

NETGEAR[®]

10/100/1000 Mbps **Managed Stackable Switch**

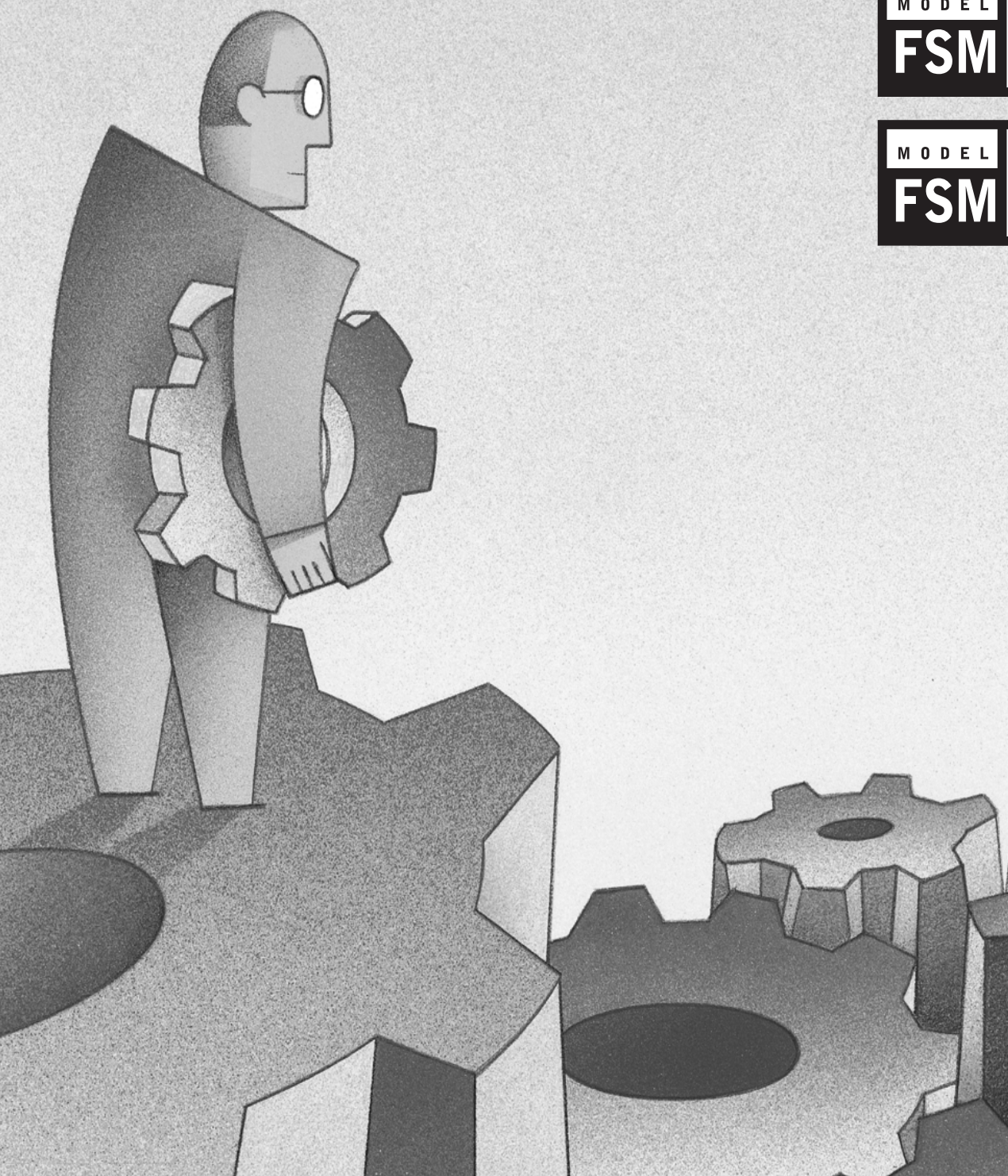
Installation Guide

MODEL

FSM 726S

MODEL

FSM 750S



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Federal Office for Telecommunications Approvals has been notified of the placing of this equipment on the market and has been granted the right to test the series for compliance with the regulations.

Voluntary Control Council for Interference (VCCI) Statement

This equipment is in the first category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines that are aimed at preventing radio interference in commercial and/or industrial areas.

Consequently, when this equipment is used in a residential area or in an adjacent area thereto, radio interference may be caused to equipment such as radios and TV receivers.

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

EN 55 022 Declaration of Conformance

This is to certify that the NETGEAR Model FSM726S/FSM750S Managed Stackable Switch is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55024 Class A (CISPR 22).

EN 55 022 and EN 55 024 Statements

This is to certify that the NETGEAR Model FSM726S/FSM750S Managed Stackable Switch is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class A (CISPR 22) and EN 55 024.



Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take appropriate measures.

