

NETGEAR®

Hardware Installation Guide

NETGEAR Intelligent Edge Managed Switches

M4100 Series

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

Revision History

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202-11217-04	August 2016	Updated model numbers on page 13; minor editorial revisions.
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1

Introduction

The NETGEAR M4100 Series Intelligent Edge Managed Switches provide state-of-the-art, high-performance, IEEE-compliant network solutions. They include powerful management features that you can use to eliminate bottlenecks, boost performance, and increase productivity. The M4100 Series switches include the following:

- M4100-26G
- M4100-50G
- M4100-26-POE
- M4100-26G-POE
- M4100-50G-POE+
- M4100-50-POE
- M4100-D10-POE
- M4100-D12G
- M4100-12GF
- M4100-D12G-POE+
- M4100-24G-POE+
- M4100-12G-POE+

This guide describes hardware installation and basic troubleshooting for these managed switches.

These switches can be freestanding, wall mounted, or rack mounted in a wiring closet or an equipment room. For information about features for each product, visit the NETGEAR website at <https://www.netgear.com>.

Front panels and LEDs

The following figures show the front panels of the 4100 series Intelligent Edge Managed switches. The front panel contains LEDs, a Reset button, a USB flash port, RJ45 ports, copper (RJ-45)/fiber (SFP) combo ports, and USB console selection slide switch, and USB console port.

NETGEAR Managed Switch

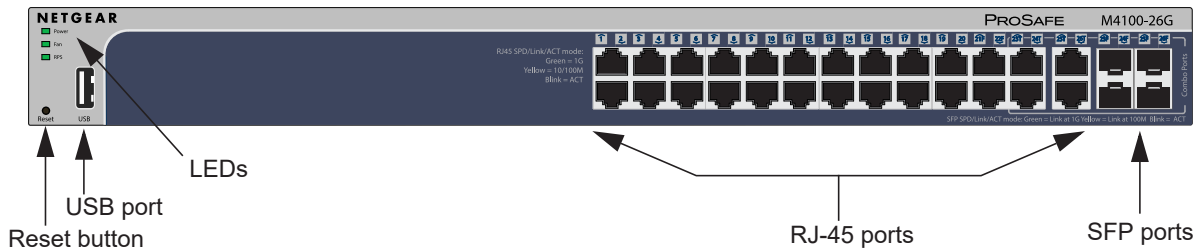


Figure 1. M4100-26G front panel

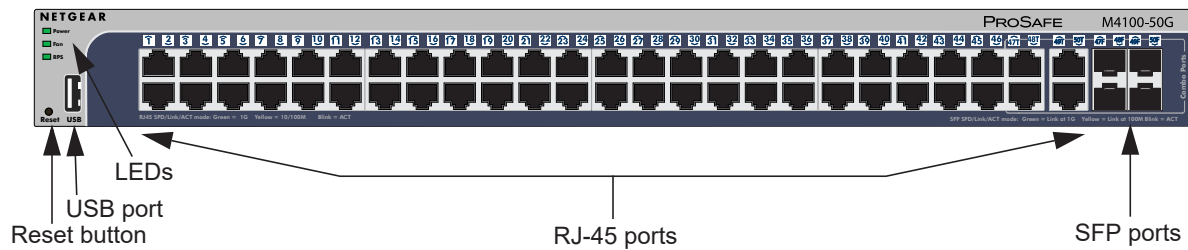


Figure 2. M4100-50G front panel

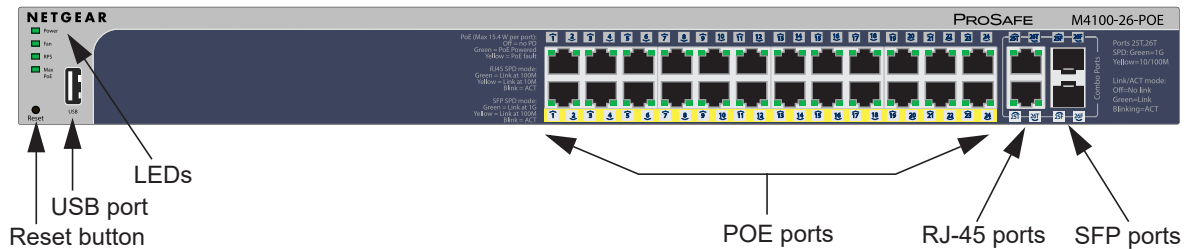


Figure 3. M4100-26-POE front panel

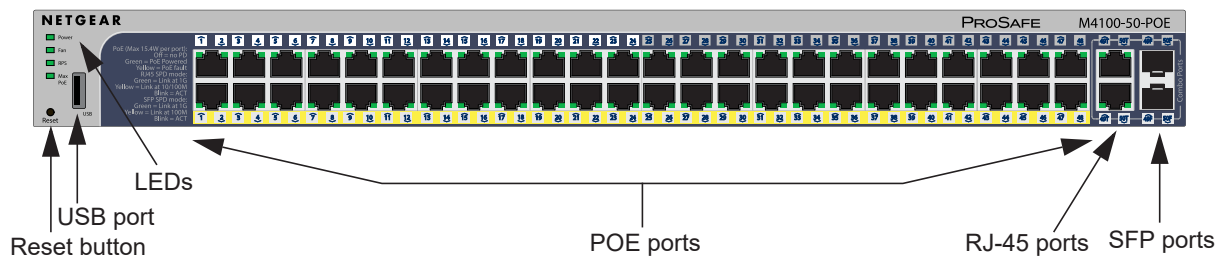


Figure 4. M4100-50-POE front panel

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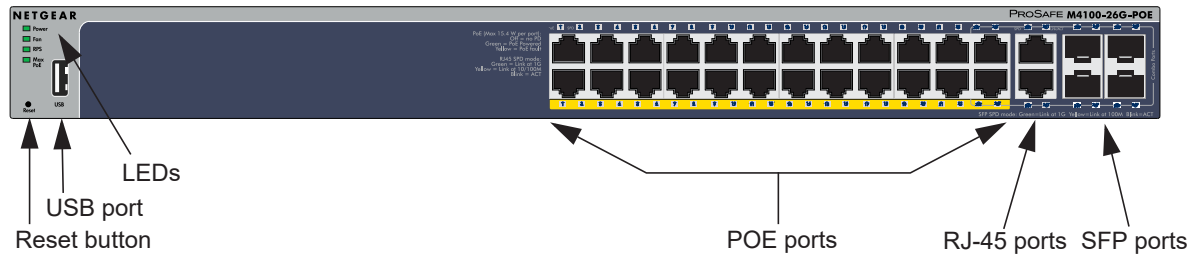


