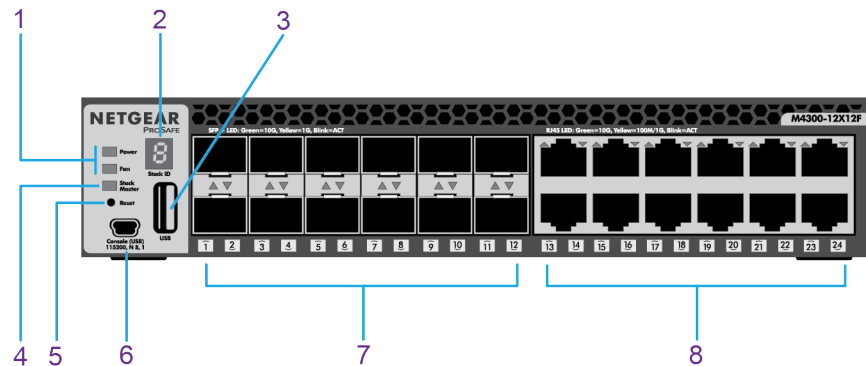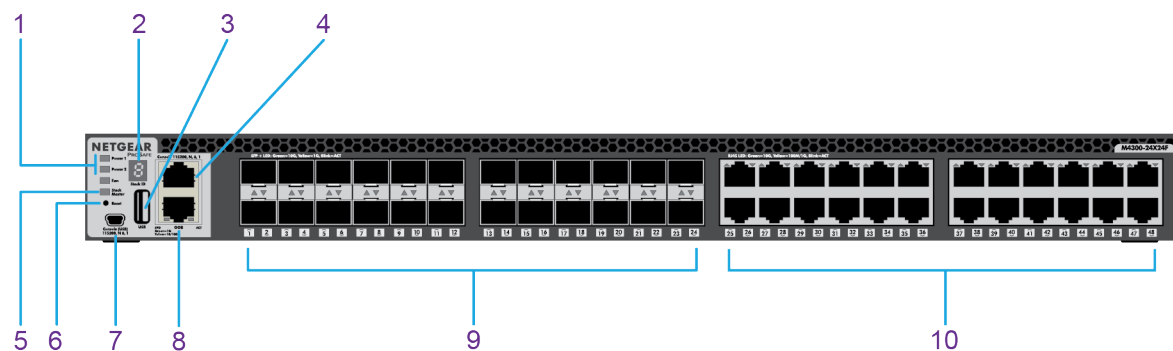The following figure illustrates the front panel of full-width model M4300-24X24F.

Figure 4. Front panel model M4300-24X24F

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED
3	USB port
4	RJ-45 RS232 console port
5	Stack Master LED
6	Reset button
7	Mini USB console port
8	OOB port with port LEDs
9	10GBASE-X SFP+ ports, each with a port LED
10	10GBASE-T ports, each with a port LED

Common components

From left to right, the front panel of the full 10G models provides the following components:

- Power, Fan, Stack Master, and Stack ID system LEDs (see LEDs, M4300 series full 10G models on page 21) .
  Because model M4300-24X24F can support two PSUs, the front panel provides both a Power 1 LED and Power 2 LED.

- Recessed **Reset** button.

- One mini USB console port.

- One USB 2.0 port.

- One RJ-45 RS232 (115200, N, 8, 1) console port (models M4300-16X, M4300-8X8F, and M4300-24X24F).
  On model M4300-12X12F, the RJ-45 RS232 console port is on the back panel.

- One out-of-band (OOB) 1G Ethernet port (models M4300-16X, M4300-8X8F, and M4300-24X24F) with a left LED that indicates the speed and a right LED that indicates the activity (see LEDs, M4300 series full 10G models on page 21).
  On model M4300-12X12F, the OOB 1G Ethernet port is on the back panel.

- Depending on the model, eight, twelve, or twenty-four independent 10GBASE-X SFP+ ports, each with a combined speed and activity LED (see LEDs, M4300 series full 10G models on page 21).

- Depending on the model, eight, twelve, sixteen, or twenty-four independent 10GBASE-T autosensing ports, each with a combined speed and activity LED (see LEDs, M4300 series full 10G models on page 21).

Back panel, M4300 series full 10G models

Model M4300-16X

The following figure illustrates the back panel of half-width model M4300-16X.
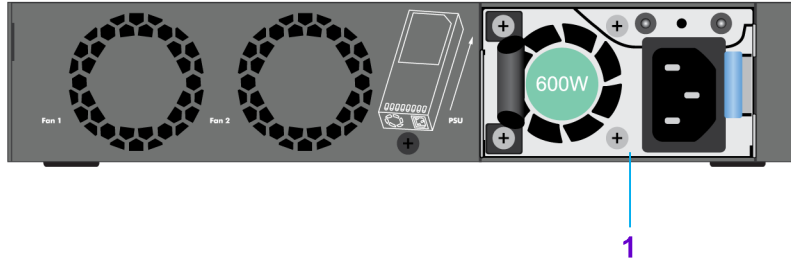

Figure 5. Back panel model M4300-16X

Number	Description
1	PSU with AC connector

From left to right, the back panel of model M4300-16X provides the following components:

- Fixed fans for front-to-back air flow.
- Modular bay in which either an APS299W or APS600W power supply unit (PSU) is installed.

Model M4300-8X8F

The following figure illustrates the back panel of half-width model M4300-8X8F.

Figure 6. Back panel model M4300-8X8F

Number	Description
1	PSU with AC connector

From left to right, the back panel of model M4300-8X8F provides the following components:

- Fixed fans for front-to-back air flow.
- Modular bay in which an APS250W power supply unit (PSU) is installed.

Model M4300-12X12F

The following figure illustrates the back panel of half-width model M4300-12X12F.

Figure 7. Back panel model M4300-12X12F

Number	Description
1	RJ-45 RS232 console port
2	OOB port with port LEDs
3	PSU with AC connector

From left to right, the back panel of model M4300-12X12F provides the following components:

- One out-of-band 1G Ethernet port.
- One RJ-45 RS232 (115200, N, 8, 1) console port.
- Fixed fans for front-to-back air flow.
- Modular bay in which an APS250W power supply unit (PSU) is installed.

Model M4300-24X24F

The following figure illustrates the back panel of full-width model M4300-24X24F.

Figure 8. Back panel model M4300-24X24F

Number	Description
1	PSU1 with AC connector
2	Bay for PSU2

From left to right, the back panel of model M4300-24X24F provides the following components:

- Fixed fans for front-to-back air flow.

- Modular bay in which an APS250W power supply unit (PSU) is installed.

- Second modular bay for an optional second PSU.

LEDs, M4300 series full 10G models

The following table describes the LEDs on the front panel of the full 10G models.

Table 1. LEDs of the full 10G models

LED	Designation
Power LED	**Solid green**. The power module is present, is supplying power to the switch, and is functioning normally. **Solid yellow**. The switch is booting. **Blinking yellow**. The system boot-up failed or another failure occurred. **Off**. Power is not supplied to the switch. **Note**: Because model M4300-24X24F can support two PSUs, the front panel provides both a Power 1 LED and Power 2 LED.
PoE model (M4300-16X) PoE Max LED	**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.
Fan LED	**Solid green**. The fans are functioning normally. **Solid yellow**. One or more fans failed. **Off**. Power is not supplied to the switch. The fans are off.
Stack Master LED	**Solid green**. The switch is functioning as a master in a stack. **Off**. The switch is not a member of a stack or is functioning as a slave in a stack.
Stack ID LED	The Stack LED contains segments that can indicate the stack unit number of the switch: **Solid green indicating a number**. The switch is a member of a stack. The LED displays the stack unit number. **Solid green indicating E**. The switch functions in ECO mode with all port LEDs turned off. **Off**. The switch is not a member of a stack.

Table 1. LEDs of the full 10G models (Continued)

LED	Designation
OOB Ethernet port LEDs (two LEDs per port)	Left side speed LED: **Off**. No link is established on the port. **Solid green**. The port established a 1000 Mbps link. **Solid yellow**. The port established a 10 or 100 Mbps link.
	Right side activity and link LED: **Off**. No link is established on the port. **Solid green**. The port established a link. **Blinking green**. The port is transmitting or receiving packets.
10GBASE-X SFP+ port LED (one LED per port)	**Off**. No SFP module link is established on the fiber port. **Solid green**. The fiber port established a 10 Gbps link. **Blinking green**. The fiber port is transmitting or receiving packets at 10 Gbps. **Solid yellow**. The fiber port established a 1 Gbps link. **Blinking yellow**. The fiber port is transmitting or receiving packets at 1 Gbps.
<u>Non-PoE models</u> 10GBASE-T RJ45 port LED (one LED per port)	**Off**. No link is established on the copper port. **Solid green**. The copper port established a 10 Gbps link. **Blinking green**. The copper port is transmitting or receiving packets at 10 Gbps. **Solid yellow**. The copper port established a 1 Gbps or 100 Mbps link. **Blinking yellow**. The copper port is transmitting or receiving packets at 1 Gbps or 100 Mbps.
<u>PoE model</u> (M4300-16X) 10GBASE-T RJ45 port LEDs (two LEDs per ports)	PoE model (M4300-16X), right side PoE status LED: **Off**. A PD is not connected to the port. **Solid green**. A PoE-powered device (PD) is connected and the port is supplying power successfully. **Solid yellow**. Indicates one of the following failures, which prevents the port from supplying power: • A short circuit occurred on the PoE power circuit. • The PoE power demand exceeds the available power. • The PoE current exceeds the PD's classification. • An out-of-proper-voltage band condition occurred.
	PoE model (M4300-16X), left side speed, activity, and link LED: **Off**. No link is established on the copper port. **Solid green**. The copper port established a 10 Gbps link. **Blinking green**. The copper port is transmitting or receiving packets at 10 Gbps. **Solid yellow**. The copper port established a 5 Gbps, 2.5 Gbps, 1 Gbps, or 100 Mbps link. **Blinking yellow**. The copper port is transmitting or receiving packets at 5 Gbps, 2.5 Gbps, 1 Gbps, or 100 Mbps.

