



Fully Managed Stackable Switches

Hardware Installation Guide

Series M4300

May 2018
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350 E. Plumeria Drive
San Jose, CA 95134
USA

Fully Managed Stackable Switches Series M4300

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Revision History

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202-11606-05	May 2018	Added information about the location of the SFP+ ports on model M4300-24X. Updated the <i>SFP+ Ports for 10GBASE-X and 1000BASE-X Transceiver Modules and Cables</i> section. Updated the <i>RJ-45 Ports, Including 10GBASE-T RJ-45 Ports</i> section, including information about some limitations for half-duplex mode for certain models. Added the <i>Cables and Speed</i> section. Made multiple corrections and refinements.
202-11606-04	January 2017	Updated Figure 17. Added notes to the <i>Install Two Half-width Switches in a Rack</i> section. Updated figures with model M4300-24X. Added the <i>Optional Step 11: Replace a Half-width switch in a Rack</i> section.
202-11606-03	July 2016	Added switch model M4300-24X and M4300-48X.
202-11606-02	December 2015	Added information to the <i>Safety Instructions and Warnings</i> section.
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The NETGEAR Fully Managed Stackable Switch Series M4300 are high-performance, IEEE-compliant, stackable, access and aggregation layer switches.

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

This chapter serves as an introduction to the Fully Managed Stackable Switch Series M4300 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 support.netgear.com.

Note For technical specifications, see the data sheet at netgear.com/business/products/switches/managed. For switch documentation, see the resource CD in the product package or visit downloadcenter.netgear.com. In this manual, the Fully Managed Stackable Switch Series M4300 is referred to as the switch.

Overview

The Fully Managed Stackable Switch Series M4300 consists of 16-port, 24-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, all four 10G ports are stackable.

This installation guide is for the following Fully Managed Stackable Switch Series M4300 switch models:

- Full 10G models:
 - **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 copper PoE+ 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 copper PoE+ ports, two 10G copper ports, and two 10G fiber ports in a full-width chassis
- 10G models with 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
 - **M4300-48X**. Switch model with forty-four copper RJ45 ports and four 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

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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 [RJ-45 Ports, Including 10GBASE-T RJ-45 Ports](#) on page 30).

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
 - **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
 - **Full 10G models with combo ports.** Twenty or forty-four independent 10GBASE-T autosensing ports and four RJ45/SFP+ 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 two-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+)

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- 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 (PoE+) on model M4300-28G-POE+ and model 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.

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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 downloadcenter.netgear.com.

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 (0–50°C or 32–122°F) and humidity-controlled (90 percent maximum relative humidity, noncondensing) environment. Any device that is located outdoors and connected to this product must be properly grounded and surge protected. To the extent permissible by applicable law, failure to follow these guidelines can result in damage to your NETGEAR product, which might not be covered by NETGEAR's warranty.
- Observe and follow service markings:
 - Do not service any product except as explained in your system documentation.
 - 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:
 - The 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.

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- 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.
- 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, be sure that the voltage selection switch (if provided) on the power supply 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.
- Use only approved power cables. 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.
- 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 and 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 cables or plugs. Consult a licensed electrician or your power company for site modifications.
- Always follow your local and national wiring rules.

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:

- **M4300-8X8F.** 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 eight, twelve, or twenty-four independent 10GBASE-T autosensing ports and eight, twelve, or twenty-four independent 10GBASE-X SFP+ ports.

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

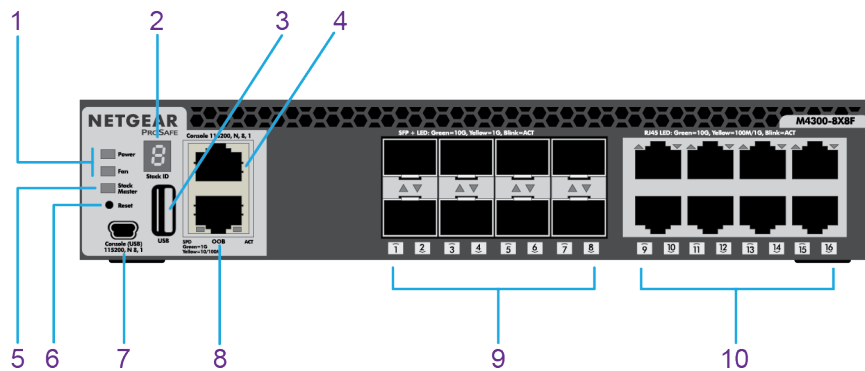


Figure 1. Front panel model M4300-8X8F

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
9	10GBASE-X SFP+ ports
10	10GBASE-T ports

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

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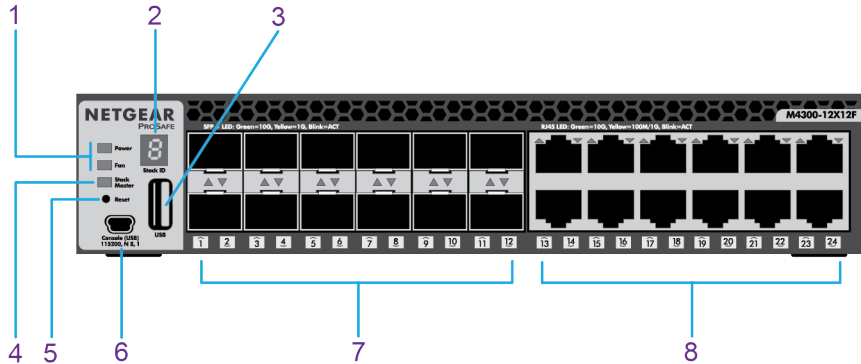


