



Managed Switch JGSM7224

Hardware Installation Guide



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Introduction

This guide describes hardware installation and basic troubleshooting for the **ProSafe™ 24-Port Managed Switch JGSM7224**. The NETGEAR managed switch is a state-of-the-art, high-performance, IEEE-compliant network solution. It includes powerful management features that you can use to eliminate bottlenecks, boost performance, and increase productivity.

These switches can be free standing, or rack mounted in a wiring closet or an equipment room. For information about features for these products, see the NETGEAR website at <http://www.netgear.com>.

JGSM7224 Front Panel and LEDs

The following figure shows the front panel of the JGSM7224. The front panel contains LEDs, a RST (reset) button, a USB port, RJ-45 jacks, and copper/fiber combo ports.

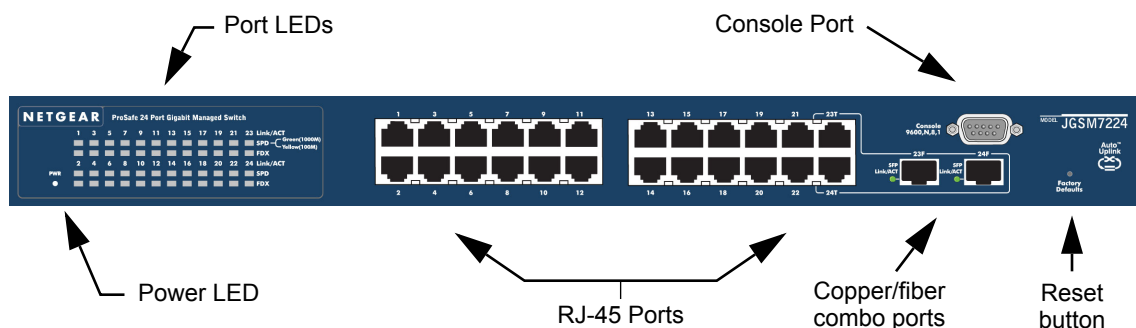


Figure 1.

For information about the LEDs on the front panel of the switch, see [Interpreting the LEDs](#) on page 5.

JGSM7224 Rear Panel

The rear panel has a console port, a redundant power supply connector, and a standard AC power receptacle for the supplied power cord.



Figure 2.

Interpreting the LEDs

The following table describes the LEDs on the front panel of the switch.

Table 1. LED Descriptions

LED	Description
PWR (power)	• Solid green. Power is supplied and the switch is working. • Solid yellow. System is booting up. • Off. Power is disconnected.
10/100/1000M Ports (3 LEDs per port)	Link/ACT • Off. No link is established on the port. • Solid green. A valid link is established on the port. • Blinking green. The port is sending or receiving packets. SPD • Off. No link is established on the port or current valid link is 10 Mbps.. • Solid yellow. Current valid link is 100 Mbps. • Solid green. Current valid link is 1000 Mbps. FDX • Off. No full-duplex link is established or half-duplex link is established on the port. • Solid green. A full-duplex link is established on the port. Note: If port 23–24 for the JGSM7224 media is changed to SFP, the RJ-45 LEDs change to Off status.
SFP Ports (1 LED per port)	SPD/Link/ACT LED • Off. No SFP module link is established on the port. • Solid green. A valid 1000 Mbps SFP module link is established on the port. • Blinking green. The port is sending or receiving packets at 1000 Mbps. Note: if port 23-24 for the switch is changed to fiber, the copper LEDs change to off status.

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:

- 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. Only a trained service technician should service 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 has fallen into the product.
 - The product has been exposed to water.
 - The product has been 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, contact technical support or 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 help avoid damaging your system, be sure that the voltage selection switch (if provided) on the power supply is set to match the power available at your location:
 - 115 volts (V), 60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
 - 100 V, 50 Hz in eastern Japan and 100 V, 60 Hz in western Japan
 - 230 V, 50 Hz in most of Europe, the Middle East, and the Far East
- Also, be sure that attached devices are electrically rated to operate with the power available in your location.
- Use only approved power cables. If you have not been provided with a power cable for your system or for any AC-powered option intended for your system, purchase a power

cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should 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.
- Move products with care; ensure that all casters and stabilizers are firmly connected to the system. Avoid sudden stops and uneven surfaces.