Hardware descriptions, M4300 series 1G models with 10G uplinks

This section describes the switch hardware features for the following 1G models with 10G uplinks:

- **M4300-28G**. Switch model with twenty-four 1G copper ports, two 10G copper ports, and two 10G fiber ports

- **M4300-28G-POE+**. Switch model with twenty-four 1G copper PoE+ ports, two 10G copper ports, and two 10G fiber ports

- **M4300-52G**. Switch model with forty-eight 1G copper ports, two 10G copper ports, and two 10G fiber ports

- **M4300-52G-POE+**. Switch model with forty-eight 1G copper PoE+ ports, two 10G copper ports, and two 10G fiber ports

Front panel, M4300 series 1G models with 10G uplinks

The 1G models with 10G uplinks provide twenty-four or forty-eight 1000BASE-T autosensing ports (depending on the model, either regular, non-PoE, ports or PoE+ ports), two dedicated 10GBASE-T ports, and two dedicated 10GBASE-X SFP+ ports.

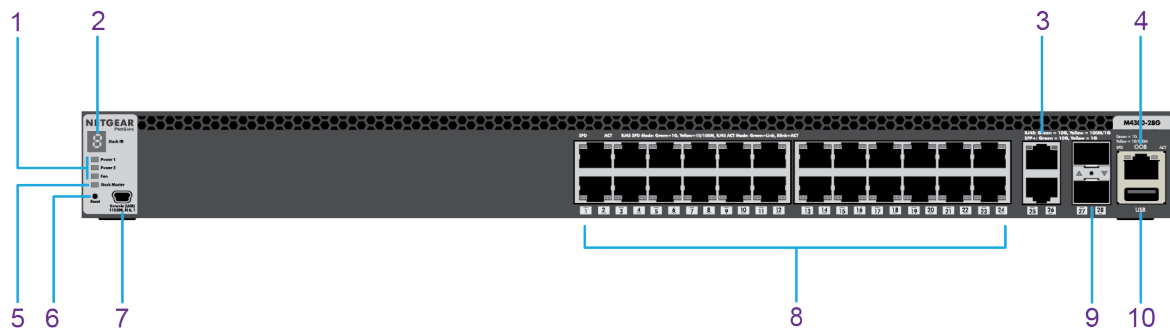The following figure illustrates the front panel of full-width model M4300-28G.

Model M4300-28G

Figure 9. Front panel model M4300-28G

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED
3	10GBASE-T ports, each with a port LED
4	OOB port with port LEDs

Number	Description
5	Stack Master LED
6	Reset button
7	Mini USB console port
8	1000BASE-T ports, each with a port LED
9	10GBASE-X SFP+ ports, each with a port LED
10	USB port

Model M4300-28G-POE+

Model M4300-28G-POE+ supports PoE+ on ports 1 through 24. The following figure illustrates the front panel of full-width model M4300-28G-POE+.
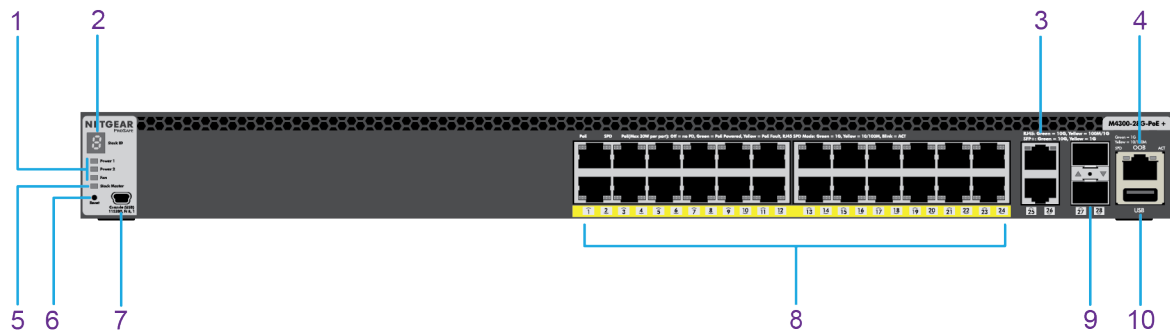

Figure 10. Front panel model M4300-28G-POE+

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED
3	10GBASE-T ports, each with a port LED
4	OOB port with port LEDs
5	Stack Master LED
6	Reset button
7	Mini USB console port
8	1000BASE-T PoE+ ports, each with two port LEDs
9	10GBASE-X SFP+ ports, each with a port LED
10	USB port

Model M4300-52G

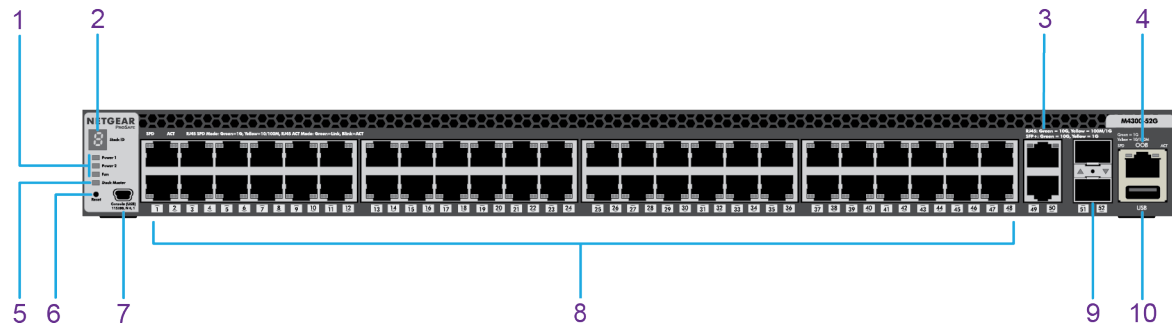The following figure illustrates the front panel of full-width model M4300-52G.

Figure 11. Front panel model M4300-52G

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED
3	10GBASE-T ports, each with a port LED
4	OOB port with port LEDs
5	Stack Master LED
6	Reset button
7	Mini USB console port
8	1000BASE-T ports, each with a port LED
9	10GBASE-X SFP+ ports, each with a port LED
10	USB port

Model M4300-52G-POE+

Model M4300-52G-POE+ supports PoE+ on ports 1 through 48. The following figure illustrates the front panel of full-width model M4300-52G-POE+.
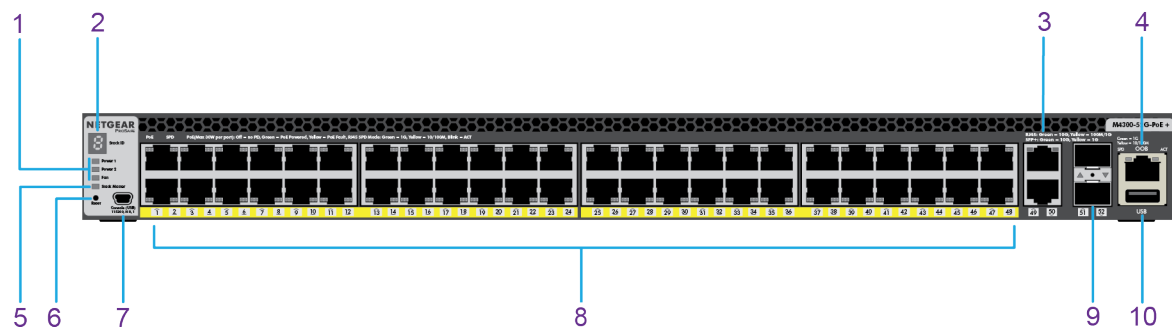

Figure 12. Front panel model M4300-52G-POE+

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED
3	10GBASE-T ports, each with a port LED
4	OOB port with port LEDs
5	Stack Master LED
6	Reset button
7	Mini USB console port
8	1000BASE-T PoE+ ports, each with two port LEDs
9	10GBASE-X SFP+ ports, each with a port LED
10	USB port

Common components

From left to right, the front panel of the full 1G models with 10G uplinks provides the following components:

- Stack ID, Power 1, Power 2, Fan, Stack Master, and system LEDs (see LEDs, M4300 series 1G models with 10G uplinks on page 29).

- Recessed **Reset** button.

- One mini USB console port.

- Depending on the model, twenty-four or forty-eight 10/100/1000 Mbps autosensing 1000BASE-T RJ-45 ports, each with a left LED and a right LED (see LEDs, M4300 series 1G models with 10G uplinks on page 29).

- The LED functionality depends on the model:

  - **Non-PoE models**. On model M4300-28G and model M4300-52G, the left LED indicates the speed and the right LED indicates the activity.
  - **PoE models**. On model M4300-28G-POE+ and model M4300-52G-POE+, the left LED indicates the PoE status and the right LED functions as the combined speed and activity LED.

- Two dedicated 10GBASE-T autosensing ports, each with a combined speed and activity LED (see LEDs, M4300 series 1G models with 10G uplinks on page 29):

  - On model M4300-28 and model M4300-28G-POE+, these are port numbers 25 and 26.
  - On model M4300-52G and model M4300-52G-POE+, these are port numbers 49 and 50.

- Two dedicated 10GBASE-X SFP+ ports, each with a combined speed and activity LED (see LEDs, M4300 series 1G models with 10G uplinks on page 29):

  - On model M4300-28 and model M4300-28G-POE+, these are port numbers 27 and 28.
  - On model M4300-52G and model M4300-52G-POE+, these are port numbers 51 and 52.

- One out-of-band (OOB) 1G Ethernet port with a left LED that indicates the speed and a right LED that indicates the activity (see LEDs, M4300 series 1G models with 10G uplinks on page 29).

- One USB 2.0 port.

Back panel, 4300 series 1G models with 10G uplinks

Models M4300-28G, M4300-28G-POE+, and M4300-52G

The following figure illustrates the back panel of full-width models M4300-28G, M4300-28G-POE+, and M4300-52G.

Figure 13. Back panel models M4300-28G, M4300-28G-POE+, and M4300-52G

Number	Description
1	RJ-45 RS232 console port
2	PSU1 with AC connector
3	Bay for PSU2

From left to right, the back panel of models M4300-28G, M4300-28G-POE+, and M4300-52G provides the following components:

- One RJ-45 RS232 (115200, N, 8, 1) console port.

- Fixed fans for front-to-back air flow.

- Modular bay in which for model M4300-28G and model M4300-52G an APS150W power supply unit (PSU) is installed. For model M4300-28G-POE+, an APS550W PSU or APS1000W PSU is installed, depending on the product ordered.