Figure 2. Front panel model M4300-12X12F

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
8	10GBASE-T ports

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

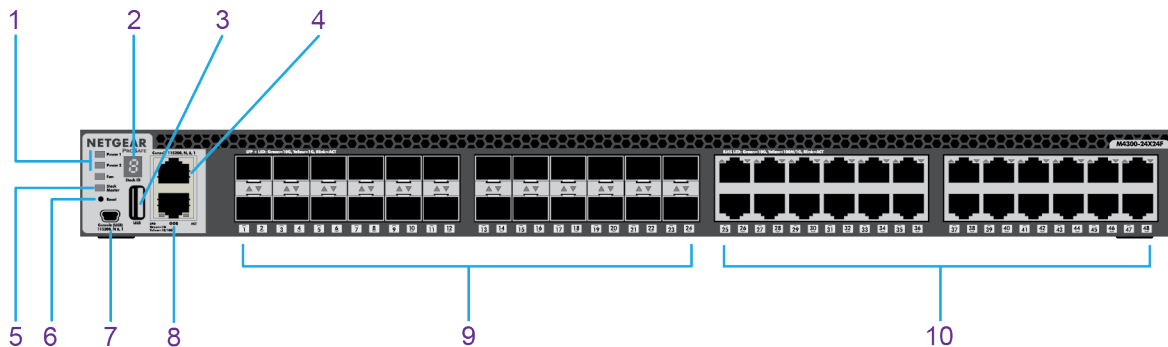


Figure 3. Front panel model M4300-24X24F

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED
3	USB port

Hardware Overview

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Number	Description
4	RJ-45 RS232 console port
5	Stack Master LED
6	Reset button
7	Mini USB console port
8	OOB port
9	10GBASE-X SFP+ ports
10	10GBASE-T ports

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 16) .

Note 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 (model M4300-8X8F and model M4300-24X24F)

Note On model M4300-12X12F, the RJ-45 RS232 (115200, N, 8, 1) console port is on the back panel.

- One out-of-band (OOB) 1G Ethernet port (model M4300-8X8F and model 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 16).

Note 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 16).
- Depending on the model, eight, twelve, 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 16).

Back Panel, M4300 Series Full 10G Models

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



Figure 4. 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

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



Figure 5. Back panel model M4300-12X12F

Number	Description
1	RJ-45 RS232 console port
2	OOB port
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

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



Figure 6. 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	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 that because model M4300-24X24F can support two PSUs, the front panel provides both a Power 1 LED and Power 2 LED.
Fan	Solid green. The fans are functioning normally. Blinking yellow. One or more fans failed. Off. Power is not supplied to the switch. The fans are off.
Stack Master	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.

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

LED	Designation
Stack ID	<p>The Stack LED contains segments that can indicate the stack unit number of the switch:</p> <p>Solid green indicating a number. The switch is a member of a stack. The LED displays the stack unit number.</p> <p>Solid green indicating E. The switch functions in ECO mode with all port LEDs turned off.</p> <p>Off. The switch is not a member of a stack.</p>
OOB Ethernet port (two LEDs per port)	<p>Left side speed LED:</p> <p>Solid green. A valid 1000 Mbps link is established on the port.</p> <p>Solid yellow. A valid 10 or 100 Mbps link is established on the port.</p> <p>Off. No link is established on the port.</p>
	<p>Right side activity and link LED:</p> <p>Solid green. A valid link is established on the port.</p> <p>Blinking green. The port is transmitting or receiving packets.</p> <p>Off. No link is established on the port.</p>
10GBASE-T RJ45 ports (one LED per port)	<p>Off. No link is established on the copper port.</p> <p>Solid green. The copper port established a valid 10 Gbps link.</p> <p>Blinking green. The copper port is transmitting or receiving packets at 10 Gbps.</p> <p>Solid yellow. The copper port established a valid 1 Gbps or 100 Mbps link.</p> <p>Blinking yellow. The copper port is transmitting or receiving packets at 1 Gbps or 100 Mbps.</p>
10GBASE-X SFP+ ports (one LED per port)	<p>Off. No SFP+ module link is established on the fiber port.</p> <p>Solid green. The fiber port established a valid 10 Gbps link.</p> <p>Blinking green. The fiber port is transmitting or receiving packets at 10 Gbps.</p> <p>Solid yellow. The fiber port established a valid 1 Gbps link.</p> <p>Blinking yellow. The fiber port is transmitting or receiving packets at 1 Gbps.</p>

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

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- **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, two dedicated 10GBASE-T ports, and two dedicated 10GBASE-X SFP+ ports.

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

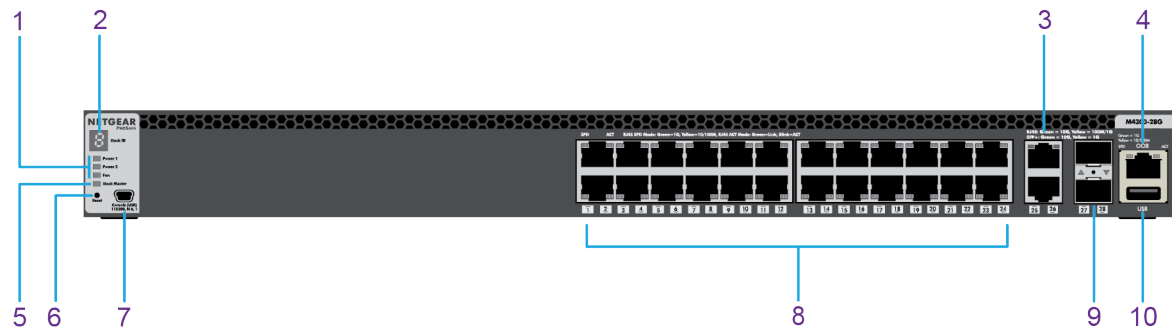


Figure 7. Front panel model M4300-28G

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

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

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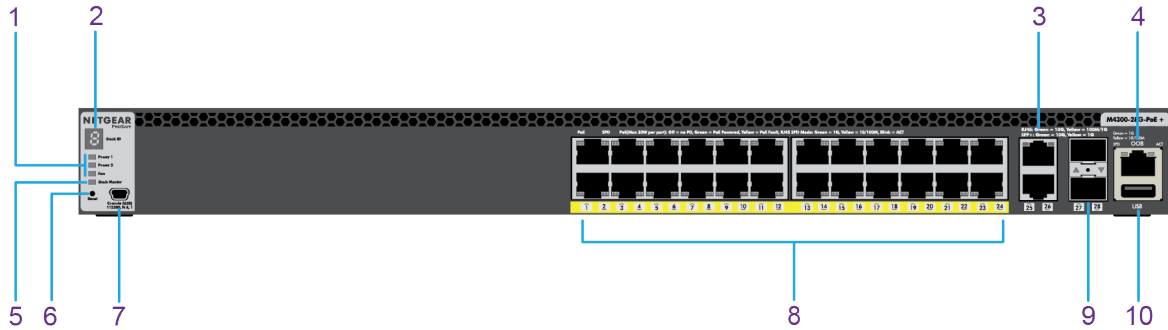