Figure 5. M4100-26G-POE front panel

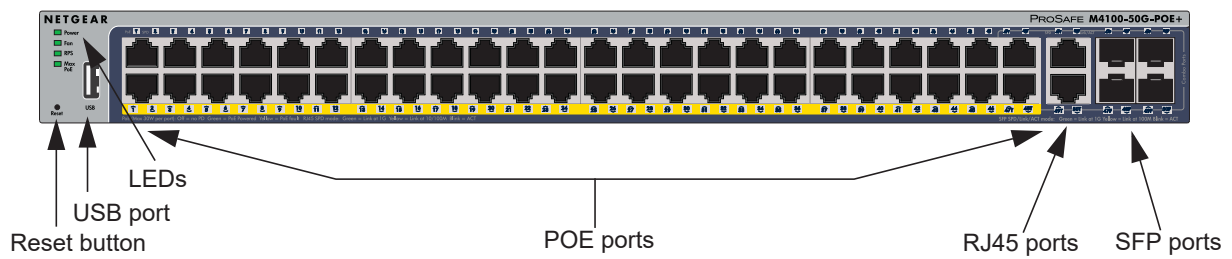


Figure 6. M4100-50G-POE+ front panel

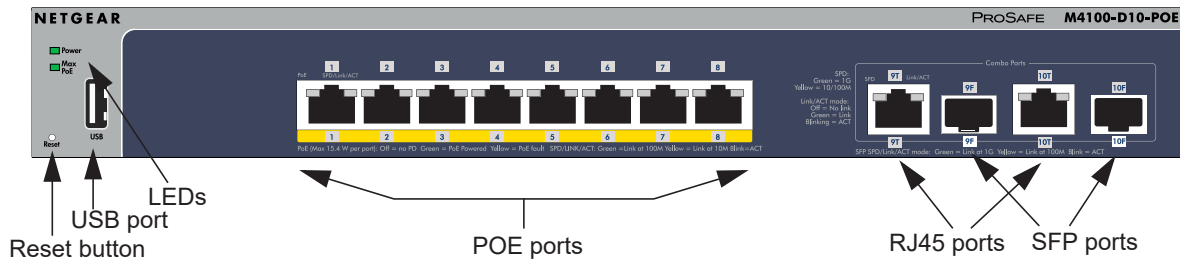


Figure 7. M4100-D10-POE Front Panel

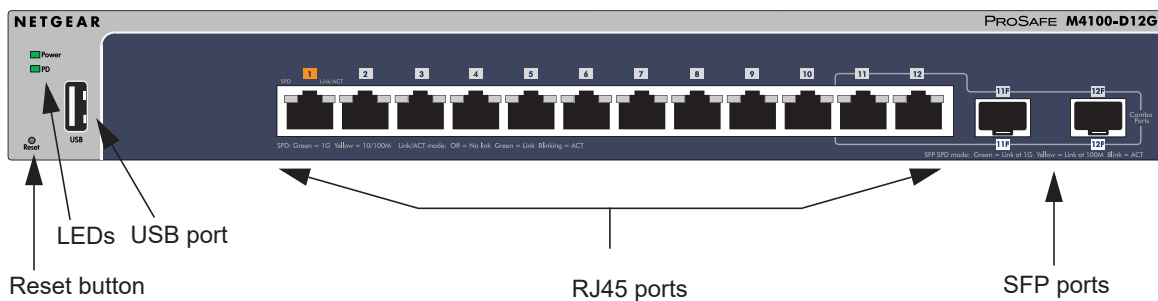


Figure 8. M4100-D12G front panel

NETGEAR Managed Switch

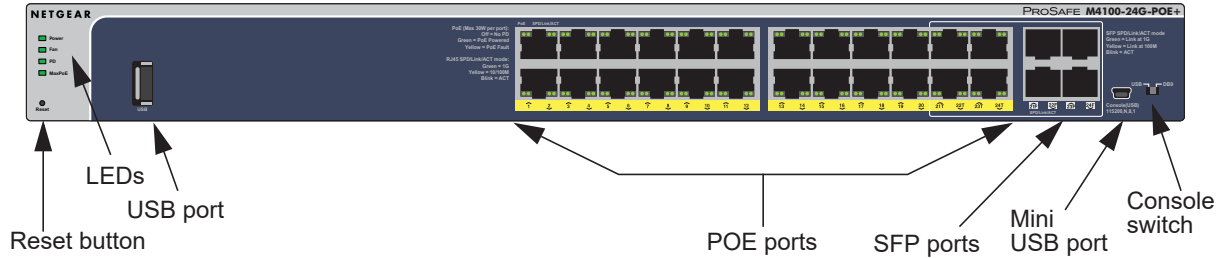


Figure 9. M4100-24G-POE+ front panel

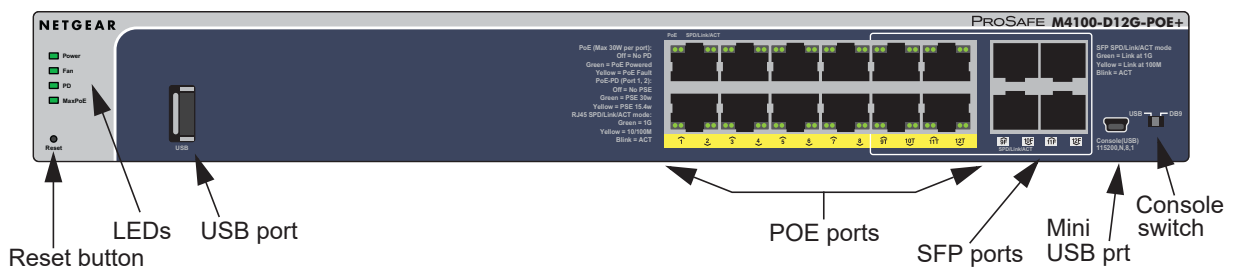


Figure 10. M4100-D12G-POE+ front panel

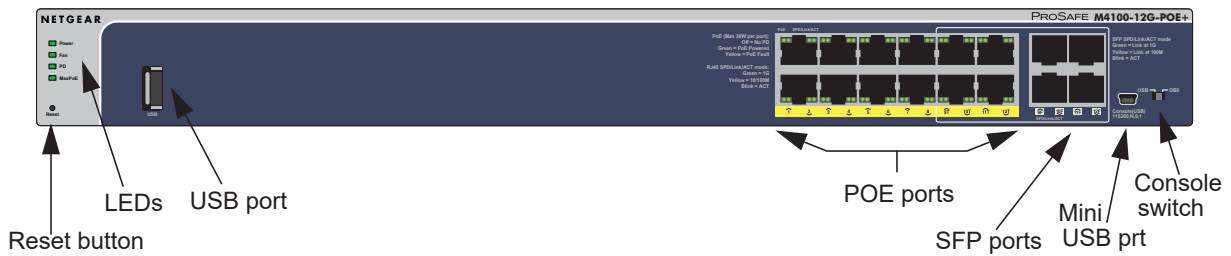


Figure 11. M4100-12G-POE+ front panel

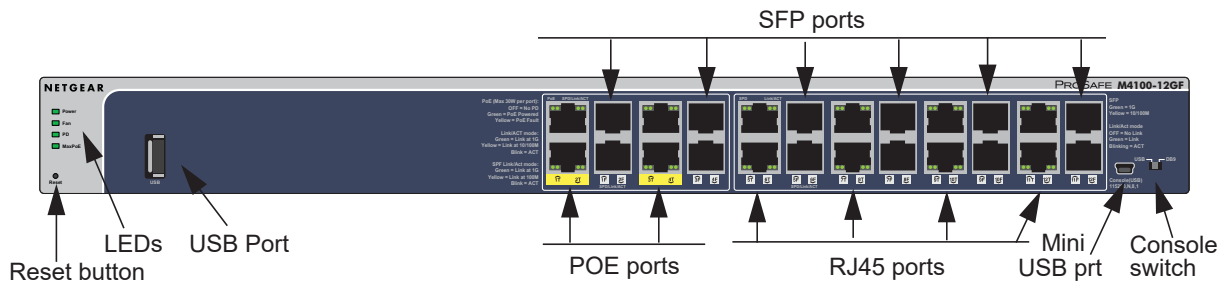


Figure 12. M4100-12GF front panel

Table 1. LED descriptions

LED	Description
Power	<p>Solid green: Internal power supply operating normally and supplying power to the switch.</p> <p>Solid yellow: The system is in boot-up stage.</p> <p>Blinking yellow: Power module is present but has failed.</p> <p>Off: Power is disconnected.</p>
Fan	<p>Solid green: The fan is operating normally.</p> <p>Solid yellow: The fan has failed.</p> <p>Off: No fan is detected.</p>
RPS	<p>Solid green: RPS connected (using internal power supply's power).</p> <p>Solid yellow: The internal power supply has failed and the RPS is providing power to the switch.</p> <p>Blinking yellow: RPS is present but RPS has failed.</p> <p>Off: RPS disconnected.</p> <p>Note: Only for M4100-26G, 50G, 26-POE, 26G-POE, 50G-POE+, and 50-POE</p>
PD	<p>Solid green: PD port 1 is connected to PSE getting 802.3at specified power.</p> <p>Blinking green: PD port 1 is connected to PSE getting 802.3af specified power.</p> <p>Off: PD port 1 is not connected to PSE.</p> <p>Note: Only for M4100-D12G, -24G-POE, D12G-POE, 12G-POE+, -12GF</p>
Max PoE	<p>Solid yellow: Indicates less than 7 watts of PoE power is available.</p> <p>Blinking yellow: Indicates the PoE MAX LED was active in the previous 2 minutes.</p> <p>Off: There is at least 7 watts of PoE power available for another device.</p>
SPD/Link/ACT (RJ-45 port)	<p>Off: No link is established on the port.</p> <p>Solid green: A valid 1000 Mbps link is established on the port.</p> <p>Blinking green: Packet transmission or reception is occurring on the port at 1000 Mbps.</p> <p>Solid yellow: A valid 10/100 Mbps link is established on the port.</p> <p>Blinking yellow: Packet transmission or reception is occurring on the port at 10/100 Mbps.</p> <p>Note: If combo port media change to fiber, the Ethernet LED changes to off status.</p>