- Second modular bay for an optional second PSU.

Model M4300-52G-POE+

The following figure illustrates the back panel of full-width model M4300-52G-POE+.

Figure 14. Back panel model M4300-52G-POE+

Number	Description
1	RJ-45 RS232 console port
2	RPS interface
3	PSU1 with AC connector
4	Bay for PSU2

From left to right, the back panel of model M4300-52G-POE+ provides the following components:

- One RJ-45 RS232 (115200, N, 8, 1) console port.

- One redundant power supply (RPS) interface.

- Fixed fans for front-to-back air flow.

- Modular bay in which an APS550W power supply unit (PSU) or APS1000W PSU is installed, depending on the product ordered.

- Second modular bay for an optional second PSU.

LEDs, M4300 series 1G models with 10G uplinks

This section describes the LED designations of the 1G models with 10G uplinks.

Table 2. LEDs of the 1G models with 10G uplinks

LED	Description
Stack ID LED	**Stack ID**. The Stack LED contains segments that can indicate the stack unit number of the switch: **Solid green indicating a number**. The switch is a member of a stack. The LED displays the stack unit number. **Solid green indicating E**. The switch functions in ECO mode with all port LEDs turned off. **Off**. The switch is not a member of a stack.
Power 1 LED (for PSU 1) and Power 2 LED (for PSU 2)	**Solid green**. The power module is present, is supplying power to the switch, and is functioning normally. **Solid yellow**. The switch is booting. **Blinking yellow**. The system boot-up failed or another failure occurred. **Off**. Power is not supplied to the switch. The fans are off. **Solid green**. The fans are functioning normally. **Blinking yellow**. One or more fans failed. **Off**. Power is not supplied to the switch.
Fan LED	**Solid green**. The fans are functioning normally. **Solid yellow**. One or more fans failed. **Off**. Power is not supplied to the switch.
Stack Master LED	**Solid green**. The switch is functioning as a master in a stack. **Off**. The switch is not a member of a stack or is functioning as a slave in a stack.
<u>Non-PoE models</u> 1000BASE-T RJ-45 port LEDs (two LEDs per ports)	Non-PoE models, left side speed LED: **Off**. No link is established on the copper port. **Solid green**. The copper port established a 1000 Mbps link. **Solid yellow**. The copper port established a 10 or 100 Mbps link. Non-PoE models, right side activity/link LED: **Off**. No link is established on the copper port. **Solid green**. The copper port established a link. **Blinking green**. The copper port is transmitting or receiving packets.

Table 2. LEDs of the 1G models with 10G uplinks (Continued)

LED	Description
PoE models 1000BASE-T RJ-45 port LEDs (two LEDs per ports)	PoE models, left side PoE status LED: **Off**. A PD is not connected to the port. **Solid green**. A PoE-powered device (PD) is connected and the port is supplying power successfully. **Solid yellow**. Indicates one of the following failures, which prevents the port from supplying power: - A short circuit occurred on the PoE power circuit. - The PoE power demand exceeds the available power. - The PoE current exceeds the PD's classification. - An out-of-proper-voltage band condition occurred.
	PoE models, right side speed, activity, and link LED: **Off**. No link is established on the copper port. **Solid green**. The copper port established a 1000 Mbps link. **Blinking green**. The port is transmitting or receiving packets at 1000 Mbps. **Solid yellow**. The copper port established a 10 or 100 Mbps link. **Blinking yellow**. The port is transmitting or receiving packets at 10 or 100 Mbps.
10GBASE-T RJ-45 port LED (one LED per port)	**Off**. No link is established on the copper port. **Solid green**. The copper port established a 10 Gbps link. **Blinking green**. The copper port is transmitting or receiving packets at 10 Gbps. **Solid yellow**. The copper port established a 1 Gbps or 100 Mbps link. **Blinking yellow**. The copper port is transmitting or receiving packets at 1 Gbps or 100 Mbps.
10GBASE-X SFP+ port LED (one LED per port)	**Off**. No SFP module link is established on the fiber port. **Solid green**. The fiber port established a 10 Gbps link. **Blinking green**. The fiber port is transmitting or receiving packets at 10 Gbps. **Solid yellow**. The fiber port established a 1 Gbps link. **Blinking yellow**. The fiber port is transmitting or receiving packets at 1 Gbps.
OOB Ethernet port LEDs (two LEDs per port)	Left side speed LED: **Solid green**. The port established a 1000 Mbps link. **Solid yellow**. The port established a 10 or 100 Mbps link. **Off**. No link is established on the port.
	Right side activity and link LED: **Solid green**. The port established a link. **Blinking green**. The port is transmitting or receiving packets. **Off**. No link is established on the port.

Hardware descriptions, M4300 series full 10G models with RJ45/SFP+ combo ports

This section describes the switch hardware features for the following models:

- **M4300-24X**. Switch model with twenty copper RJ45 ports and four 10G RJ45/SFP+ combo ports in a half-width chassis

- **M4300-24XF**. Switch model with twenty-two fiber SFP+ ports and two 10G RJ45/SFP+ combo ports in a half-width chassis

- **M4300-48X**. Switch model with forty-four copper RJ45 ports and four 10G RJ45/SFP+ combo ports in a full-width chassis

- **M4300-48XF**. Switch model with forty-six fiber SFP+ ports and two 10G RJ45/SFP+ combo ports in a full-width chassis

Front panel, M4300 series full 10G models with RJ45/SFP+ combo ports

The full 10G models with RJ45/SFP+ combo ports provide either a port configuration of twenty or forty-four independent 10GBASE-T autosensing ports and four 10G RJ45/SFP+ combo ports or a port configuration of twenty-two or forty-six independent 10GBASE-X SFP+ ports and two 10G RJ45/SFP+ combo ports.

Model M4300-24X

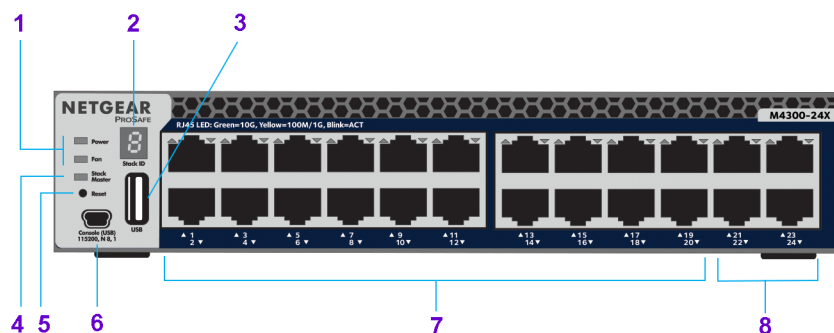The following figure illustrates the front panel of half-width model M4300-24X.

Figure 15. Front panel model M4300-24X

Number	Figure
1	Power and Fan LEDs
2	Stack ID LED

Number	Figure
3	USB port
4	Stack Master LED
5	Reset button
6	Mini USB console port
7	10GBASE-T ports, each with a port LED
8	10GBASE-T RJ-45 combo ports (21, 22, 23, and 24), each with a port LED (the corresponding 10GBASE-X SFP+ combo ports are on the back panel)

Model M4300-24XF

The following figure illustrates the front panel of half-width model M4300-24XF.
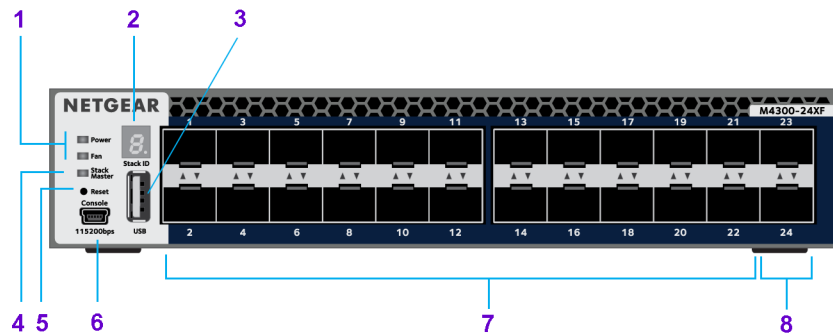

Figure 16. Front panel model M4300-24XF

Number	Figure
1	Power and Fan LEDs
2	Stack ID LED
3	USB port
4	Stack Master LED
5	Reset button
6	Mini USB console port
7	10GBASE-X SFP+ ports, each with a port LED
8	10GBASE-X SFP+ combo ports (23 and 24), each with a port LED (the corresponding 10GBASE-T RJ-45 combo ports are on the back panel)

Model M4300-48X

The following figure illustrates the front panel of full-width model M4300-48X.
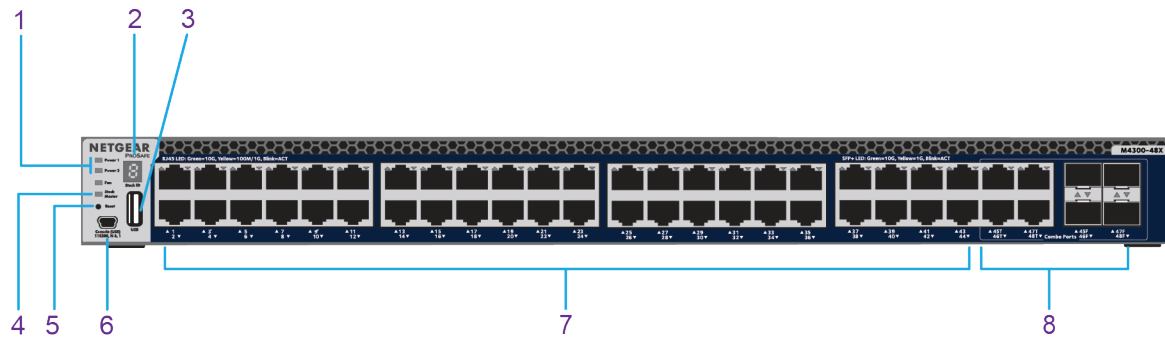

Figure 17. Front panel model M4300-48X

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED
3	USB port
4	Stack Master LED
5	Reset button
6	Mini USB console port
7	10GBASE-T ports, each with a port LED
8	Combo ports, each with a port LED:
	Ports 45T, 46T, 47T, and 48T are 10GBASE-T ports
	Ports 45F, 46F, 47F, and 48F 10GBASE-X SFP+ ports