Figure 8. Front panel model M4300-28G-POE+

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

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

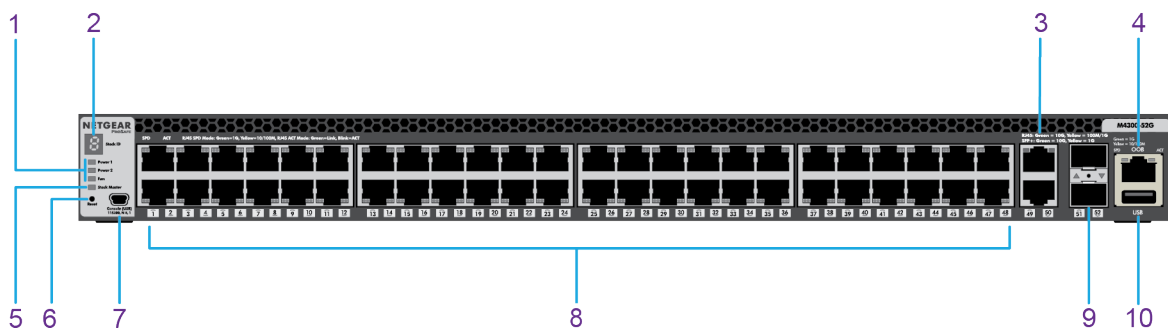


Figure 9. Front panel model M4300-52G

Number	Description
1	Power 1, Power 2, and Fan LEDs
2	Stack ID LED

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Number	Description
3	10GBASE-T ports
4	OOB port
5	Stack Master LED
6	Reset button
7	Mini USB console port
8	1000BASE-T PoE+ ports
9	10GBASE-X SFP+ ports
10	USB port

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

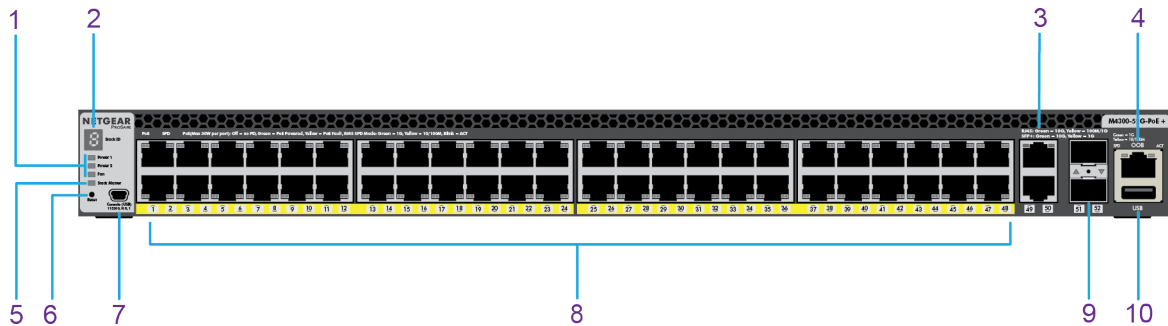


Figure 10. Front panel model M4300-52G-POE+

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

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

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- Stack ID, Power 1, Power 2, Fan, Stack Master, and system LEDs (see [LEDs, M4300 Series 1G Models With 10G Uplinks](#) on page 23)
- 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 23)
- 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 23):
 - 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 23):
 - 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 23)
- One USB 2.0 port

Back Panel, 4300 Series 1G Models With 10G Uplinks

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



Figure 11. Back panel model M4300-28G, model M4300-28G-POE+, and model M4300-52G

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

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From left to right, the back panel of model M4300-24X24F 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.



Figure 12. 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	<p>Stack ID. The Stack LED contains segments that can indicate the stack unit number of the switch:</p> <p>Solid green indicating a number. The switch is a member of a stack. The LED displays the stack unit number.</p> <p>Solid green indicating E. The switch functions in ECO mode with all port LEDs turned off.</p> <p>Off. The switch is not a member of a stack.</p>
Power 1 (for PSU 1) and Power 2 (for PSU 2)	<p>Solid green. The power module is present, is supplying power to the switch, and is functioning normally.</p> <p>Solid yellow. The switch is booting.</p> <p>Blinking yellow. The system boot-up failed or another failure occurred.</p> <p>Off. Power is not supplied to the switch. The fans are off.</p> <p>Solid green. The fans are functioning normally.</p> <p>Blinking yellow. One or more fans failed.</p> <p>Off. Power is not supplied to the switch.</p>
Fan	<p>Solid green. The fans are functioning normally.</p> <p>Blinking yellow. One or more fans failed.</p> <p>Off. Power is not supplied to the switch.</p>
Stack Master	<p>Solid green. The switch is functioning as a master in a stack.</p> <p>Off. The switch is not a member of a stack or is functioning as a slave in a stack.</p>
Non-PoE models 1000BASE-T RJ-45 ports (two LEDs per ports)	<p>Non-PoE models, left side speed LED:</p> <p>Solid green. A valid 1000 Mbps link is established on the port.</p> <p>Solid yellow. A valid 10 of 100 Mbps link is established on the port.</p> <p>Off. No link is established on the port.</p>
	<p>Non-PoE models, right side activity/link LED:</p> <p>Solid green. A valid link is established on the port.</p> <p>Blinking green. The port is transmitting or receiving packets.</p> <p>Off. No link is established on the port.</p>

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

LED	Description
PoE models 1000BASE-T RJ-45 ports (two LEDs per ports)	<p>PoE models, left side PoE status LED:</p> <p>Solid green. A PoE-powered device (PD) is connected and the port is supplying power successfully.</p> <p>Solid yellow. Indicates one of the following failures, which prevents the port from supplying power:</p> <ul style="list-style-type: none"> • 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. <p>Off. A PD is not connected to the port.</p> <hr/> <p>PoE models, right side speed, activity, and link LED:</p> <p>Solid green. A valid 1000 Mbps link is established on the port.</p> <p>Blinking green. The port is transmitting or receiving packets at 1000 Mbps.</p> <p>Solid yellow. A valid 10 or 100 Mbps link is established on the port.</p> <p>Blinking yellow. The port is transmitting or receiving packets at 10 or 100 Mbps.</p> <p>Off. No link is established on the port.</p>
10GBASE-T RJ-45 ports (one LED per port)	<p>Off. No link is established on the copper port.</p> <p>Solid green. The copper port established a valid 10 Gbps link.</p> <p>Blinking green. The copper port is transmitting or receiving packets at 10 Gbps.</p> <p>Solid yellow. The copper port established a valid 1 Gbps or 100 Mbps link.</p> <p>Blinking yellow. The copper port is transmitting or receiving packets at 1 Gbps or 100 Mbps.</p>
10GBASE-X SFP+ ports (one LED per port)	<p>Off. No SFP+ module link is established on the fiber port.</p> <p>Solid green. The fiber port established a valid 10 Gbps link.</p> <p>Blinking green. The fiber port is transmitting or receiving packets at 10 Gbps.</p> <p>Solid yellow. The fiber port established a valid 1 Gbps link.</p> <p>Blinking yellow. The fiber port is transmitting or receiving packets at 1 Gbps.</p>