PoE	<p>Off: No PoE powered device (PD) connected.</p> <p>Solid green: The PoE powered device (PD) is connected and the port is supplying power successfully.</p> <p>Solid yellow: Indicates that one of the following failures resulted in stopping power to that port:</p> <ul style="list-style-type: none"> - Short circuit on PoE power circuit - PoE power demand exceeds power available - PoE current exceeds PD's classification - Out of proper voltage (44 VDC–57 VDC for af, 50 VDC–57 VDC for at)

Table 1. LED descriptions (continued)

LED	Description
Link/ACT (RJ45 port)	<p>Off: No link is established on the port.</p> <p>Solid green: A valid link is established on the port.</p> <p>Blinking green: Packets transmission or reception is occurring on the port.</p> <p>Note: If a combo port media changes to fiber, the copper port LED changes to off status.</p>
SPD (RJ45 port)	<p>Off: No link is established on the port.</p> <p>Solid green: A valid 1000 Mbps link is established on the port.</p> <p>Solid yellow: A valid 10/100 Mbps link is established on the port.</p>
PoE-PD	<p>Off: No PSE is connected or PSE is connected but connection has failed.</p> <p>Solid green: The PSE is connected and get 30 W power from PSE successfully.</p> <p>Solid yellow: The PSE is connected and get 15.4 W power from PSE successfully.</p>
SPD/Link/ACT (SFP port)	<p>Off: No SFP/SFP+ module link is established on the port.</p> <p>Solid green: A valid 1000 Mbps SFP+ module 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 100 Mbps SFP module link is established on the port.</p> <p>Blinking yellow: Packet transmission or reception is occurring on the port at 100 Mbps.</p> <p>Note: If combo port media changes to copper, the SFP port LED changes to off status.</p>

Rear panels

The rear panels have a DB9 console port, a mini USB port (only for M4100-26G, 50G, 26-POE, 26G-POE, 50G-POE+, 50-POE, D12-PoE, and D12G), a redundant power supply connector (only for M4100-26G, 50G, 26-POE, 26G-POE, 50G-POE+, 50-POE, 12GF, 24G-POE+, and 12G-POE+), and a standard AC power receptacle for the supplied power cord.