Model M4300-48XF

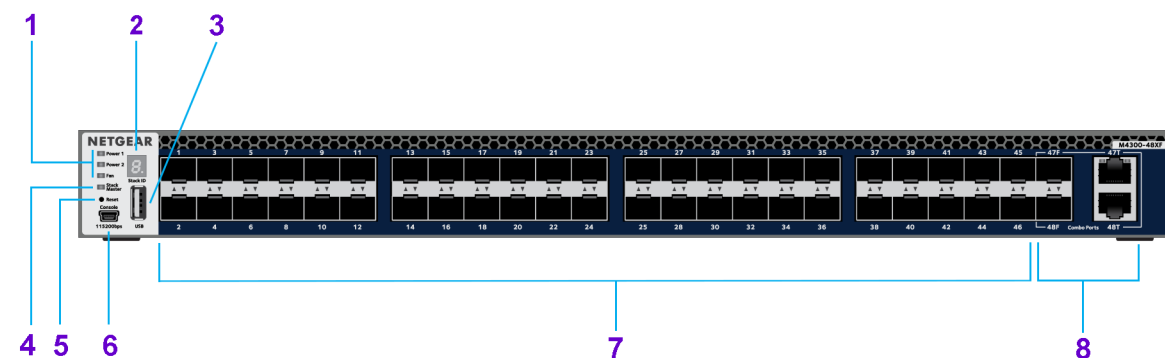The following figure illustrates the front panel of full-width model M4300-48XF.

Figure 18. Front panel model M4300-48XF

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED
3	USB port
4	Stack Master LED
5	Reset button
6	Mini USB console port
7	10GBASE-X SFP+ ports, each with a port LED
8	Combo ports, each with a port LED: Ports 47F and 48F are 10GBASE-X SFP+ ports Ports 47T and 48T are 10GBASE-T ports

Common components

From left to right, the front panel of the full 10G models provides the following components:

- Power, Fan, Stack Master, and Stack ID system LEDs (see <u>LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports</u> on page 38).
  Because models M4300-48X and M4300-48XF can support two PSUs, the front panel provides both a Power 1 LED and Power 2 LED.

- Recessed **Reset** button.

- One mini USB console port.

- One USB 2.0 port.

- Depending on the model, twenty, twenty-two, forty-four, or forty-six ports, each with a combined speed and activity LED (see <u>LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports</u> on page 38).

- Depending on the model, either two 10GBASE-X/10GBASE-T combo ports or four 10GBASE-T/10GBASE-X combo. ports, each with a combined speed and activity LED (see <u>LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports</u> on page 38).

Back panel, M4300 series full 10G models with RJ45/SFP+ combo ports

Model M4300-24X

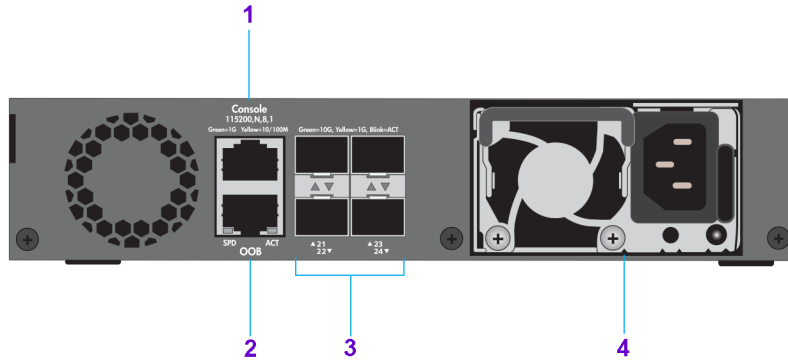The following figure illustrates the back panel of model half-width M4300-24X.

Figure 19. Back panel model M4300-24X

Number	Description
1	RJ-45 RS232 console port
2	OOB port with port LEDs
3	10GBASE-X SFP+ combo ports (21, 22, 23, and 24), each with a port LED (the corresponding 10GBASE-T RJ-45 combo ports are on the front panel)
4	PSU with AC connector

From left to right, the back panel of model M4300-24X provides the following components:

- Fixed fan for front-to-back air flow

- One RJ-45 RS232 (115200, N, 8, 1) console port.

- One out-of-band (OOB) 1G Ethernet port with a left LED that indicates the speed and a right LED that indicates the activity (see <u>LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports</u> on page 38).

- Four combo SFP+ ports.

- Modular bay in which an APS250W power supply unit (PSU) is installed.

Model M4300-24XF

The following figure illustrates the back panel of half-width model M4300-24XF.
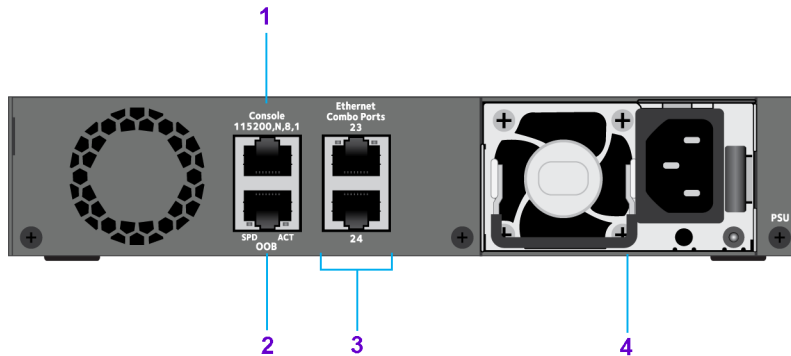

Figure 20. Back panel model M4300-24XF

Number	Description
1	RJ-45 RS232 console port
2	OOB port with port LEDs
3	10GBASE-T RJ-45 combo ports (23 and 24), each with a port LED (the corresponding 10GBASE-X SFP+ combo ports are on the front panel)
4	PSU with AC connector

From left to right, the back panel of model M4300-24XF provides the following components:

- Fixed fan for front-to-back air flow.

- One RJ-45 RS232 (115200, N, 8, 1) console port.

- One out-of-band (OOB) 1G Ethernet port with a left LED that indicates the speed and a right LED that indicates the activity (see <u>LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports</u> on page 38).

- Two combo 10GBASE-T RJ-45 ports.

- Modular bay in which an APS250W power supply unit (PSU) is installed.

Model M4300-48X

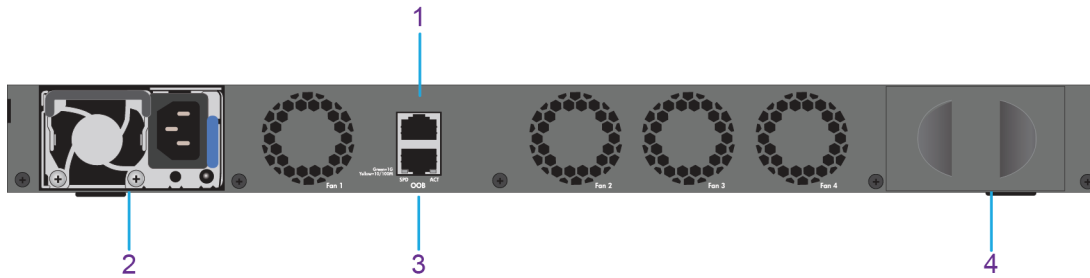The following figure illustrates the back panel of full-width model M4300-48X.

Figure 21. Back panel model M4300-48X

Number	Description
1	RJ-45 RS232 console port
2	PSU 1 with AC connector
3	OOB port with port LEDs
4	Bay for PSU 2

From left to right, the back panel of model M4300-48X provides the following components:

- Modular bay for power supply unit 1 (PSU 1), which is an APS250W.

- Fixed fans for front-to-back air flow.

- One RJ-45 RS232 (115200, N, 8, 1) console port.

- One out-of-band (OOB) 1G Ethernet port with a left LED that indicates the speed and a right LED that indicates the activity (see <u>LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports</u> on page 38).

- Modular bay PSU 2 for an optional second PSU.

Model M4300-48XF

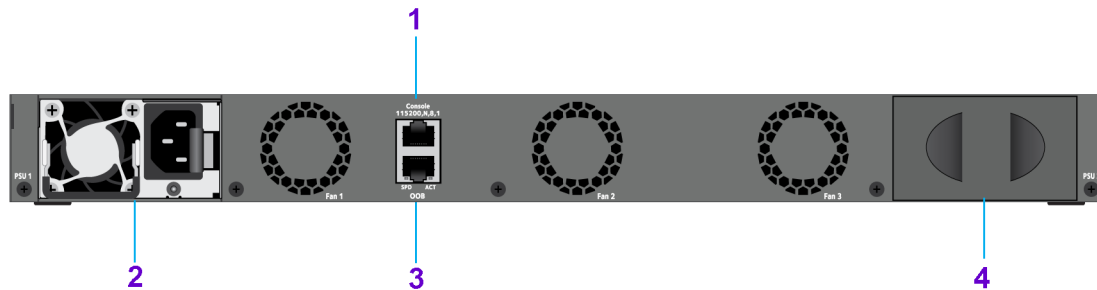The following figure illustrates the back panel of full-width model M4300-48XF.

Figure 22. Back panel model M4300-48XF

Number	Description
1	RJ-45 RS232 console port
2	PSU 1 with AC connector
3	OOB port with port LEDs
4	Bay for PSU 2

From left to right, the back panel of model M4300-48XF provides the following components:

- Modular bay for power supply unit 1 (PSU 1), which, by default, is an APS250W.

- Fixed fans for front-to-back air flow.

- One RJ-45 RS232 (115200, N, 8, 1) console port.

- One out-of-band (OOB) 1G Ethernet port with a left LED that indicates the speed and a right LED that indicates the activity (see LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports on page 38).

- Modular bay PSU 2 for an optional second PSU.

LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports

The following table describes the LEDs on the front panel of the full 10G models.

For the following models, some port LEDs are on the back panel:

- For model M4300-24X, the LEDs for the 10GBASE-X SFP+ combo ports are on the back panel.

- For model M4300-24XF, the LEDs for the 10GBASE-T RJ45 combo ports are on the back panel.