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

LED	Description
OOB Ethernet port (two LEDs per port)	Left side speed LED: Solid green. A valid 1000 Mbps link is established on the port. Solid yellow. A valid 10 or 100 Mbps link is established on the port. Off. No link is established on the port.
	Right side activity and link LED: Solid green. A valid link is established on the port. 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
- **M4300-48X.** Switch model with forty-four copper RJ45 ports and four 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 provides twenty or forty-four independent 10GBASE-T autosensing ports and four 10G RJ45/SFP+ combo ports.

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

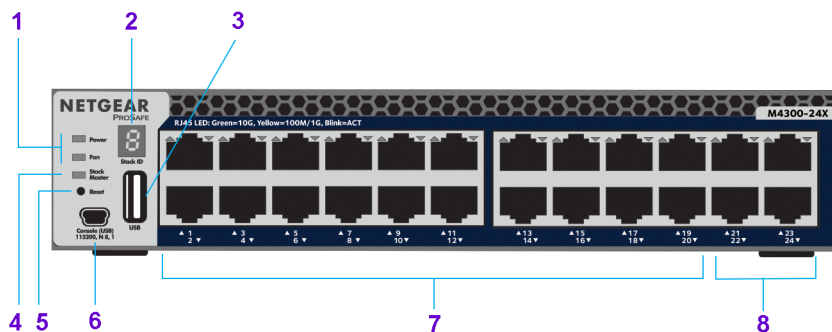


Figure 13. Front panel model M4300-24X

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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-T ports
8	10GBASE-T RJ-45 combo ports (the corresponding SFP+ combo ports are on the back panel)

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

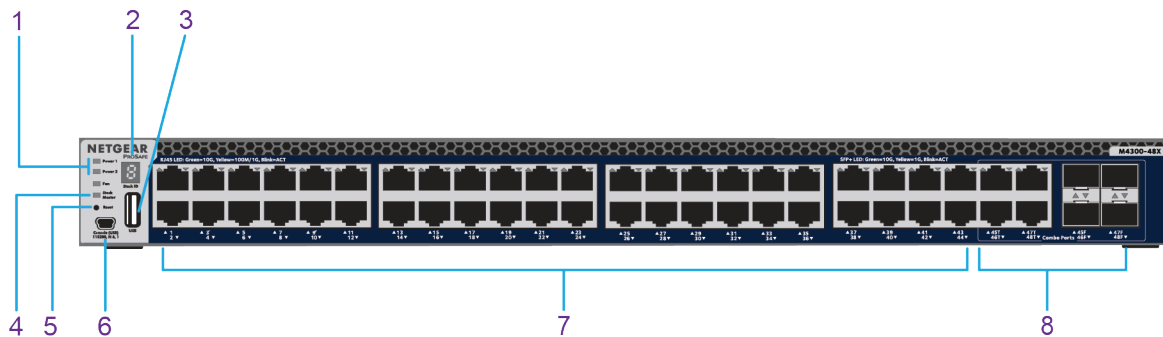


Figure 14. Front panel model M4300-48X

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-T ports
8	Combo ports

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, M4300X Series Full 10G Models With RJ45/SFP+ Combo Ports](#) on page 28)

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Note Because model M4300-48X 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 or forty-four ports, each with a combined speed and activity LED (see [LEDs, M4300X Series Full 10G Models With RJ45/SFP+ Combo Ports](#) on page 28)
- Four combo 10GBASE-T/10GBASE-X ports, each with a combined speed and activity LED (see [LEDs, M4300X Series Full 10G Models With RJ45/SFP+ Combo Ports](#) on page 28)

Back Panel, M4300 Series Full 10G Models with RJ45/SFP+ Combo Ports

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

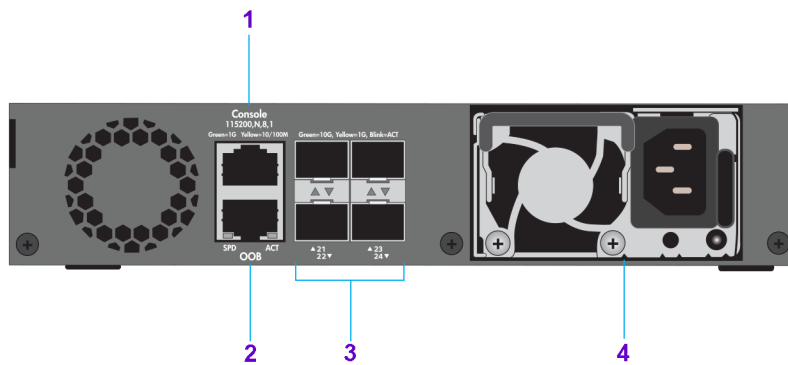


Figure 15. Back panel model M4300-24X

Number	Description
1	RJ-45 RS232 console port
2	OOB port
3	SFP+ combo ports (the corresponding 10GBASE-T RJ-45 combo ports are on the front panel)
4	PSU1 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 [LEDs, M4300X Series Full 10G Models With RJ45/SFP+ Combo Ports](#) on page 28)

Hardware Overview

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- Four combo SFP+ ports
- Modular bay in which an APS250W power supply unit (PSU) is installed

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

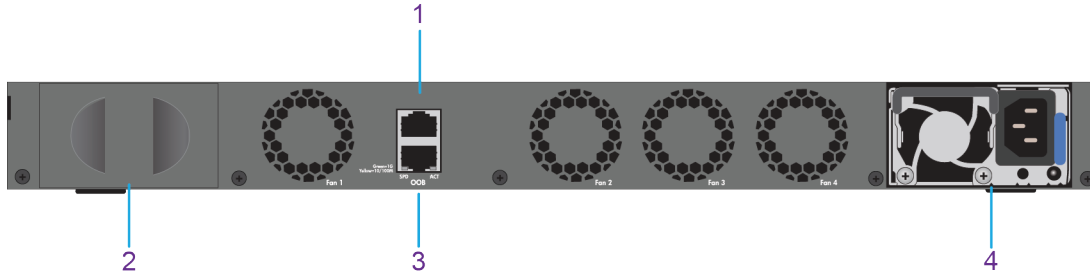


Figure 16. Back panel model M4300-48X

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

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

- Modular bay for a power supply unit (PSU)
- 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 28)
- Modular bay in which an APS550W power supply unit (PSU) or APS1000W PSU is installed, depending on the product ordered

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.