Hardware Installation

This chapter explains how to install the hardware for the ProSafe™ 24-Port Managed Switch JGSM7224.

Package Contents

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

- Managed Switch with preinstalled software
- Power adapter cord
- Rubber footpads for tabletop installation
- Rubber caps for the SFP sockets
- Rack-mounting kit
- Null-modem serial console cable (RS-232) with 9-pin connectors
- *Resource CD*: The CD contains documentation including the Installation Guide, and link to the *ProSafe JGSM7224 Managed Switch CLI Reference Manual* and the *ProSafe JGSM7224 Managed Switch Reference Manual*.
- *Installation Guide*

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.

Unpacking the Hardware

Check the contents of the boxes to make sure that all items are present before beginning the installation.

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. See [Selecting a Location](#) on page 10.

3. Remove all packing material.
4. Make sure that all items are present. See [Package Contents](#) on page 8.

Note: If any item is found 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 following sequence, as presented in this chapter:

1. Select a location. See the following section, [Selecting a Location](#) .”
2. Install the switch. See [Installing the Switch](#) on page 10.
3. Check the installation. See [Checking the Installation](#) on page 11.
4. Apply power and check the LEDs. See [Connecting to Power and Check the LEDs](#) on page 12.

Selecting 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 can greatly affect its performance. Before installing the switch or switches, make sure that the chosen installation location meets the following site requirements.

Table 1. Site Requirements for Switch Location

Requirements	
Mounting	• Desktop Installations. Provide a flat table or shelf surface. • Rack-mount Installations. Use a 19-inch (48.3-centimeter) EIA standard equipment rack that is grounded and physically secure, and the rack-mounting kit supplied with your switch.
Access	Put 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 55°C (32° and 131°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 will 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.

Installing the Switch

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

Installing 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.

Installing the Switch in a Rack

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

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.

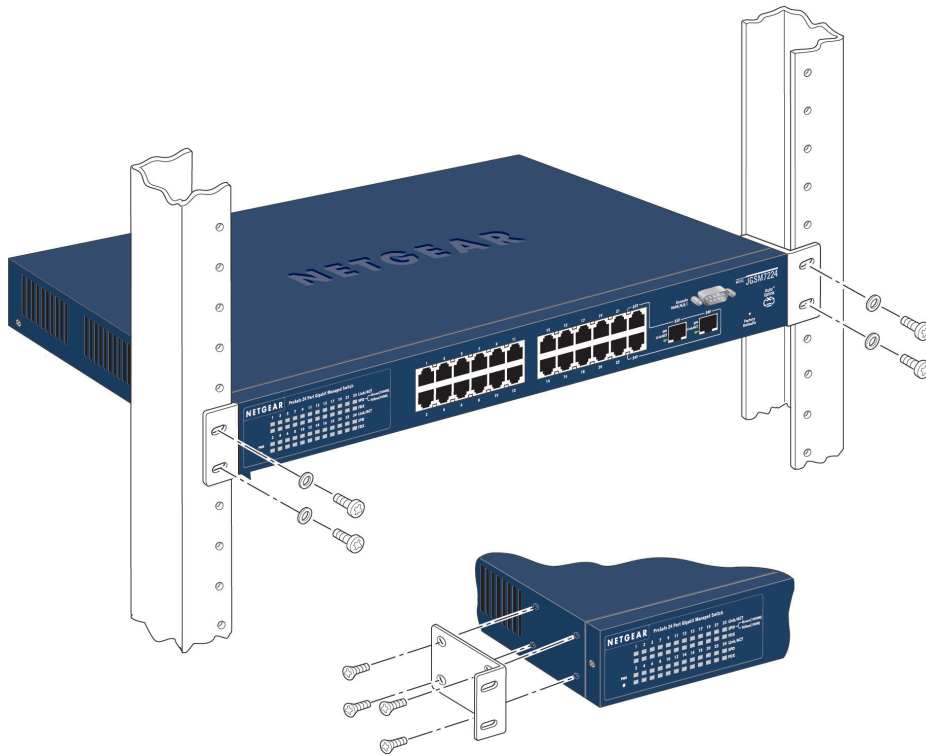


Figure 1.