Table 3. LEDs of the full 10G models with RJ45/SFP+ combo ports

LED	Designation
Power LED	**Solid green**. The power module is present, is supplying power to the switch, and is functioning normally. **Solid yellow**. The switch is booting. **Blinking yellow**. The system boot-up failed or another failure occurred. **Off**. Power is not supplied to the switch. **Note**: Because models M4300-48X and M4300-48XF can support two PSUs, the front panel provides both a Power 1 LED and Power 2 LED.
Fan LED	**Solid green**. The fans are functioning normally. **Solid yellow**. One or more fans failed. **Off.** Power is not supplied to the switch. The fans are off.
Stack Master LED	**Solid green**. The switch is functioning as a master in a stack. **Off**. The switch is not a member of a stack or is functioning as a slave in a stack.
Stack ID LED	The Stack LED contains segments that can indicate the stack unit number of the switch: **Solid green indicating a number**. The switch is a member of a stack. The LED displays the stack unit number. **Solid green indicating E**. The switch functions in ECO mode with all port LEDs turned off. **Off**. The switch is not a member of a stack.
OOB Ethernet port LEDs (two LEDs per port)	Left side speed LED: **Off**. No link is established on the port. **Solid green**. The port established a 1000 Mbps link. **Solid yellow**. The port established a 10 or 100 Mbps link.
	Right side activity and link LED: **Off**. No link is established on the port. **Solid green**. The port established a link. **Blinking green**. The port is transmitting or receiving packets.
10GBASE-T RJ45 port LED (one LED per port)	**Off**. No link is established on the copper port. **Solid green**. The copper port established a 10 Gbps link. **Blinking green**. The copper port is transmitting or receiving packets at 10 Gbps. **Solid yellow**. The copper port established a 1 Gbps or 100 Mbps link. **Blinking yellow**. The copper port is transmitting or receiving packets at 1 Gbps or 100 Mbps. **Note**: On model M4300-24XF, the 10GBASE-T RJ45 combo ports are on the back panel.
10GBASE-X SFP+ port LED (one LED per port)	**Off**. No SFP module link is established on the fiber port. **Solid green**. The fiber port established a 10 Gbps link. **Blinking green**. The fiber port is transmitting or receiving packets at 10 Gbps. **Solid yellow**. The fiber port established a 1 Gbps link. **Blinking yellow**. The fiber port is transmitting or receiving packets at 1 Gbps. **Note**: On model M4300-24X, the 10GBASE-X SFP+ combo ports are on the back panel.

Switch hardware interfaces

This section describes the hardware interfaces of the M4300 series switch models.

Cables and speed

The following table describes the network cables that you can use for the switch connections and the speeds that these cables can support, up to 100 meters (328 feet).

Table 4. Cables and speeds

Speed	Cable Type
100 Mbps	Category 5 (Cat 5) or higher rated **Note**: In most business networks, Cat 5e cables superseded Cat 5 cables.
1 Gbps, 2.5 Gbps, or 5 Gbps	Category 5e (Cat 5e) or higher rated
10 Gbps	Category 6a (Cat 6a) or higher rated

Note: For speeds of 10 Gbps, if the cable length is shorter than 180 feet (55 meters), you can use a Category 6 (Cat 6) cable.

RJ-45 ports, including 10GBASE-T RJ-45 ports

All copper RJ-45 ports support autosensing. When you insert a cable into an RJ-45 port, the switch automatically ascertains the maximum speed (10 Mbps, 100 Mbps, 1 Gbps, or 10 Gbps) and duplex mode (half-duplex or full-duplex) of the attached device. All ports support a Category 5 (Cat 5) unshielded twisted-pair (UTP) cable or higher-rated Ethernet cable terminated with an 8-pin RJ-45 connector.

Note: Use a Category 5e (Cat 5e) cable for a copper port at 1 Gbps and a Cat 5e or higher-rated (Cat 6, Cat 6a, or Cat 7) cable for a copper port at 10 Gbps.

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

When you insert a cable into the switch's RJ-45 port, the switch 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 uplink connection (such as when you are connecting the port to a router, switch, or hub).

- 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.

For the following models, some limitations exist for half-duplex mode:

- Model M4300-28G supports half-duplex mode on ports 1 to 16 only.

- Model M4300-28G-POE+ supports half-duplex mode on ports 1 to 16 only.

- Model M4300-52G supports half-duplex mode on ports 1 to 16 and ports 25 to 40 only.

- M4300-52G-POE+ supports half-duplex mode on ports 1 to 16 and ports 25 to 40 only.

10GBASE-X, 1000BASE-X, and 1000BASE-T transceiver modules and cables for SFP+ ports

To enable high-speed fiber and Gigabit Ethernet, short- and long-distance connections on the switch, SFP+ ports can accommodate standard 10G SFP+ and 1G SFP transceiver modules and direct attach cables (DACs), all of which are sold separately.

The switch supports the following NETGEAR SFP and SFP+ transceiver modules and cables:

- Short-reach fiber transceiver modules:

  - **AGM731F**. SFP transceiver 1000BASE-SX, SFP multimode LC GBIC

  - **AXM761**. SFP+ transceiver 10GBASE-SR, SFP+ multimode LC GBIC

- Long-reach fiber transceiver modules:

  - **AGM732F**. SFP transceiver 1000BASE-LX, SFP single mode LC GBIC

  - **AXM762**. SFP+ transceiver 10GBASE-LR, SFP+ single mode LC GBIC

  - **AXM764**. SFP+ transceiver 10GBASE-LR Lite, SFP+ single mode LC GBIC

- Gigabit transceiver modules:

  - **AGM734**. SFP transceiver 1000BASE-T, SFP copper RJ-45 GBIC

  - **AXM765**. SFP+ transceiver 10GBASE-T, SFP+ copper RJ-45 GBIC
    Note: The AXM765 module is supported on switch models M4300-24XF and M4300-48XF only.

- Direct attach cables:

  - **AXC761**. SFP+ 1m direct attach cable

  - **AXC763**. SFP+ 3m direct attach cable

  - **AXC765**. SFP+ 5m direct attach cable

  - **AXC767**. SFP+ 7m direct attach cable

  - **AXC7610**. SFP+ 10m direct attach cable

  - **AXC7615**. SFP+ 15m direct attach cable

  - **AXC7620**. SFP+ 20m direct attach cable

For more information about NETGEAR SFP and SFP+ transceiver modules and cables, visit netgear.com/business/products/switches/modules-accessories. If purchased, transceiver modules and cables are shipped separately form the switch.

USB port

The switch provides one USB 2.0 port that lets you upgrade firmware from a disk, back up the configuration to a storage device, and allow for the collection of a memory dump for debugging purposes.

A device that you attach to the USB port must comply with the following requirements:

- The USB device must support USB 2.0.

- The USB device must support the FAT32 or VFAT file type. The NTFS file type is not supported.

Because of hardware limitations, the write speed to and read speed from a USB device is about 1 Mbps.

Note: In a stack, only the switch that functions as the master can detect and manage an attached USB device.

Out-of-band 1G Ethernet port

The switch provides one out-of-band (OOB) 1000BASE-T RJ-45 Ethernet port that lets you access the switch over its local browser interface or over a Telnet or SSH session.

Mini USB console port

The switch provides one mini USB console port for console access only. The product package includes one USB console cable with one mini B connector and one type A connector. You can use this cable to connect the mini USB console port on the switch to a USB port on a VT100-compatible terminal or a Windows-based computer that runs VT100 terminal emulation software.

Note: For you to be able to use the mini USB port and access the switch from a Windows-based computer that runs VT100 terminal emulation software, you must install the USB driver on the computer. To download the VT100 terminal emulation software and Windows USB driver, visit https://www.netgear.com/support/, enter your model number in the search box, and click the **Downloads** button on the product page.

RJ-45 RS232 console port

The switch provides one RJ-45 RS232 console port for console access only. This serial port is configured for 115200 baud, eight data bits, one stop bit, and no parity.

The switch package includes one console cable with one DB9 connector and one RJ-45 connector. You can use this cable to connect the RJ-45 RS232 console port on the switch to a DB9 port on a VT100-compatible terminal or a Windows-based computer that runs VT100 terminal emulation software.

RPS interface

The redundant power supply (RPS) interface on model M4300-52G-POE+ provides a receptacle for an RPS cable such as the NETGEAR DC Connection Cable Model RPSC5412.

Reset button

The switch provides a **Reset** button on the front panel so that you can reboot the switch. Save the configuration before you press the **Reset** button.

To reboot the switch:

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

2. Press the recessed **Reset** button for about three seconds.

The switch reboots.

Power supply units

The following table describes the power supply units (PSUs) and options.

For models M4300-16X, M4300-28G-POE+, and M4300-52G-POE+, the PSU that is installed depends on the product ordered. For models that can support two PSUs, you can order a second PSU as an option.

Table 5. Supported PSUs

Switch Model	Possible PSU Configurations	Power Redundancy	RPS Support
M4300-16X	1x APS299W 1x APS600W		
M4300-8X8F	1x APS250W		
M4300-12X12F	1x APS250W		
M4300-24X24F	1x APS250W 2x APS250W		
M4300-28G	1x APS150W 2x APS150W		
M4300-52G	1x APS150W 2x APS150W		
M4300-28G-POE+	1x APS550W 2x APS550W 1x APS1000W 2x APS1000W 1x APS550W + 1x APS1000W (see Note)	N+1 redundancy is supported for this model	
M4300-52G-POE+	1x APS550W 2x APS550W 1x APS1000W 2x APS1000W 1x APS550W + 1x APS1000W (see Note)	N+1 redundancy is supported for this model	An RPS is supported for this model
M4300-24X	1xAPS250W		
M4300-24XF	1xAPS250W		

Table 5. Supported PSUs (Continued)

Switch Model	Possible PSU Configurations	Power Redundancy	RPS Support
M4300-48X	1x APS250W 2x APS250W		
M4300-48XF	1x APS250W 2x APS250W		

Note: For models M4300-28G-POE+ and M4300-52G-POE+, the switch automatically selects the APS1000W PSU to provide the power and turns off the APS550W PSU. If the APS1000W PSU is removed or fails, the switch uses the APS550W PSU to provide the power and might reboot if the consumed power is more than the power that the APS550W PSU can provide.