However, for model M4300-24X only, the LEDs for the SFP+ ports are on the back panel.

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Table 3. LEDs of the full 10G models with RJ45/SFP+ Combo Ports

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

Table 3. LEDs of the full 10G models with RJ45/SFP+ Combo Ports (Continued)

LED	Designation
10GBASE-T RJ45 ports (one LED per port)	<p>Off. No SFP+ module link is established on the copper port.</p> <p>Solid green. The copper port established a valid 10 Gbps link.</p> <p>Blinking green. The copper port is transmitting or receiving packets at 10 Gbps.</p> <p>Solid yellow. The copper port established a valid 1 Gbps or 100 Mbps link.</p> <p>Blinking yellow. The copper port is transmitting or receiving packets at 1 Gbps or 100 Mbps.</p>
10GBASE-X SFP+ ports (one LED per port)	<p>Off. No SFP+ module link is established on the fiber port.</p> <p>Solid green. The fiber port established a valid 10 Gbps link.</p> <p>Blinking green. The fiber port is transmitting or receiving packets at 10 Gbps.</p> <p>Solid yellow. The fiber port established a valid 1 Gbps link.</p> <p>Blinking yellow. The fiber port is transmitting or receiving packets at 1 Gbps.</p> <p>Note that on model M4300-24X, the SFP+ ports are on the back panel.</p>

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
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.

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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 and 1000BASE-X Transceiver Modules and Cables for SFP+ Ports

To enable high-speed fiber and long-distance connections on the switch, SFP+ fiber ports accommodate standard 10G and 1G SFP+ transceiver modules, which are sold separately.

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

- Short reach transceiver modules:
 - **AGM731F**. SFP transceiver 1000BASE-SX, SFP multimode LC GBIC
 - **AGM734**. SFP transceiver 1000BASE-T, SFP copper RJ-45 GBIC
 - **AXM761**. SFP+ transceiver 10GBASE-SR, SFP+ multimode LC GBIC
- Long reach 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
- Cables:
 - **AXC761**. SFP+ 1m direct attach cable
 - **AXC763**. SFP+ 3m direct attach cable

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For more information about NETGEAR SFP and SFP+ transceiver modules and cables, visit netgear.com/business/products/switches/modules-accessories.

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.

OOB 1G Ethernet Port

The switch provides one out-of-band 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. The Windows USB driver is on the resource CD in the product package.

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 product 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. The redundant power supply (RPS)

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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 model M4300-28G-POE+ and model 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
M4300-8X8F	1x APS250W		
M4300-12X12F	1x APS250W		
M4300-24X24F	1x APS250W 2x APS250W		
M4300-28G	1x APS250W 2x APS250W		
M4300-52G	1x APS250W 2x APS250W		
M4300-28G-POE+	1x APS550W 2x APS550W 1x APS1000W 2x APS1000W 1x APS550W + 1x APS1000W (see Note)	N+1 redundancy	

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Table 5. Supported PSUs (Continued)

Switch Model	Possible PSU Configurations	Power Redundancy	RPS Support
M4300-52G-POE+	1x APS550W 2x APS550W 1x APS1000W 2x APS1000W 1x APS550W + 1x APS1000W (see Note)	N+1 redundancy	Available
M4300-24X	1xAPS250W		
M4300-48X	1x APS250W 2x APS250W		

Note 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 model M4300-28G-POE+ and model M4300-52G-POE+ differ and depend on the installed PSU or PSUs. The following table describes the PoE power budgets.

Table 6. PoE budgets and PSUs for model M4300-28G-POE+ and model M4300-52G-POE+

PSU Configuration	PoE Power Budget	
	M4300-28G-POE+	M4300-52G-POE+
M4300-52G-POE+		
110 VAC input	480W	480W
220 VAC input	480W	480W
Dual APS550W		
1+1 RPS mode, 110 VAC input	480W	480W
1+1 RPS mode, 220 VAC input	480W	480W
EPS mode, 110 VAC input	720W	720W
EPS mode, 220 VAC input	720W	720W

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Table 6. PoE budgets and PSUs for model M4300-28G-POE+ and model M4300-52G-POE+ (Continued)

PSU Configuration	PoE Power Budget	
	M4300-28G-POE+	M4300-52G-POE+
Single APS1000W		
110 VAC input	630W	591W
220 VAC input	720W	860W
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

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*
- *Optional Step 5: Install SFP Transceiver Modules*
- *Optional Step 6: Install a Second Power Supply Unit*
- *Optional Step 7: Connect a Redundant Power Supply to Model M4300-52G-POE+*
- *Step 8: Check the Installation*
- *Step 9: Apply AC Power and Check the LEDs*
- *Optional Step 10: Connect a Console to 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 7. Site requirements

Characteristics	Requirements
Mounting	<p>Desktop installations. Provide a flat table or shelf surface.</p> <p>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.</p>
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	<p>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.</p> <p>Operating humidity. The maximum relative humidity of the installation location must not exceed 90%, noncondensing.</p> <p>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.</p> <p>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.</p>

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.

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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 model (M4300-8X8F or M4300-24X) are the same.



Figure 17. 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+, and M4300-48X) are the same.