NETGEAR Managed Switch

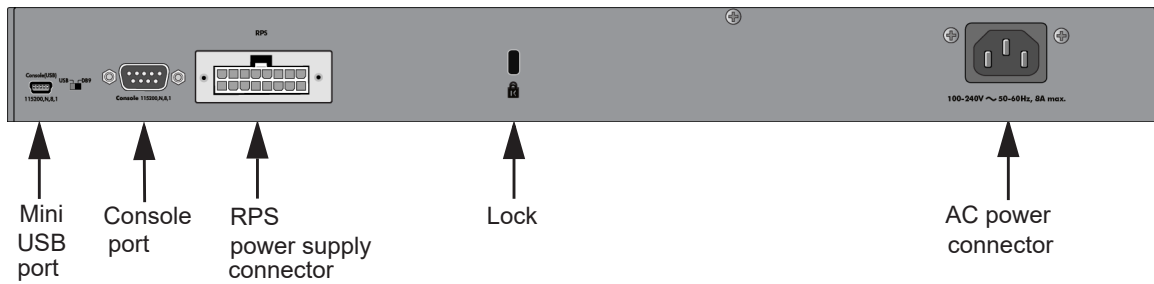


Figure 13. M4100-26G, 50G, 26-POE, 26G-POE, 50G-POE+, and 50-POE rear panels

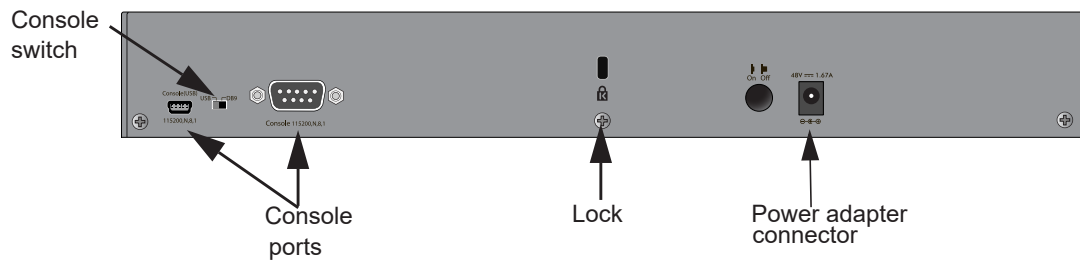


Figure 14. M4100-D10-POE and M4100-D12G rear panels



Figure 15. M4100-12GF, 24G-POE+, 12G-POE+ rear panel

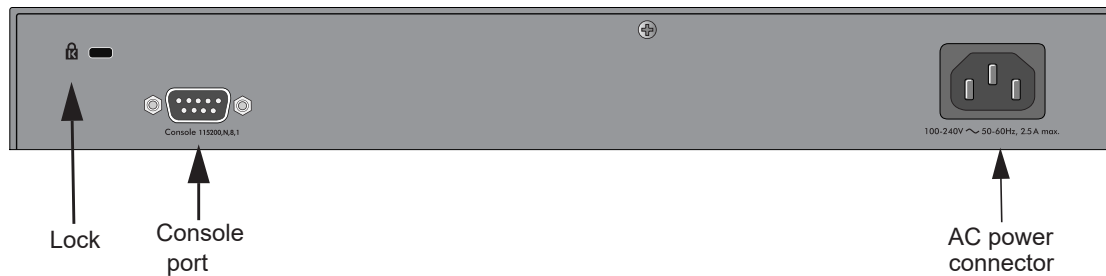


Figure 16. M4100-D12G-POE+ rear panel

Safety instructions

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.

- 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.

2

Hardware Installation

This chapter explains how to install the hardware for the managed switches.

Package contents

Each switch is packed and shipped separately. The package contains the following items:

- NETGEAR M4100 Series Intelligent Edge Managed Switch with preinstalled software with preinstalled software
- Power cord
- Rubber footpads for tabletop installation
- Rubber caps for the SFP sockets
- Rack-mounting kit
- Wall-mounting kit (M4100-D10-POE only)
- Magnetic mounting kit (M4100-D10-POE and M4100-D12G only)
- USB console cable with one mini B connector and one type A connector

Protecting 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):

1. When unpacking a static-sensitive component from its shipping carton, leave it in the antistatic package until you are ready to install it. Just before unwrapping the antistatic package, discharge static electricity from your body.
2. Before moving a sensitive component, place it in an antistatic container or package.
3. Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads, workbench pads, and an antistatic grounding strap.

Unpack the hardware

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

1. Place the container on a clean flat surface and cut all straps securing the container.
2. Unpack the hardware from the boxes.

Carefully remove the hardware and place it on a secure and clean surface. For more information, see [Select a location on page 15](#).

3. Remove all packing material.
4. Make sure that all items are present. For more information, see [Package contents on page 13](#).

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

5. Inspect the products and accessories for damage.
Report any damage immediately.

Installation

Install the equipment in the sequence presented in this section:

1. Select a location.
For more information, see [Select a location on page 15](#).
2. Install the switch.
For more information, see [Install the switch on page 16](#).
3. Check the installation.

For more information, see [Check the installation on page 20](#).

4. Apply power and check the LEDs.

For more information, see [Connect to power and check the LEDs on page 20](#).

Select a location

The switch can be mounted in a standard 19-inch (48.26-centimeter) rack, wall mounted, or left freestanding (placed on a tabletop).

The site where you install the switch might greatly affect its performance. Before installing the switch or switches, make sure that the chosen installation location meets the following site requirements.

Table 2. Site requirements for switch location

Requirements	
Mounting	<ul style="list-style-type: none"> 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 need the rack-mount kit supplied with your switch.
Access	Locate the switch in a position that lets you access the front panel RJ-45 ports, view the front panel LEDs, and access the rear panel power connector.
Power source	Provide a power source within 6 feet (1.8 meters) of the installation location. Power specifications for the switch are shown in Appendix A . Be sure that the AC outlet is not controlled by a wall switch, which can accidentally turn off power to the outlet and the switch.
Environment	Install the switch in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.
Temperature	The ambient switch operating temperature range is 0° to 50°C (32° to 122°F). Keep the switch away from heat sources such as direct sunlight, warm air exhausts, hot-air vents, and heaters.
Operating humidity	Install the switch in a dry area with a maximum relative humidity of 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. Be sure that there is adequate airflow in the room or wiring closet where you intend to install the switch.
Cabling	Route the cable to avoid sources of electrical noise such as radio transmitters, broadcast amplifiers, power lines, and fluorescent lighting fixtures.

Install the switch

You can install the switch on a flat surface or in a standard 19-inch rack.

Install the Switch on a Flat Surface

The switch ships with four self-adhesive rubber footpads. Stick one rubber footpad on each of the four concave spaces on the bottom of the switch. The rubber footpads cushion the switch against shock and vibrations.

Install the Switch in a Rack

Note: The M4100-D10-PoE is not rack mountable.