PoE power budgets

The PoE power budgets for models M430-16X, M4300-28G-POE+, and M4300-52G-POE+ differ and depend on the installed PSU or PSUs. The following tables describe the PoE power budgets.

Table 6. PSU and PoE budgets for model M4300-16X

PSU (Single PSU only)	PSU Configuration	M4300-16X PoE Power Budget
APS299W	110 VAC or 220 VAC input	199W
APS600W	110 VAC or 220 VAC input	500W

Table 7. PSUs and PoE budgets models M4300-28G-POE+ and M4300-52G-POE+

PSU (Single or dual PSU)	PSU Configuration	M4300-28G-POE+ PoE Power Budget	M4300-52G-POE+ PoE Power Budget
Single APS550W	110 VAC or 220 VAC input	480W	480W
Dual APS550W	1+1 RPS mode, 110 VAC or 220 VAC input	480W	480W
	EPS mode, 110 VAC or 220 VAC input	720W	720W
Single APS1000W	110 VAC input	630W	591W
	220 VAC input	720W	860W

Table 7. PSUs and PoE budgets models M4300-28G-POE+ and M4300-52G-POE+ (Continued)

PSU (Single or dual PSU)	PSU Configuration	M4300-28G-POE+ PoE Power Budget	M4300-52G-POE+ PoE Power Budget
Dual APS1000W	1+1 RPS mode, 110 VAC input	630W	591W
	1+1 RPS mode, 220 VAC input	720W	860W
	EPS mode, 110 VAC input	720W	1,010W
	EPS mode, 220 VAC input	720W	1,440W

3

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

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

Table 8. Site requirements

Characteristics	Requirements
Mounting	**Desktop installations**. Provide a flat table or shelf surface. **Rack-mount installations**. Use a 19-inch (48.3-centimeter) EIA standard equipment rack that is grounded and physically secure. You also need the rack-mount kit that is supplied with the switch.
Access	Locate the switch in a position that allows you to access the front panel RJ-45 ports, view the front panel LEDs, and access the power connector on the back panel.
Power source	Use the AC power cord that is supplied with the switch. Make sure that the AC outlet 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 0°C and 50°C (32°F and 122°F). 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 90%, 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 system. To prevent static damage, discharge static electricity from your body before you touch any of the electronic components, such as the microprocessor. 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 you unpack a static-sensitive component from its shipping carton, leave it in the antistatic package until you are ready to install it.
  Just before you unwrap the antistatic package, discharge static electricity from your body.

- Before you move 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 half-width model M4300-12X12F. The package contents for the other half-width models (M4300-16X, M4300-8X8F, M4300-24X, and M4300-24XF) are the same.

Figure 23. Switch package contents, half-width models

The following figure shows full-width model M4300-52G. The package contents for the other full-width models (M4300-24X24F, M4300-28G, M4300-28G-POE+, M4300-52G-POE+, M4300-48X, and M4300-48XF) are the same.
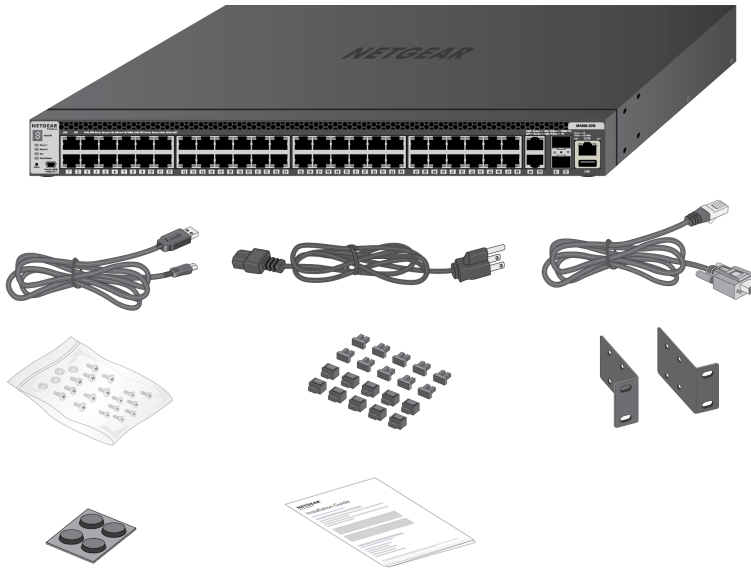
Figure 24. Switch package contents, full-width models

Check the contents of the boxes to make sure that all items are present before installing the switch. If any item is missing or damaged, contact your local NETGEAR reseller for replacement.

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 of the correct model.

   - Power cord.

   - Console cable with one DB9 connector and one RJ-45 connector.

   - USB console cable with one mini B connector and one type A connector.

   - Rack-mounting kit:

     - The half-width models include a long bracket, regular (short) bracket, and screws. The kit also includes two inside and two outside middle mounts, which allow you to install two half-width switches in a single rack space.

     - The full-width models include two regular (short) brackets and screws.

   - Rubber footpads for tabletop installation.

   - Quick installation guide.

For some models, depending on the product ordered, the package might include a power supply unit (PSU).

Step 4: Install the switch

You can install the switch on a flat surface or mount it in a standard 19-inch (48.26-centimeter) network equipment rack. You can install a single half-width switch (models M4300-16X, M4300-8X8F, M4300-12X12F, or M4300-24X) in a single rack space. You can also install two half-width switches (models M4300-16X, M4300-8X8F, M4300-12X12F, M4300-24X, or a combination of models) in a single rack space, that is, you can install these half-width switches next to each other.

Install a full-width switch in a rack

To install the switch in a rack, you need the 19-inch rack-mount kit supplied with the switch.

To install a full-width switch in a rack:

1. Attach the supplied mounting brackets to the side of the switch.

2. Insert the screws provided in the rack-mount kit through each bracket and into the bracket mounting holes in the switch.

3. Tighten the screws with a No. 1 Phillips screwdriver to secure each bracket.

4. Align the mounting holes in the brackets with the holes in the rack, and insert two pan-head screws with nylon washers through each bracket and into the rack.

5. Tighten the screws with a No. 2 Phillips screwdriver to secure mounting brackets to the rack.

The following figure shows model M4300-52G-POE+. However, you install the other full-width models in the same manner.
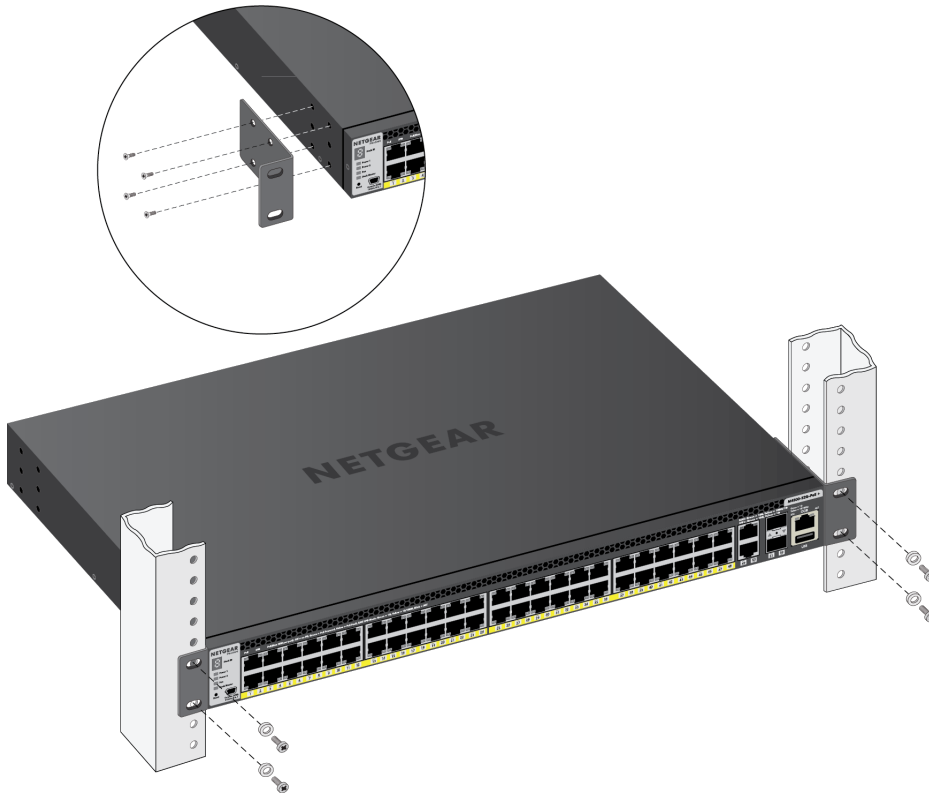
Install a single half-width switch in a rack

To install a single half-width switch in single rack space, you need the 19-inch rack-mount kit supplied with the switch. The figures in the following procedure shows model M4300-24X. However, you install the other half-width models in the same manner.

To install a single half-width switch in a single rack space:

1. Attach the supplied brackets to the switch:

   a. Attach the supplied regular mounting bracket to the side of the switch that you want to attach to the rack.

   b. Attach the supplied long mounting bracket to the other side of the switch.
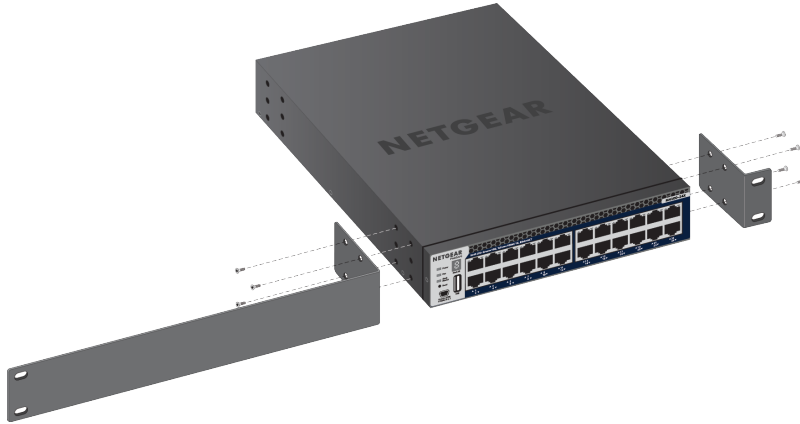
2. Insert the screws provided in the rack-mount kit through each bracket and into the bracket mounting holes in the switch.