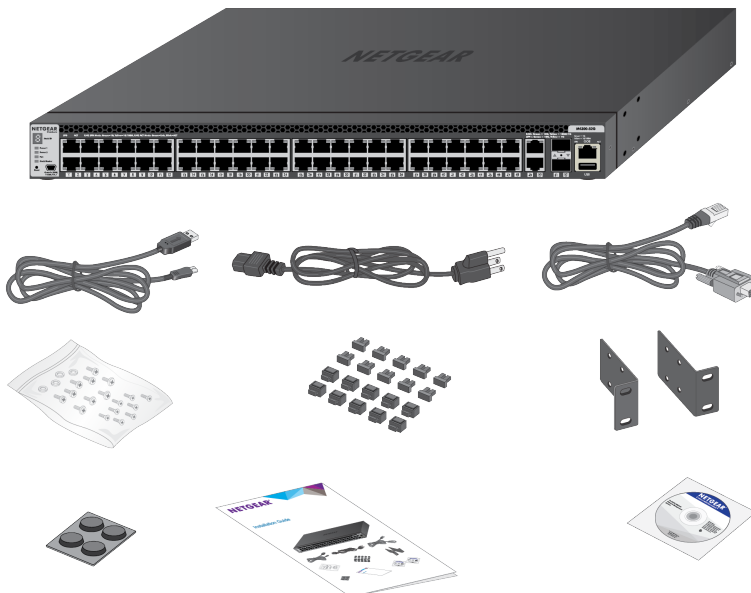


Figure 18. Switch package contents, full-width models

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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
 - Resource CD with manuals and software

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 (model M4300-8X8F, M4300-12X12F or M4300-24X) in a single rack space. You can also install two half-width switches (model 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

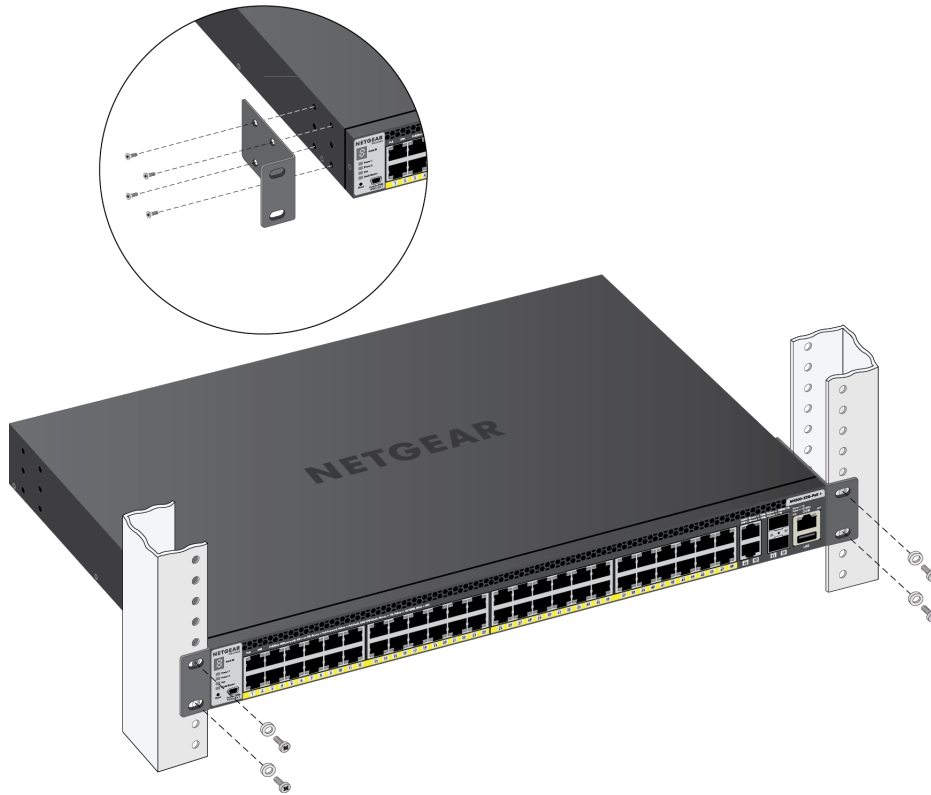
To install the switch in a rack, you need the 19-inch rack-mount kit supplied with the switch.

► 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.

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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.



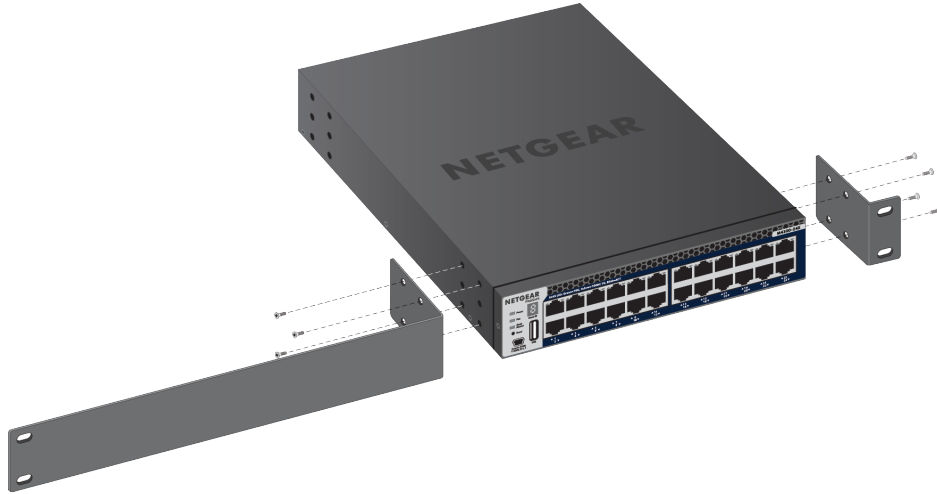
Install a Single Half-Width Switch in a Rack

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.

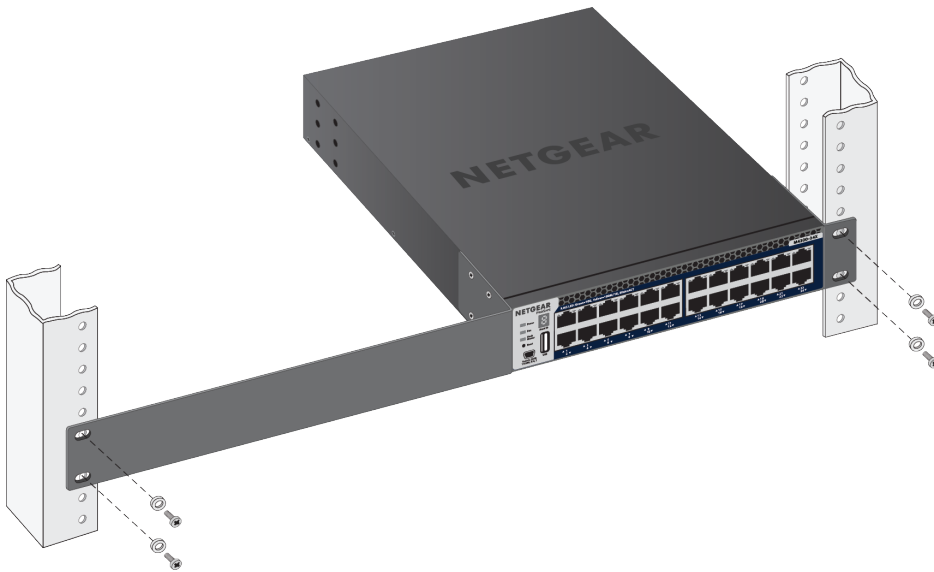
► To install a single half-width switch in a single rack space:

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.