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (NETGEAR Model FSM726S/FSM750S Managed Stackable Switch) do not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (NETGEAR Model FSM726S/FSM750S Managed Stackable Switch) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

Customer Support

For assistance with installing and configuring your NETGEAR system or with questions or problems following installation:

- Check the NETGEAR Web page at <http://www.NETGEAR.com>.
- Call Technical Support in North America at 1-888-NETGEAR. If you are outside North America, please refer to the phone numbers listed on the Support Information Card that shipped with your switch.
- Email Technical Support at support@NETGEAR.com.

Defective or damaged merchandise can be returned to your point-of-purchase representative.

Internet/World Wide Web

NETGEAR maintains a World Wide Web home page that you can access at the uniform resource locator (URL) <http://www.NETGEAR.com>. A direct connection to the Internet and a Web browser such as Internet Explorer or Netscape are required.

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CHAPTER 1: INTRODUCTION

Congratulations on your purchase of a NETGEAR Model FSM726S/FSM750S Managed, Fast Ethernet stackable Switch! Your NETGEAR Switch is a state-of-the-art, high-performance, IEEE-compliant network solution designed for users who want ease of use along with the power of management to eliminate bottlenecks, boost performance, and increase productivity.

This Installation Guide will assist you in getting your switch up and running. For a detailed description of the management features in this switch, refer to the User Manual, located on your Managed Switches CD-ROM that came with your switch.

This chapter serves as the introduction for using your NETGEAR FSM726S/FSM750S Switch and provides the following information:

Overview

Switch Features

Package contents

Overview

Your NETGEAR Model FSM726S/FSM750S Managed Stackable Switch provides the benefit of management with a complete package of features for the observation, configuration, and control of your network. With a web-based Graphical User Interface (GUI), the switch's many capabilities can be viewed and used in a simple and intuitive manner. For those who prefer a more traditional interface, there is both a Command Menu Interface (CMI) as well as a Command Line Interface (CLI) available through the console port on the front or a telnet connection via the network. The switch's management features include SNMP and RMON for port and switch information, VLAN for traffic control, port trunking for increased bandwidth, and Class of Service (CoS) for traffic prioritization. These features and more will allow you to better understand and better control your network.

Your NETGEAR Model FSM726S/FSM750S Managed Stackable Switch also provides two Gigabit Ethernet ports that are used either by the built-in RJ-45 ports or by the GBIC module bays, both located on the front panel. The GBIC module bays will accept any standard GBIC module, including the AGM721F 1000BASE-SX module from NETGEAR. Using these Gigabit ports, you can create high-speed connections to a server or network backbone. For example, you can:

- Connect switches to each other with high-speed links
- Link up to high-speed servers
- Connect fiber and copper Gigabit Ethernet networks

Your NETGEAR Model FSM726S/FSM750S Managed Stackable Switch can be free-standing, or rack mounted in a wiring closet or equipment room. It is IEEE-compliant and offers low latency for high-speed networking. It includes 24 auto-sensing 10/100 Ethernet/Fast Ethernet ports. The 10/100 ports are shielded RJ-45 ports that automatically negotiate to the highest speed. In addition, all 10/100 Mbps ports operate in half- or full-duplex mode, increasing the maximum bandwidth of each connection up to 20 Mbps or 200 Mbps, respectively. Using Auto Uplink™ technology, every RJ-45 port will automatically detect the proper MDI or MDI-X configuration to make the connection, eliminating the need for crossover cables. The maximum segment length is 328 feet (100 meters) over Category 5 unshielded twisted-pair (UTP) cable.

Features

The following list identifies the key features of the NETGEAR Model FSM726S/FSM750S Managed Stackable Switch.

- Twenty-four 10/100 Mbps auto sensing Fast Ethernet switching ports
- Two Gigabit Ethernet ports that can be used either through the built-in RJ-45 ports for 10/100/1000 Mbps connectivity or through the GBIC modules for a variety of fiber connections
- Two, built-in gigabit speed stacking ports for network expandability and scalability up to 144 10/100 ports, using either FSM726S or FSM750S or a combination of them
- Full compatibility with IEEE standards:
 - o IEEE 802.3i, (10BASE-T)
 - o IEEE 802.3u (100BASE-TX)
 - o IEEE 802.3ab (1000BASE-T)
 - o IEEE 802.3x (full-duplex flow control)
- Full Layer 2 switch management including:
 - o SNMP
 - o RMON (groups 1,2,3 and 9)
 - o IEEE 802.1Q (up to 64 Static VLAN groups)
 - o IEEE 802.1D (Spanning Tree)
 - o Port Trunking - Manual as per IEEE802.3ad Link Aggregation
 - o Port Mirroring
 - o DHCP Client for easy set up
 - o Configuration file export/import
 - o TFTP firmware upgrade
- Security to better safeguard your network
 - o Password Access Control
 - o IP Access Control List
 - o RADIUS Client Support
 - o IEEE 802.1x Port Authorization Protocol*
- Traffic management to better manage traffic flows through your switch
 - o IEEE 802.1p (Class of Service)
 - o DiffServ traffic prioritization
 - o Broadcast Storm Control*
 - o IGMP snooping
 - o Half-duplex back-pressure control
 - o Full-duplex IEEE 802.3x pause frame flow control
- Multiple interfaces to access the management features
 - o Browser-based Graphical User Interface (GUI)
 - o Command Menu Interface (CMI)
 - o Command Line Interface (CLI)
 - o Telnet or Console
 - o SNMP-based Network Management Software (NMS)