3. Tighten the screws with a No. 1 Phillips screwdriver to secure each bracket.

4. Align the mounting holes in the brackets with the holes in the rack, and insert two pan-head screws with nylon washers through each bracket and into the rack.

5. Tighten the screws with a No. 2 Phillips screwdriver to secure mounting brackets to the rack.

Install two half-width switches in a rack

To install two half-width switches in a single rack space, you need the 19-inch rack-mount kit, which includes inside and outside middle mounts, supplied with the switch.

The figures in the following procedure show two M4300-24X switches. However, you can install any two half-width models in the same manner. For example, you can also install two M4300-8X8F switches or one M4300-8X8F switch and one M4300-12X12F switch in a single rack space.

To install two single half-width switches in a single rack space:

1. On the switch that will be on the left side of the rack space, do the following:

    a. On the right side of the switch, attach the inside middle mounts by inserting the screws provided in the rack-mount kit through the mounts and into the mounting holes in the switch. Position the male mounts on the same side of the switch and the female mounts of the switch on the other side.

    b. Tighten the screws with a No. 2 Phillips screwdriver to secure each middle mount to the right side of the switch.
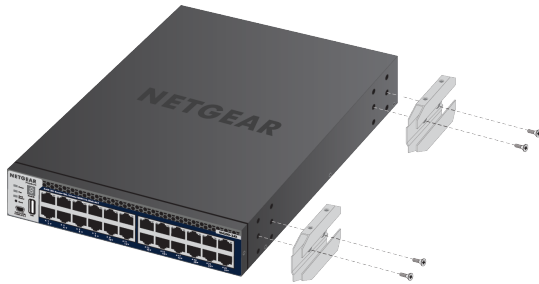

2. On the switch that will be on the right side of the rack space, do the following:

    a. On the left side of the switch, attach the outside middle mounts by inserting the screws provided in the rack-mount kit through the mount and into the mounting holes in the switch. For this switch too, position the male mounts on the same side of the switch and the female mounts of the switch on the other side.

    b. Tighten the screws with a No. 2 Phillips screwdriver to secure each middle mount to the right side of the switch.
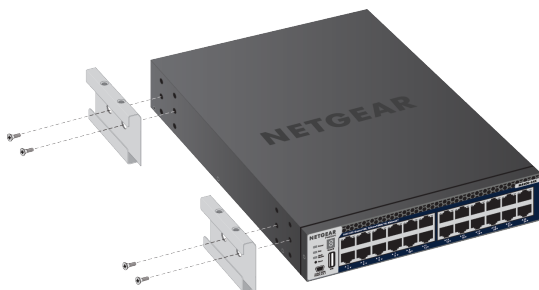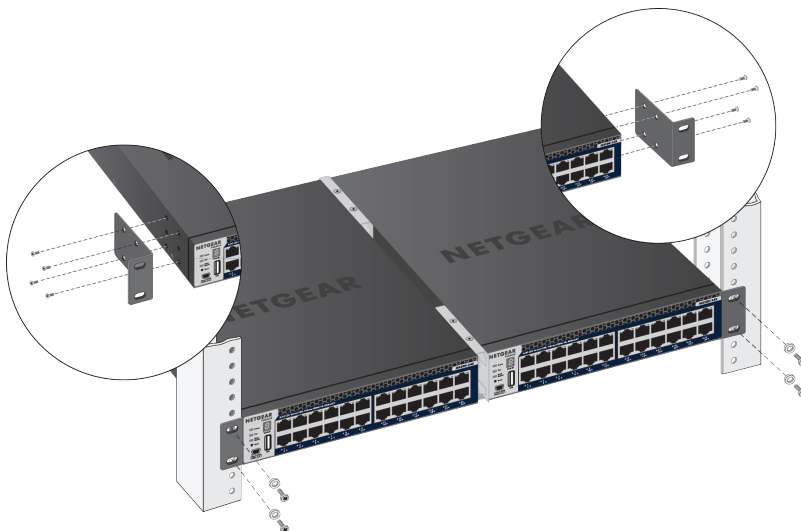
3. Slide the inside middle mounts on the left switch into the outside middle mounts on the right switch.
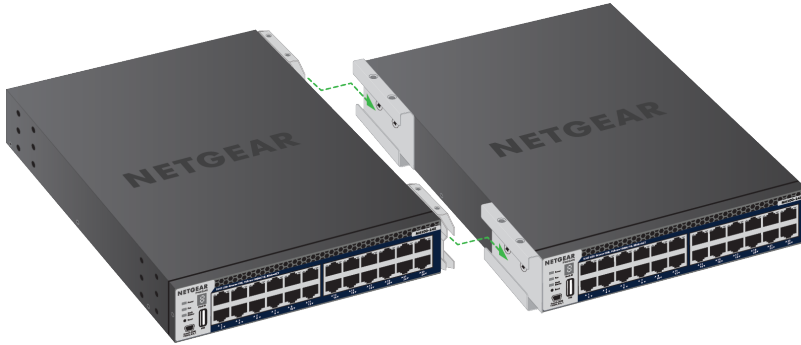
4. Insert the screws provided in the rack-mount kit through the holes in each middle mount.
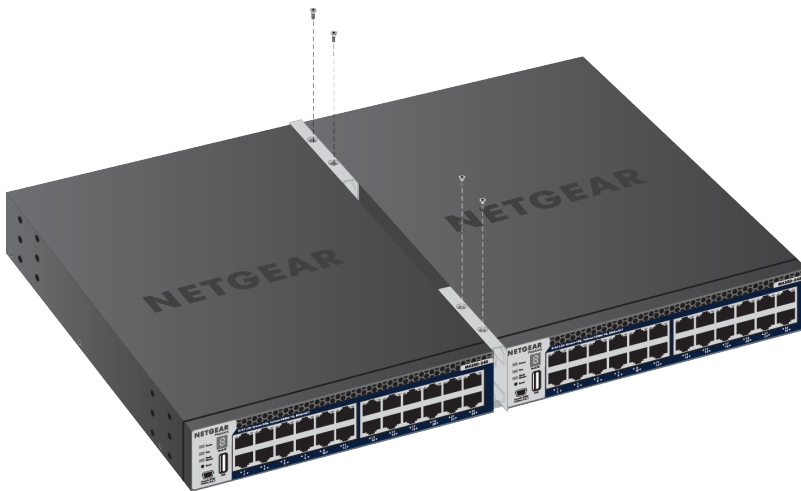
5. Tighten the screws with a No. 1 Phillips screwdriver to secure each middle mount.

6. Attach the supplied mounting brackets to the left side of the left switch and to the right side of the right switch.

7. Insert the screws provided in the rack-mount kit through each bracket and into the bracket mounting holes in the switches.

8. Tighten the screws with a No. 1 Phillips screwdriver to secure each bracket.

9. Align the mounting holes in the regular brackets (on the left of the left switch and on the right of the right switch) with the holes in the rack, and insert two pan-head screws with nylon washers through each bracket and into the rack.

10. Tighten the screws with a No. 2 Phillips screwdriver to secure mounting brackets to the rack.

Install the switch on a flat surface

The switch ships with four self-adhesive rubber footpads. The rubber footpads cushion the switch against shock and vibrations. They also provide ventilation space between stacked switches.

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.

Optional Step 5: Install SFP transceiver modules

The following optional procedure describes how to install an optional SFP transceiver module in one of the SFP+ ports. For information about supported modules, see 10GBASE-X, 1000BASE-X, and 1000BASE-T transceiver modules and cables for SFP+ ports on page 41.

Note: Contact your NETGEAR sales office to purchase these modules. If you do not want to install an SFP module, skip this procedure.
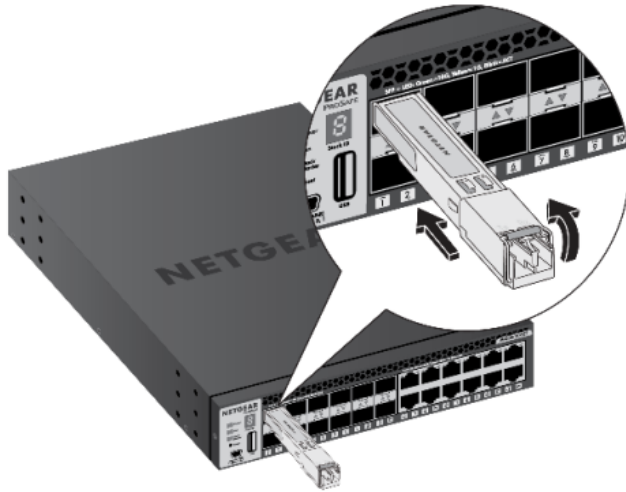
Install an SFP transceiver module in a full 10G model

This procedure describes how to install an SFP transceiver module in a full 10G model. This procedure is for model M4300-16X, M4300-8X8F, model M4300-12X12F, and model M4300-24X24F.

To install an SFP transceiver module in a full 10G model:

1. Insert the transceiver into the SFP+ port.

2. Press firmly on the flange of the module to seat it securely into the connector.

   The following figure shows model M4300-12X12F. However, you install SFP transceiver modules in the SFP+ ports of the other 10G models in the same manner.


Install an SFP transceiver module in an uplink or combo port

This procedure describes how to install an SFP transceiver module in a 1G model with 10G uplinks or a 10G model with RJ45/SFP+ combo ports. That is, this procedure is for models M4300-24X, M4300-24XF, M4300-28G, M4300-28G-POE+, M4300-48X, M4300-48FX, M4300-52G, and M4300-52G-POE+. For models M4300-24X and M4300-24XF, the SFP+ combo ports are on the back panel.