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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

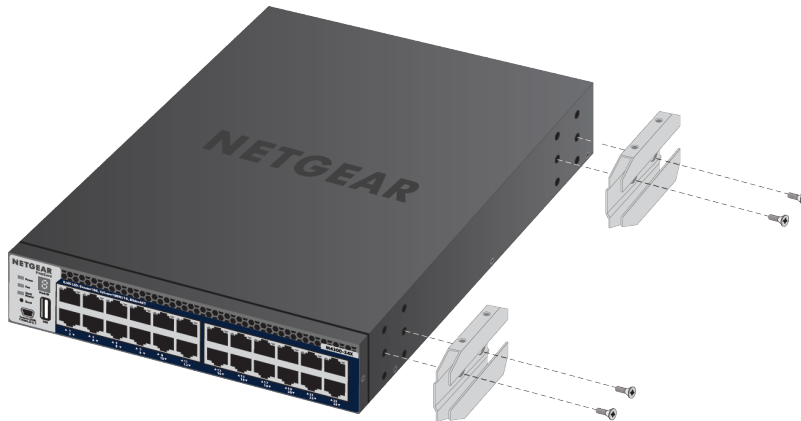
To install two half-width switches in a single rack space, you need the 19-inch rack-mount kit, which includes inside and outside middle mounts, supplied with the switch.

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.

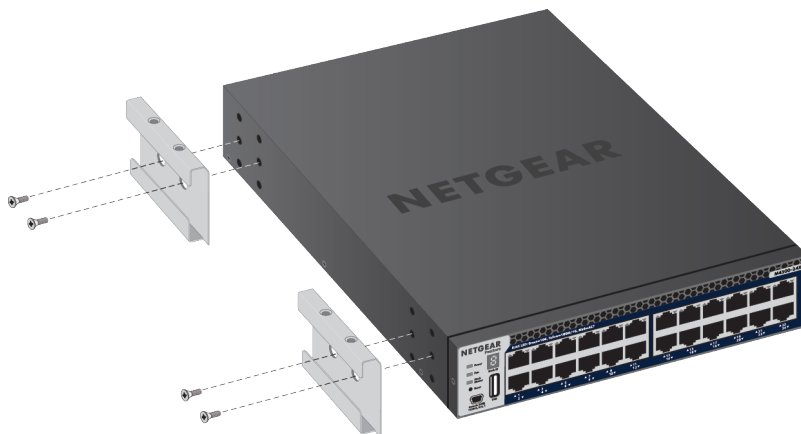
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► To install two single half-width switches in a single rack space:

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.

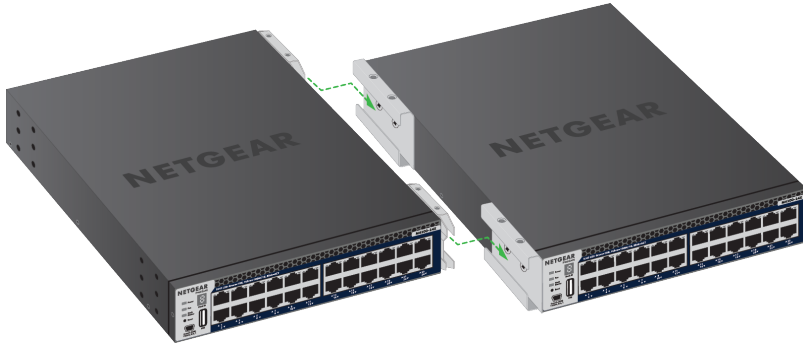


2. On the switch that will be on the right side of the rack space, do the following:
 - a. On the left side of the switch, attach the outside middle mounts by inserting the screws provided in the rack-mount kit through the mount and into the mounting holes in the switch.
For this switch too, position 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.

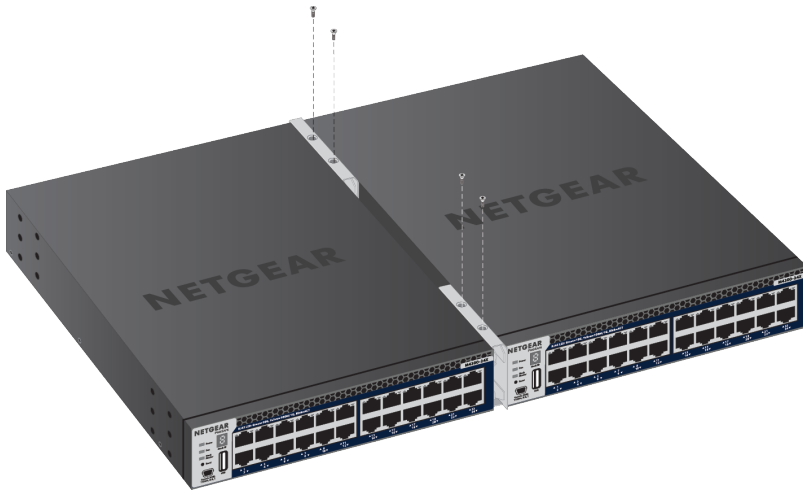


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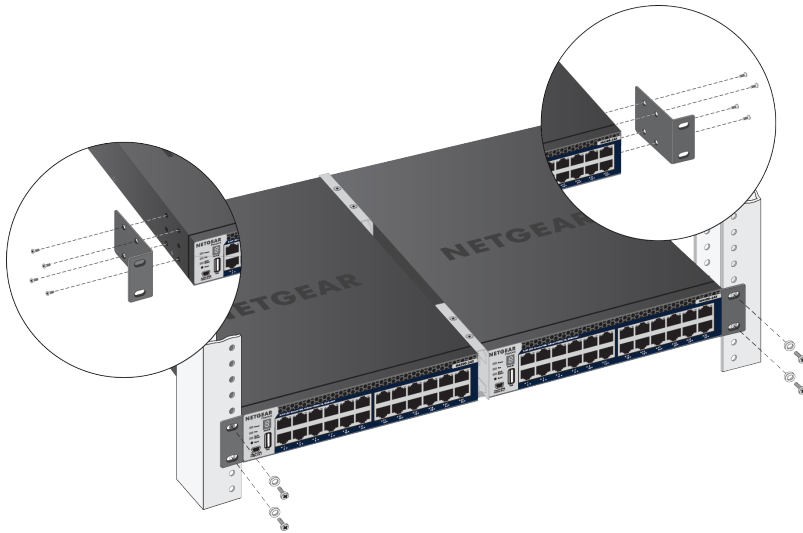
- Slide the inside middle mounts on the left switch into the outside middle mounts on the right switch.