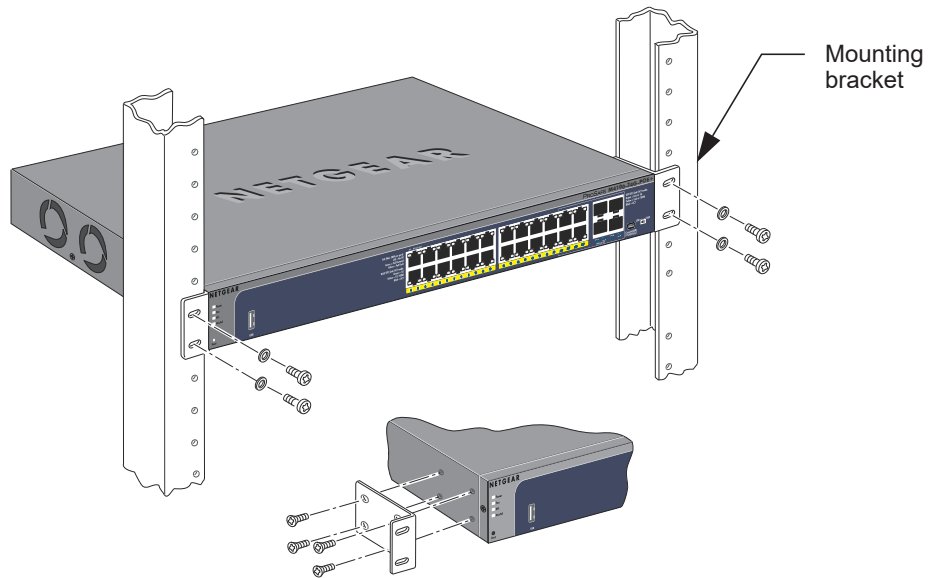
To install the switch in a rack you will need the 19-inch rack-mount kit supplied with your switch. Keep the following considerations in mind as you install your switch:

- **Ambient operating temperature.** If the switch is installed in a closed or multiunit rack assembly, the ambient operating temperature of the rack environment might be greater than the ambient temperature of the room. Therefore, consider installing the equipment in an environment compatible with the maximum rated ambient temperature.
- **Reduced airflow.** Mount the equipment into a rack so that the amount of airflow required for safe operation is not compromised.
- **Mechanical loading.** Mount the equipment into a rack so that a hazardous condition does not arise due to uneven mechanical loading.
- **Circuit overloading.** Consider the equipment's connection to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Consider equipment nameplate ratings when addressing this concern.
- **Reliable grounding.** This product requires reliable grounding to be maintained at all times. To ensure this, ground the rack itself. Pay particular attention to power supply connections other than the direct connections to the branch circuit (for example, the use of power strips).
- **Clearance.** Leave enough clearance in front of the rack (about 25 inches) to enable you to open the front door completely and in the back of the rack (about 30 inches) to allow for sufficient airflow and ease in servicing.

To install your switch in a rack:

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

2. Use the provided Phillips head screws to fasten the brackets to the sides of the switch.



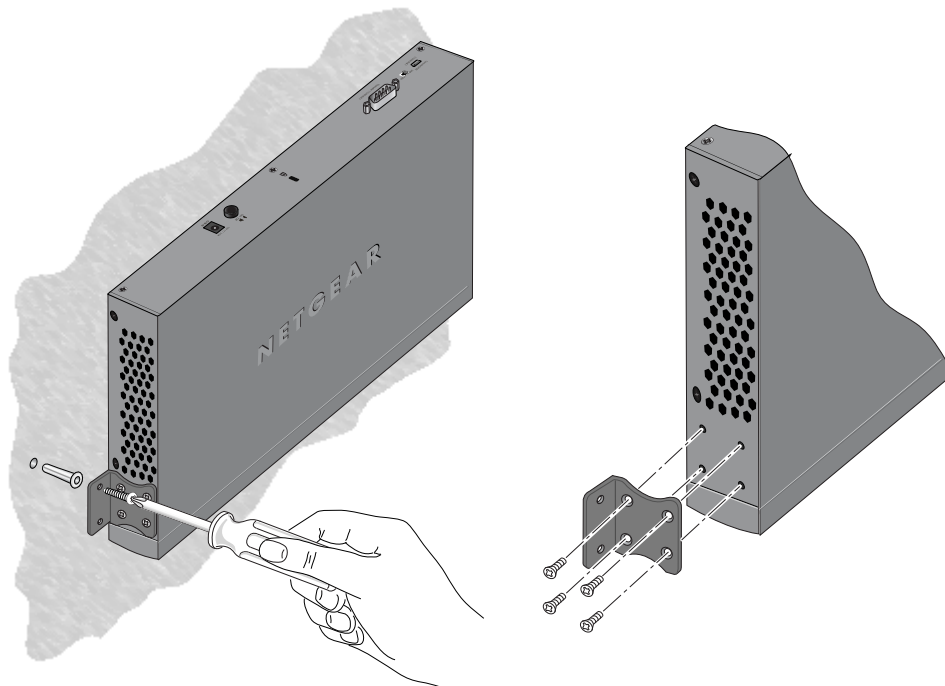
3. Tighten the screws with a No. 1 Phillips screwdriver to secure each bracket.
4. Align the bracket and rack holes. Use two pan-head screws with nylon washers to fasten each bracket to the rack.
5. Tighten the screws with a No. 2 Phillips screwdriver to secure the switch in the rack.

Install the switch on a wall (M4100-D10-PoE Only)

If you install the switch on a wall in the vertical position, be sure to orient the switch as shown in the following figure. The switch should be mounted so that the ports face up or down. Do not mount the switch with the ports to the side. The exhaust air should come out the side of the switch case.

Note: The switch should have a minimum of 5 inches (130 millimeters) of clearance on all sides.

1. Attach the supplied mounting brackets to the sides of the switch.
2. Use four Phillips head screws to fasten each bracket to the sides of the switch.
3. Tighten the screws with a No. 1 Phillips screwdriver to secure each bracket.
4. Mark the position of bracket holes on the wall.
5. Drill holes 4.7 mm diameter and 22.2 mm depth at each mark.
6. Hammer caps into holes in the wall.
7. Use two Phillips head screws to fasten each bracket to the wall.
8. Tighten the screws with a No. 2 Phillips screwdriver to secure the switch to the wall.