To install an SFP transceiver module in a 1G models with 10G uplinks or a 10G model with RJ45/SFP+ combo ports:

1. Insert the transceiver into the SFP+ port.

2. Press firmly on the flange of the module to seat it securely into the connector.

The following figure shows model M4300-48X. However, you install SFP transceiver modules in the SFP+ ports of the 1G models with 10G uplinks or the 10G models with RJ45/SFP+ combo ports in the same manner.
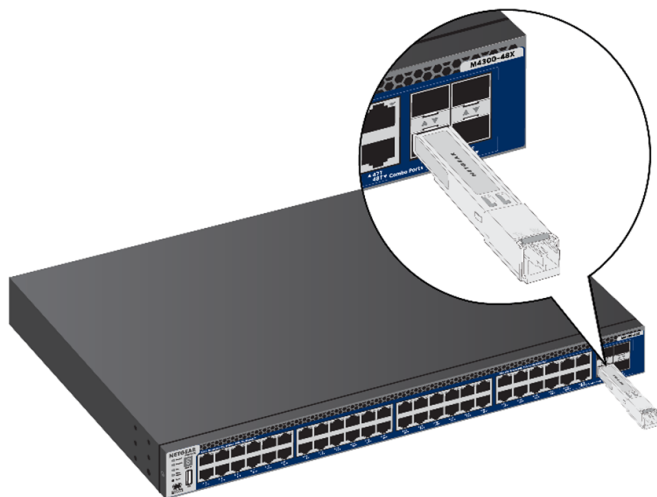
Optional Step 6: Install a power supply unit

The supported power supply unit (PSU) or PSUs depend on the switch model. For more information, see Power supply units on page 44.

The PSU for model M4300-16X might be in the product package, in which case you must install it in the power module bay.

The following full-width models provide a second power module bay in which you can install an optional second PSU:

- M4300-24X24F, M4300-48X, and M4300-48XF

- M4300-28G and M4300-28G-POE+

- M4300-52G and M4300-52G-POE+

For these models, the PSU that is shipped with the product is installed in the power supply bay on the left, which is marked PSU1. You can install the second PSU in the power supply bay on the right, which is marked PSU2. The switch can continue to operate while you install a second PSU.

To install a PSU:

1. Pull out the cover plate from the power module bay. For models with two power modules bays, the PSU that is shipped with the product is installed in the left power supply bay. The second power supply bay is the one on the right.

---

2. Insert the PSU into the power module bay, and gently push the PSU into the bay until the latch locks.

    WARNING: When inserting the PSU, do not use unnecessary force. Doing so can damage the connectors on the rear of the PSU and on the midplane.

    The following figure shows model M4300-24X24F. However, you install a second PSU in models M4300-28G, M4300-28G-POE+, M4300-48X, M4300-48XF, M4300-52G, and M4300-52G-POE+ in the same manner.

3. Connect the end of the power cord to the power receptacle on the PSU.

4. Plug the AC power cord into a power source such as a wall socket or power strip.

    When you install a second PSU and apply power, the Power 2 LED on the switch front panel lights. If the Power 2 LED does not light, check that the power cord is plugged in correctly and that the power source is good.

Optional Step 7: Connect a redundant power supply to model M4300-52G-POE+

This procedure is optional for model M4300-52G-POE+ only, which can support an optional RPS5412 external redundant power supply (RPS). That is, model M4300-52G-POE+ can support two internal power supply units (PSUs) and an external RPS.

To install the RPS and apply power:

1. Power off the switch.

2. Loosen the screws of the RPS cover plate to remove the cover plate and expose the RPS interface.

Number	Description
1	RJ-45 RS232 console port
2	RPS interface
3	PSU with AC connector
4	Bay for PSU2

3. Connect the RPS cable to the RPS receptacle on the switch.

4. Connect to other end of the RPS cable to the RPS.

5. Plug the AC power cord of the RPS into a power source such as a wall socket or power strip.

6. Power on the switch.

Step 8: Check the installation

Before you apply power to the switch, perform the steps that are described in this section.

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 9: Apply AC power and check the LEDs

The switch does not provide an on/off switch. The power cord connection controls the power. Before connecting the power cord, select an AC outlet that is not controlled by a wall switch, which can turn off power to the switch.

To apply AC power and check the LEDs:

1. Connect the end of the power cord to the power receptacle on the power supply unit (PSU) on back of the switch.

   If you installed two PSUs, do this for both PSUs.

2. Check to see that the system LEDs on the front panel function as expected.

   For more information about the LEDs, see the following sections:

   - LEDs, M4300 series full 10G models on page 21

   - LEDs, M4300 series 1G models with 10G uplinks on page 29

   - LEDs, M4300X series full 10G models with RJ45/SFP+ combo ports on page 38

   When you apply power, the Power LED on the switch front panel lights. If the Power LED does not light, check that the power cord is plugged in correctly and that the power source is good.

   If you installed two PSUs, the Power 1 LED on the front panel is associated with the PSU 1 bay and the Power 2 LED is associated with the PSU 2 bay. If a Power LED does not light, check to see that the power cord is plugged in correctly and that the power source is good.

Optional Step 10: Connect a console to the switch

This procedure is optional. You can manage the switch through its local browser interface or through a console that is attached to the switch. To be able to use a console, you need the following items:

- A computer with a Windows, Mac, or Linux operating system, a UNIX workstation, or a VT100/ANSI terminal.

- Depending on the connector type at your computer or terminal, use one of the following cables, both of which are included in the product package:

  - Mini USB cable for use with the mini USB console port

  - Ethernet cable for use with the RJ-45 RS232 console port

To connect a console to the switch:

1. Connect either the mini USB cable or the RJ-45 RS232 cable to the appropriate port on the switch.

   - On all models, the mini USB console port is located on the front panel.

   - On the half-width models (M4300-16X, M4300-8X8F, M4300-12X12F, M4300-24X, and M4300-24XF) the RJ-45 RS232 console port is located on the front panel.

   - On the full-width models (M4300-24X24F, M4300-28G, M4300-28G-POE+, M4300-48X, M4300-48XF, M4300-52G, and M4300-52G-POE+), the RJ-45 RS232 console port is located on the back panel.

2. Connect the other end of the cable to your computer, workstation, or terminal.

   - On a Windows-based computer, you can use HyperTerminal or install another terminal emulator such as Tera Term.

   - On Mac operating system, you can use ZTerm.

   - On a UNIX workstation, you can use a terminal emulator such as TIP.

3. If you attach a computer or workstation, start a terminal emulation program.

4. If you attach a computer or workstation, configure the terminal emulation program to use the following settings:

   - **Baud rate**. 115,200 bps
   - **Data bits**. 8

- **Parity**. None
- **Stop bit**. 1
- **Flow control**. None

After you connect a console to the switch, you must configure the switch. For information about configuring the switch, see the CLI manual, which you can download by visiting netgear.com/support/download/.

For information about configuring the switch through its local browser interface, see the software administration guide and the user manual, which you can download by visiting netgear.com/support/download/.

4

Maintenance and Troubleshooting

This chapter provides information about maintaining and troubleshooting the switch. The chapter includes the following sections:

- Replace a power supply unit
- Replace a half-width switch in a rack
- Troubleshooting chart
- Additional troubleshooting suggestions

Replace a power supply unit

You can replace a power supply unit (PSU). If your switch includes a second power module bay in which a PSU is installed, you can replace the PSU while the switch remains powered on and functioning. The figures in the following procedure show models M4300-24X24F and M4300-24X.

To remove one PSU and reinstall another PSU in the same power module bay:

1. If your switch functions with a single PSU only, disconnect the power cord from the PSU and let the switch power down.

   If your switch functions with two PSUs, you do not need to power down the switch and can perform a hot swap.

2. Remove the PSU from the power module bay by moving the release latch to the left and pulling the extraction handle.

3. Insert the other PSU into the power module bay, and gently push the PSU into the bay until the latch locks.

WARNING: When inserting the PSU, do not use unnecessary force. Doing so can damage the connectors on the rear of the PSU and on the midplane.

4. Plug the AC power cord into a power source such as a wall socket or power strip.

    When you apply power, the Power LED on the switch front panel lights. If your switch supports two PSUs, either the Power 1 LED or Power 2 LED on the switch front panel lights, depending on which PSU you installed. If the Power LED does not light, make sure that the power cord is plugged in correctly and that the power source is good.

Replace a half-width switch in a rack

This step describes how to replace a half-width switch that is mounted next to a second half-width switch on a rack.

You can skip this procedure if the middle mounts are already secured in the rack with screws.

Note: The switch that shares the same rack as the switch being replaced can remain operational during this procedure.

WARNING: Make sure to add a support beneath the half-width switches when removing or installing a half-width switch. The support keeps the switches level while the mounting screws are loosened to avoid damage to both the switch and the middle mount screws.

WARNING: Do not apply unnecessary force on the middle of the two half-width switches when removing or installing a half-width switch to avoid damage to the switch and deformation of the middle mount brackets.

To replace a half-width switch:

1. Remove power to the switch you want to replace.

2. Insert an item under the two half-width switches that can support the switches and keep them level during removal and installation.

3. Loosen the screws with a No. 2 Phillips screwdriver to disconnect the mounting bracket from the rack of the switch you want to replace.

4. Loosen the screws with a No. 1 Phillips screwdriver to disconnect the middle mounts from the half-width switches.

5. Carefully pull to remove the switch you want to replace from the rack.

6. Attach the mounts to the replacement switch.

    a. If you are replacing the half-width switch on the right, attach the inside middle mounts by inserting the screws provided in the rack-mount kit with a No. 2 Philips screwdriver.

    b. If you are replacing the half-width switch on the left, attach the outside middle mounts by inserting the screws provided in the rack-mount kit with a No. 1 Philips screwdriver.

7. Gently push the new half-width switch into the rack until the holes in each middle mount are aligned.

8. Attach the supplied mounting brackets to the left side of the left switch and to the right side of the right switch (as required).

9. Insert the screws provided in the rack-mount kit through each bracket and into the bracket mounting holes in the switches.

10. Tighten the screws with a No. 1 Phillips screwdriver to secure each bracket.

11. Align the mounting holes in the regular brackets (on the left of the left switch and on the right of the right switch) with the holes in the rack, and insert two pan-head screws with nylon washers through each bracket and into the rack.

12. Tighten the screws with a No. 2 Phillips screwdriver to secure mounting brackets to the rack.

13. Remove the item that was used to support the two half-width switches during removal and installation.

14. Verify the installation (see).

15. Restore power to the switch (see).

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 resetting it. To reset the switch, disconnect the AC power from the switch and then reconnect the AC power. If the problem continues, contact NETGEAR Technical Support. For more information, visit the support website at support.netgear.com.

- **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 Gigabit Ethernet ports negotiate speed, duplex mode, and flow control if the attached device supports autonegotiation.