- Insert the screws provided in the rack-mount kit through the holes in each middle mount.



- Tighten the screws with a No. 1 Phillips screwdriver to secure each middle mount.



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

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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 into one of the 10GBASE-X SFP+ ports. For information about supported modules, see *10GBASE-X and 1000BASE-X Transceiver Modules and Cables for SFP+ Ports* on page 31.

Note Contact your NETGEAR sales office to purchase these modules. If you do not want to install an SFP module, skip this procedure.

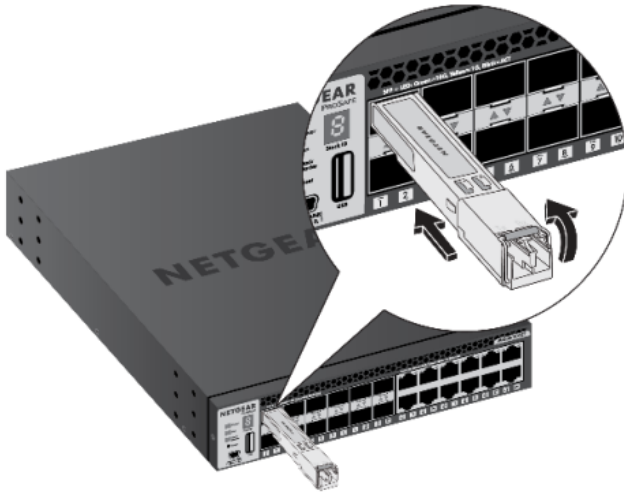
Install an SFP Transceiver Module in a Full 10G Model

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

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

1. Insert the transceiver into the 10GBASE-X 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.



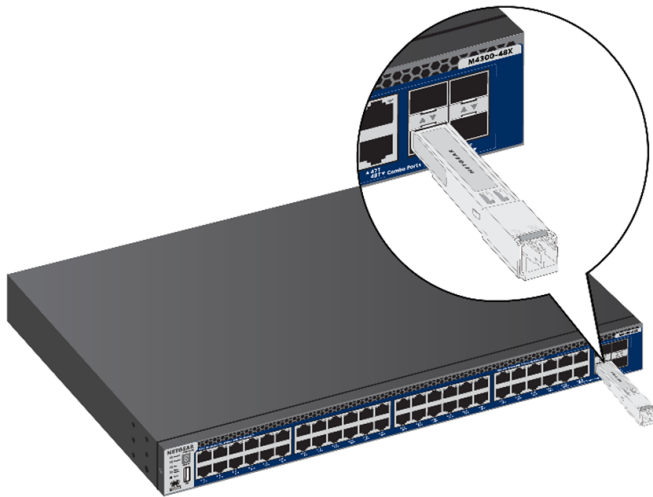
Install an SFP Transceiver Module in an Uplink or Combo Port

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 model M4300-28G, model M4300-28G-POE+, model M4300-52G, model M4300-52G-POE+, model M4300-24X (for this model, the SFP+ combo ports are on the back panel), and model M4300-48X.

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

1. Insert the transceiver into the 10GBASE-X 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 10GBASE-X 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 Second Power Supply Unit

This procedure is optional. The following full-width models provide a second power module bay in which you can install an optional second power supply unit (PSU):

- M4300-24X24F and M4300-48X
- M4300-28G and M4300-28G-POE+
- M4300-52G and M4300-52G-POE+

The supported PSUs depend on the switch model. For more information, see *Power Supply Units* on page 33.

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 second PSU:

1. Pull out the cover plate from the second power module bay. By default, 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 second 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 model M4300-28G, model M4300-28G-POE+, model M4300-52G, model M4300-48X, or model M4300-52G-POE+ in the same manner.



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3. Connect the end of the power cord to the power receptacle on the second PSU.
4. Plug the AC power cord into a power source such as a wall socket or power strip.
When you 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 16
- [LEDs, M4300 Series 1G Models With 10G Uplinks](#) on page 23
- [LEDs, M4300X Series Full 10G Models With RJ45/SFP+ Combo Ports](#) on page 28

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, M4300-8X8F, M4300-24X24F, the RJ-45 RS232 console port is located on the front panel.
 - On the full-width models (M4300-28G, M4300-52G, M4300-28G-POE+, M4300-52G-POE+, M4300-12X12F, M4300-24X, and M4300-48X), 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 downloadcenter.netgear.com.

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 downloadcenter.netgear.com.

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. However, you replace a PSU in model M4300-28G, M4300-28G-POE+, M4300-52G, M4300-52G-POE+, M4300-8X8F, or M4300-48X in the same manner.

► **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 [Step 8: Check the Installation](#) on page 47).
15. Restore power to the switch (see [Step 9: Apply AC Power and Check the LEDs](#) on page 48).

Troubleshooting Chart

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

Table 8. Troubleshooting chart

Symptom	Cause	Solution
Power LED is off.	The switch is not receiving power.	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.
A combined speed and activity LED or an individual speed LED and an individual activity LED are off when the port is connected to a 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.
File transfer is slow or performance is degraded.	One possible cause is that a broadcast storm occurred and that 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 local browser interface, 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.
A combined speed and activity LED or an individual speed LED and an individual activity LED are blinking continuously on all connected ports 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 local browser interface, you can configure the Spanning Tree Protocol (STP) to prevent network loops.
A unit is linked to a stack but does not join the stack.	The stacking ports of the new unit are configured differently from the stack, or the unit is configured as a standalone unit.	Remove the unit from the stack. Use the local browser interface to configure the unit as a stackable unit, with combo links used as the stacking ports.

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.