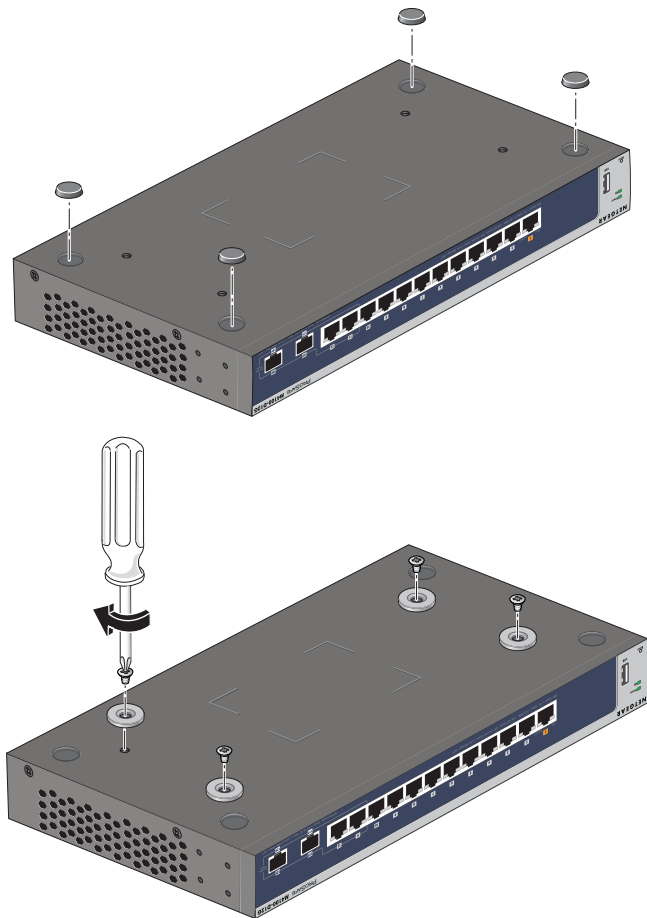
Install the M4100-D12G or M4100-D10-PoE using magnets

If you use the magnets (included) to install the M4100-D12G or M4100-D10-PoE switch to a vertical metal surface, the maximum height above the floor is 75 centimeters (29.5 inches). Be sure to orient the switch as shown in the following figure. Exhaust air should come out the side of the switch case.

1. Attach the magnets to the switch using a No. 1 Phillips screwdriver and 4 screws (provided).

See the following figure.

2. Press each of the 4 rubber feet firmly into the indentations on the bottom of the switch.
3. Position the switch so that it is no more than 75 centimeters (29.5 inches) above the floor.



Check the installation

Before you apply power, perform the following checks:

1. Inspect the equipment thoroughly.
2. Verify that all cables are installed correctly.
3. Check cable routing to ensure that cables are not damaged and will not create a hazard.
4. Be sure that all equipment is mounted properly and securely.

Connect to power and check the LEDs

The switch does not have an on/off switch. The only way to apply or remove power is to connect or disconnect the power cord. Before you connect 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:

1. Select an appropriate outlet.
2. Connect one end of the AC power adapter cable (M4100-DG12 or M4100-D10-PoE) or the AC power cord to the rear of the switch, and the other end to a grounded three-pronged AC outlet.

Note: The M4100-26G, 50G, 26-PoE, 26G-PoE, 50-PoE+, 50G-PoE, 12GF, 24G-POE+, 12G-POE+ can also obtain power from an RPS. Supported RPS models are the RPS5412 and RPS4000.

Note: Normally the M4100-D12G and M4100-D12G-POE+ will get power using the supplied power adapter. These switches can also get power from a PSE (power sourcing equipment) switch if AC power is not available. Connect port 1 of these switches to a PSE switch. The PSE device should support IEEE802.3at so that it can provide full power to these switches for system operation. If the PSE device used does not support IEEE802.3at, these switches might not operate correctly.

3. Check the Power LED on the front panel of the switch.

The LED should light in the following sequence:

- The LED turns yellow as the switch runs a power-on self-test (POST).
- If the switch passes the test, the LED turns green. The switch is working and ready to pass data.
- If the POST fails, the Power LED blinks yellow.

Note: If the PD LED on the front panel of the M4100-D12G and M4100-D12G-POE+ blinks green, port 1 is connected to a IEEE802.3af PoE device. Check the PoE device specification to make sure that it supports IEEE802.3at.

If the Power LED does not light up, check that the power cable is plugged in correctly and that the power source is good. For more information, see [Troubleshooting on page 24](#).

SFP modules

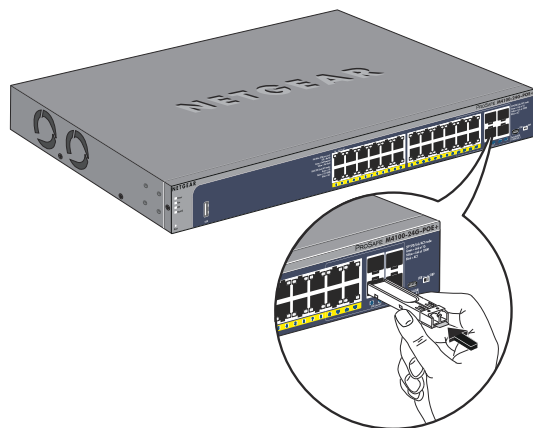
SFP modules (sold separately) can be inserted directly into the switch's ports.

Note: Use only optical transceiver modules that are UL approved and that are certified as Laser class 1 products.

- AGM731F: SFP module with LC connector, compatible with the IEEE 802.3z 1000Base-SX standard
- AGM732F: SFP module with LC connector, compatible with the IEEE 802.3z 1000Base-LX standard
- AFM735: SFP module with LC connector, compatible with the IEEE 802.3u 100Base-FX standard

To insert an SFP module into the switch port:

1. Insert the module into the switch port.
2. Press firmly to ensure that the module seats into the connector.



Connect equipment to the switch

You can connect devices, a Gigabit Ethernet module, and/or a console to the switch.

RJ-45 Ports

The switch uses Auto Uplink technology, which enables you to attach devices using either straight-through or crossover cables. Use a Category 5 (Cat 5) unshielded twisted-pair (UTP) cable terminated with an RJ-45 connector.

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

Connect a console to the switch

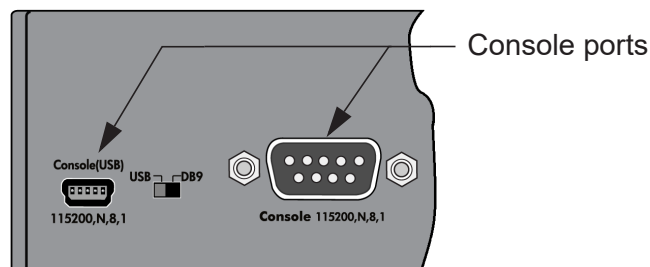
After you install the switch and apply power, you can connect to it with a terminal or workstation. You can use the command-line interface (CLI) to identify the IP address.