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.

Checking 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 safety hazard.
4. Be sure that all equipment is mounted properly and securely.

Connecting 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).

After you select an appropriate outlet, follow these steps to apply AC power:

1. Connect one end of the AC power adapter cable to the rear of the switch, and the other end to a grounded three-pronged AC outlet.
2. Check the Power LED on the front panel of the switch. The LED should light up 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 remains yellow.

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 help with troubleshooting, see [Chapter 3](#).

SFP Modules

The module bay accommodates a standard SFP module with an LC connector that is compatible with the IEEE 802.3z 1000BASE-X standard. SFP modules are sold separately.

To install an SFP module insert the SFP module into the module bay. Press firmly to ensure that the module seats into the connector.

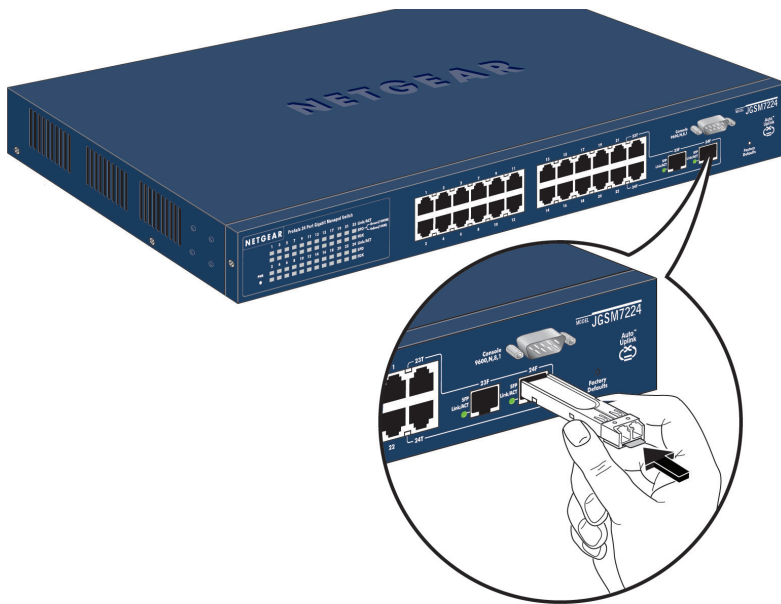


Figure 2.

Connecting Equipment to the Switch

You can connect devices, a Gigabit Ethernet module, a console, or a combination of these 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 (Cat5) 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).

Connecting 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. If you are stacking switches, see [Connecting a Redundant Power Supply \(RPS\)](#) on page 14.

To use a console you need the following items:

- VT100/ANSI terminal, or a Windows PC, Apple Macintosh PC, or UNIX workstation.
- Null-modem cable with 9-pin connectors on each end (shipped with the product).

To connect a console to the switch:

1. Connect the null-modem cable to the console port on the front of the switch.

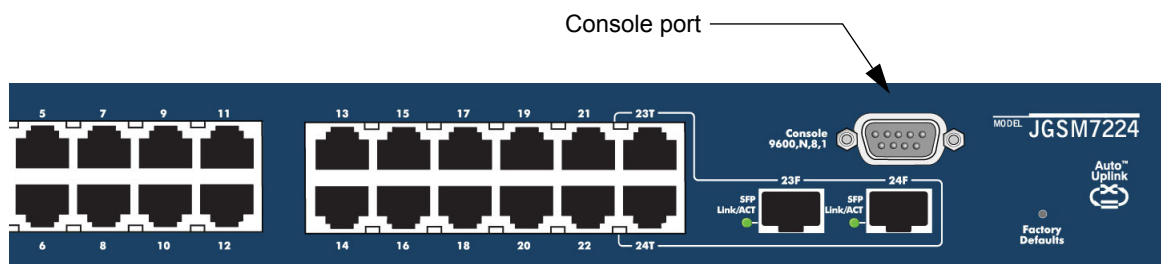


Figure 3.