To use a console, you need the following items:

- VT100/ANSI terminal, or a Windows computer, Apple Macintosh computer, or UNIX workstation
- USB console cable (shipped with the product) or a null-modem cable (shipped with the product) with 9-pin connectors on each end

To connect a console to the switch:

1. Connect the null-modem cable to the console port on the rear of the switch, or connect the USB console cable to the USB console port on the rear of the switch.



2. Select the console port through the console slide switch on the rear panel:
 - a. Select the mini USB (cable included) as the console port by pushing the slide switch to the left.

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- ## Hardware Installation Guide

- *Quick Installation Guide*: Explains basic setup and configuration. For print and PDF versions of this document, visit <https://www.netgear.com/support/> to download the Quick Installation Guide.
- *M4100 Series ProSAFE Managed Switches CLI Command Reference Manual*: Gives detailed examples of how to use the CLI.
- *ProSAFE M4100 Managed Switches Software Administration Manual*: Describes configuration tasks.

3

Troubleshooting

Troubleshooting chart

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

Table 3. Troubleshooting chart

Problem	Cause	Solution
Power LED is off.	No power is received.	Check the power cord connections for the switch at the switch and the connected device. Make sure that all cables used are correct and comply with Ethernet specifications.
Link LED is off or intermittent.	Port connection is not working.	<ul style="list-style-type: none">• Check the crimp on the connectors. Make sure that the plug is fully inserted and locked into the port at both the switch and the connecting device.• Make sure that all cables used are correct and comply with Ethernet specifications. See Appendix A.• Check for a defective adapter card, cable, or port by testing it in an alternate environment where all products are functioning.
Slow file transfer or there is performance degradation.	Half- or full-duplex setting on the switch and the connected device are not the same.	<ul style="list-style-type: none">• Make sure that the attached device is set to autonegotiate.• Check the system message log.
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. Be sure that all connectors are securely positioned in the required ports. Equipment might have been accidentally disconnected.
ACT LED blinks continuously on all connected ports and the network is disabled.	A network loop (redundant path) has been created.	Break the loop by ensuring that there is only one path from any networked device to any other networked device.

Additional troubleshooting suggestions

If the suggestions in [Table 3](#) do not resolve your problem, refer to the troubleshooting suggestions in this section.

- **Network adapter cards:**
Make sure that the network adapter cards installed in the computers are in working condition and the software driver has been installed.
- **Configuration:**
If problems occur after you change the network configuration, restore the original connections. Then find the problem by making the 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:**
You can verify the integrity of the switch by resetting the switch. To reset the switch, use the Tools > Reset command, or remove AC power from the switch and then reapply AC power. If the problem continues, contact NETGEAR technical support.
- **Autonegotiation:**
The copper 10/100/1000 Mbps ports negotiate the correct duplex mode and speed 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 fiber gigabit ports negotiate speed, duplex mode, and flow control if the attached device supports autonegotiation.

A

Technical Specifications

Table 4. M4100-26G, 50G, 26G-POE, 50G-POE+, and D12G Gigabit switch physical specifications

Specification	M4100-26G (GSM7224v2h2)	M4100-50G (GSM7248v2h2)	M4100-26G-PO E (GSM7226LP)	M4100-50G-PO E+ (GSM7248P)	M4100-D12G (GSM5212)
Interface (Auto Uplink on all RJ-45 ports)	26 RJ-45 ports for 10/100/1000 Mbps 4 SFP ports for 100/1000 Mbps 1 USB type A connector RS-232 console port 1 USB mini B console port	50 RJ-45 ports, 10/100/1000 Mbps 4 SFP ports for 100/1000 Mbps 1 USB type A connector RS-232 console port 1 USB mini B console port	26 RJ-45 ports for 10/100/1000 Mbps 4 SFP ports for 100/1000 Mbps 24 IEEE802.3at PoE ports 1 USB type A connector RS-232 console port 1 USB mini B console port	50 RJ-45 ports for 10/100/1000 Mbps 4 SFP ports for 100/1000 Mbps 48 IEEE802.3at PoE ports 1 USB type A connector RS-232 console port 1 USB mini B console port	12 RJ-45 ports for 10/100/1000 Mbps 2 SFP ports for 100/1000 Mbps 1 IEEE802.3at PD port (port 1) 1 USB type A connector RS-232 console port 1 USB mini B console port
Bandwidth	52 Gbps	100 Gbps	52 Gbps	100 Gbps	24 Gbps
Weight (Kg)	3.24	3.63	3.79	4.96	1.33
Dimensions (W x D x H) (mm)	440 x 257 x 43.2	440 x 257 x 43.2	440 x 257 x 43.2	440 x 310 x 43.2	328 x 169 x 43.2
Mean time between failure (MTBF)	702,785.9 hrs	489,311.0 hrs	437,199.85 hrs	239,298.0 hrs	214,142.66 hrs
Heat dissipation (Btu/hr)	107.8824	168.99	931.68	1,896.48	64.18

Table 4. M4100-26G, 50G, 26G-POE, 50G-POE+, and D12G Gigabit switch physical specifications

Specification	M4100-26G (GSM7224v2h2)	M4100-50G (GSM7248v2h2)	M4100-26G-POE (GSM7226LP)	M4100-50G-POE+ (GSM7248P)	M4100-D12G (GSM5212)
Acoustic noise (dB) (ANSI-S10.12)	35.6dB @ 25°C	37.2 dB @ 25°C	36.6 dB @ 25°C	47.7 dB @ 25°C	0
Maximum power consumption (W) (100–240V AC, 50–60 Hz)	31.6	49.5	272.90	555.5	18.80

Table 5. M4100-24G-POE+, D12G-POE+, 12G-POE+, 12GF Gigabit switch physical specification

Specification	M4100-24G-POE+ (GSM7224P)	M4100-D12G-POE+ (GSM5212P)	M4100-12G-POE+ (GSM7212P)	M4100-12GF (GSM7212F)
Interface (Auto Uplink on all RJ-45 ports)	24 RJ-45 ports for 10/100/1000 Mbps 4 SFP ports for 100/1000 Mbps 24 IEEE802.3at PoE ports 1 USB Type A connector RS-232 console port 1 USB mini B console port	12 RJ-45 ports for 10/100/1000 Mbps 2 SFP ports for 100/1000 Mbps 10 IEEE802.3at PoE port (ports 3–12) 2 IEEE802.3at PD port (ports 1–2) 1 USB type A connector RS-232 console port 1 USB mini B console port	12 RJ-45 ports for 10/100/1000 Mbps 4 SFP ports for 100/1000 Mbps 12 IEEE802.3at PoE ports 1 USB type A connector RS-232 console port 1 USB mini B console port	12 RJ-45 ports for 10/100/1000 Mbps 12 SFP ports for 100/1000 Mbps 4 IEEE802.3at PoE ports 1 USB type A connector RS-232 console port 1 USB mini B console port
Bandwidth	48 Gbps	24 Gbps	24 Gbps	24 Gbps
Weight (Kg)	4.368	2.596	4.021	3.665
Dimensions (W x D x H) (mm)	440 x 257 x 43.2	328 x 169 x 43.2	440 x 257 x 43.2	440 x 257 x 43.2
Mean time between failure (MTBF)	394,619 hrs	766,618 hrs	422,436 hrs	670,956 hrs
Heat dissipation (Btu/hr)	1820.00	569.00	1543.00	548.00