2. Connect the other end of the cable to a workstation or terminal.
3. If you attached a workstation, start a terminal emulation program.
 - Microsoft Windows users can use HyperTerminal, which comes with the Windows operating systems.
 - Macintosh users can use ZTerm.
 - UNIX users can use a terminal emulator such as TIP.
4. Configure the terminal-emulation program to use the following settings:
 - Baud rate: 9,600 bps
 - Data bits: 8
 - Parity: none
 - Stop bit: 1
 - Flow control: none

After you connect a console to the switch, you will need to configure the switch. The following documents are provided for this purpose:

- *Installation Guide*. Explains basic setup and configuration (provided as both a print document and in PDF format on the *Resource CD*).
- *ProSafe JGSM7224 Managed Switch CLI Reference Manual*. Gives detailed examples of how to use the CLI. A link is provided on the *Resource CD*.
- *ProSafe JGSM7224 Managed Switch Reference Manual*. Describes configuration examples. A link is provided on the *Resource CD*.

Troubleshooting

Troubleshooting Chart

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

Table 1. 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.	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 used are correct and comply with Ethernet specifications. See in Appendix A. Check for a defective adapter card, cable, or port by testing it in an alternate environment where all products are functioning.
File transfer is slow, or performance degradation is a problem.	Half or full duplex setting on the switch and the connected device are not the same.	Make sure that the attached device is set to auto negotiate. Check the system message log.

Table 1. Troubleshooting Chart (Continued)

Problem	Cause	Solution
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 is flashing 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 1** 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 PCs are in working condition and that 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 remove AC power from the switch and then reapply AC power. If the problem continues, contact NETGEAR Technical Support.
- **Auto-negotiation**
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 auto-negotiation. If the device does not support auto negotiation, the switch determines the speed, and the duplex mode defaults to half duplex. The fiber gigabit ports negotiate speed, duplex mode, and flow control, provided that the attached device supports auto-negotiation.

Hardware Specifications



This appendix provides the hardware specifications for the ProSafe™ 24-Port Gigabit Managed Switch JGSM7224.

Table 1. Technical Specifications

Feature	JGSM7224
Power consumption	21.5W
Dimensions (H x W x D)	43 x 440 x 205 mm (1.6 x 17.3 x 8 inches)
Environment	Operating: • Temperature: 0°C to 50°C (32 to 122°F) • Humidity: 10%-90% maximum relative humidity, non-condensing • Altitude: 3,000 m (10,000 ft.) maximum Storage: • Temperature: -20°C to 70°C (28 to 158°F) • Humidity: 5%-95% maximum relative humidity, non-condensing • Altitude: 3,000 m (10,000 ft.) maximum
Safety	CB

Notification of Compliance



NETGEAR Wired Products

This section includes user requirements for operating this product in accordance with National laws for usage of radio spectrum and operation of radio devices. Failure of the end-user to comply with the applicable requirements may result in unlawful operation and adverse action against the end-user by the applicable National regulatory authority.

This product's firmware limits operation to only the channels allowed in a particular Region or Country. Therefore, all options described in this user's guide may not be available in your version of the product.

GPL License Agreement

GPL may be included in this product; to view the GPL license agreement go to <ftp://downloads.netgear.com/files/GPLnotice.pdf>.

For GNU General Public License (GPL) related information, please visit http://support.netgear.com/app/answers/detail/a_id/2649.

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