Specification	M4100-24G-POE+ (GSM7224P)	M4100-D12G-POE + (GSM5212P)	M4100-12G-POE+ (GSM7212P)	M4100-12GF (GSM7212F)
Acoustic noise (dB) (ANSI-S10.12)	49.9	35.1 dB @ 25dC with AC mode 0dB with PD mode	50.3	48
Maximum power consumption (W) (100–240V AC, 50–60 Hz)	553.00	167.00	452.00	161.00

Table 6. Fast Ethernet switches physical specifications

Fast Ethernet Switches	M4100-26-POE (FSM7226P)	M4100-50-POE (FSM7250P)	M4100-D10-POE (FSM5210P)
Interface (AutoUplink on all RJ-45 ports)	24 RJ-45 ports for 10/100 Mbps 2 RJ-45 ports for 10/100/1000 Mbps 2 SFP ports for 100/1000 Mbps 24 PoE ports 1 USB type A connector RS-232 console port 1 USB mini B console port	48 RJ-45 ports for 10/100 Mbps 2 RJ-45 ports for 10/100/1000 Mbps 2 SFP ports for 100/1000 Mbps 48 IEEE802.3af PoE ports 1 USB type A connector RS-232 console port 1 USB mini B console port	8 RJ-45 ports for 10/100 Mbps 2 RJ-45 ports for 10/100/1000 Mbps 2 SFP ports for 100/1000 Mbps 8 IEEE802.3af PoE ports 1 USB type A connector RS-232 console port 1 USB mini B console port
Bandwidth	6.4 Gbps	9 Gbps	4.8 Gbps
Weight (Kg)	4.13	4.96	1.4
Dimensions (W x D x H) mm	440 x 257 x 43.2	440 x 310 x 43.2	328 x 169 x 43.2
Mean time between failure (MTBF)	242,281.66 hrs	163,019.5 hrs	579,985.8 hrs
Heat dissipation (Btu/hr)	1,557.77	1,661.39 hrs	298.04
Acoustic noise (dB) (ANSI-S10.12)	37.3 dB @ 25°C	38.9 dB @ 25°C	0
Maximum power consumption (W) (100–240V AC, 50–60 Hz)	456.29	486.64	87.30

Table 7. Technical specifications

Feature	Description
IEEE Network Protocol and Standards compatibility	<ul style="list-style-type: none"> • 802.3i 10BASE-T • 802.3u 100BASE-TX • 802.3z 1000BASE-X • 802.3ab 1000BASE-T • 802.3az EEE • 802.3x flow control • 802.3af power over Ethernet • 802.3at power over Ethernet
Switch management	<ul style="list-style-type: none"> • Port mirroring support • SNMP v1, v2c, v3 • RFC1757 RMON 1 groups 1, 2, 3, and 9, RFC1213 MIB II • RFC1643 Ethernet Interface MIB • RFC1493 bridge MIB • RFC2131 DHCP client (and BootP) • RFC2138 RADIUS client • Broadcast storm control • Telnet sessions for management CPU (5) • Ping support • ARP support • Private enterprise MIB • Configuration file upload, download • Runtime image download • Command-line interface • Web-based graphic user interface • Simple Network Time Protocol (SNTP) • Syslog • SSLv3/TLSv1.0 web security • Secured Shell (SSHv1, v2)
Layer 2 services	<ul style="list-style-type: none"> • 802.1Q Static VLAN (Up to 1 K) • 802.1 p Class of Service (CoS) • 802.1D Spanning Tree Protocol (STP) • 802.1w Rapid Spanning Tree Protocol (RSTP) • 802.1 s Multiple Spanning Tree Protocol (MSTP) • 802.3ad link aggregation (LACP) • IGMP v1, v2 snooping support • MLD snooping • DHCP L2 relay • UDP relay • SNTP • SNMP v1/v2/v3 • LLDP • ISDP
Layer 3 services	<ul style="list-style-type: none"> • Static routing

Table 7. Technical specifications (continued)

Feature	Description
QoS	<ul style="list-style-type: none"> DiffServ QoS
System Service	<ul style="list-style-type: none"> DHCP, BOOTP Relay DHCP server
Security	<ul style="list-style-type: none"> RADIUS TACACS+ 802.1x MAC filter Port security Protected port Private group Storm control DHCP snooping IP source guard Dynamic ARP inspection MAC ACL (inbound) IP ACL (inbound)
Address database size	16 K MAC addresses per system
10/100/1000 buffer memory	Max support 1.5 MB buffer memory
Performance	<ul style="list-style-type: none"> Forwarding modes: Store-and-forward Network latency: <ul style="list-style-type: none"> < 3.91 us for 64 bytes for 1000 Mbps transmission < 10.194 us for 64 bytes for 100 Mbps transmission
Addressing	48-bit MAC address
Environment	<p>Operating:</p> <ul style="list-style-type: none"> Temperature: 32° to 122°F (0° to 50°C) Humidity: 90% maximum relative humidity, noncondensing Altitude: 10,000 ft (3,000 m) maximum <p>Storage:</p> <ul style="list-style-type: none"> Temperature: -4° to 158°F (-20° to 70°C) Humidity: 95% maximum relative humidity, noncondensing Altitude: 10,000 ft (3,000 m) maximum
Electromagnetic emissions and immunity	CE mark, FCC Part 15 Class A, VCCI Class A, Class A EN 55022 (CISPR 22) Class A, Class A C-Tick, EN 50082-1, EN 55024

Table 7. Technical specifications (continued)

Feature	Description
	CE mark, UL listed (UL 1950)/cUL, CB, CCC
Security	<ul style="list-style-type: none">• RADIUS• TACACS+• 802.1x• MAC filter• Port security• Protected port• Private group• Storm control• DHCP snooping• IP source guard• Dynamic ARP inspection• MAC ACL (inbound)• IP ACL (inbound)