- Automatic hardware configuration on all RJ-45 ports
 - o Auto-sensing and auto-negotiating speed
 - o Auto Uplink™ on all ports to make the right connection (MDI/MDI-X)
 - o Full- and half-duplex functions
- Automatic address learning function to build the packet-forwarding information table. The table contains up to 8,000 media access control (MAC) addresses (that is, the switch can support networks with as many as 8,000 devices).
- Store-and-Forward transmission to remove bad packets from the network
- LED indicators for monitoring of power, link, activity, speed, duplex, and collisions
- Flexible installation:
 - o Standalone desktop installation
 - o 19-inch standard rack-mount
- Standard 1U case size (FSM726S), 2U case size (FSM750S)

* Available in future software release, free of charge

Package Contents

Figure 1-1 shows the package contents for the Managed Switch.

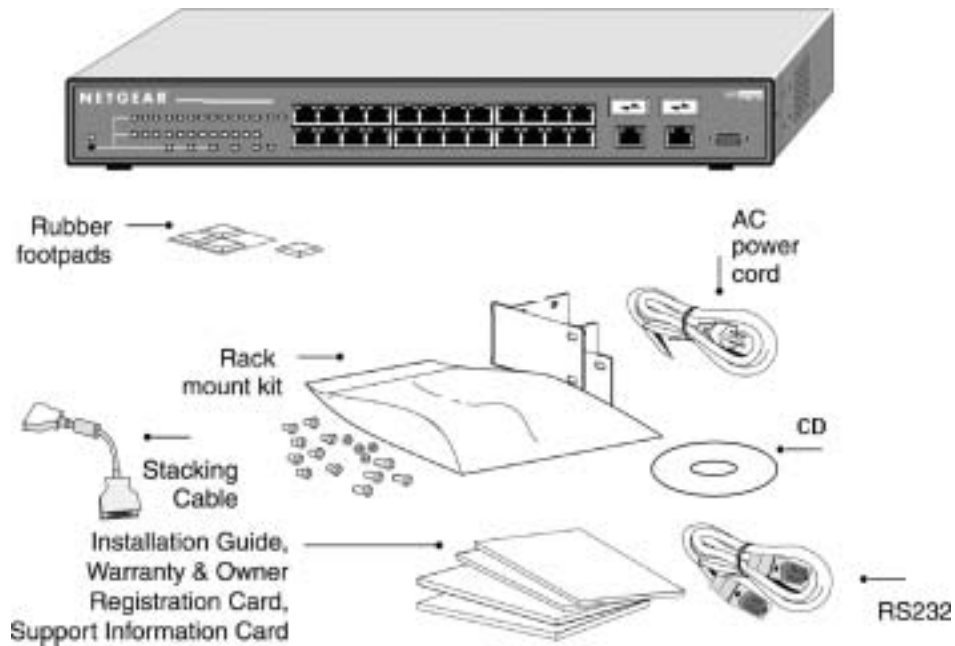


Figure 1-1. Package Contents

Verify that your package contains the following:

- FSM726S/FSM750S Managed Stackable Switch
- Rubber footpads for tabletop installation
- Power cord
- Stacking cable
- Null-modem cable
- Rack-mount kit for installing the switch in a 19-inch rack
- This Installation Guide
- Managed Switches CD-ROM
- Support Information Card
- Warranty & Owner Registration Card

If you ordered additional GBIC modules with your switch, they are provided in a separate package.
If any item is missing or damaged, contact your place of purchase immediately.

CHAPTER 2: PHYSICAL DESCRIPTION

This chapter describes the hardware features of the NETGEAR Model FSM726S/FSM750S Managed Stackable Switch. Topics include:

- Front and back panels
- 10/100 Mbps auto-sensing RJ-45 ports
- Gigabit Ethernet Ports (RJ-45 and GBIC module bay)
- LED descriptions
- Console port
- Stacking ports

Front & Rear Panels

Figures 2-1 and 2-2 show the key components on the front and back panels of the NETGEAR Model FSM726S & FSM750S Managed Stackable Switch

The front panel contains LEDs, RJ-45 jacks, GBIC module bays, and a console port. The back panel has two stacking ports and a standard AC power receptacle for accommodating the supplied power cord.



Figure 2-1. Front and Rear Panel of the FSM726S Managed Stackable Switch

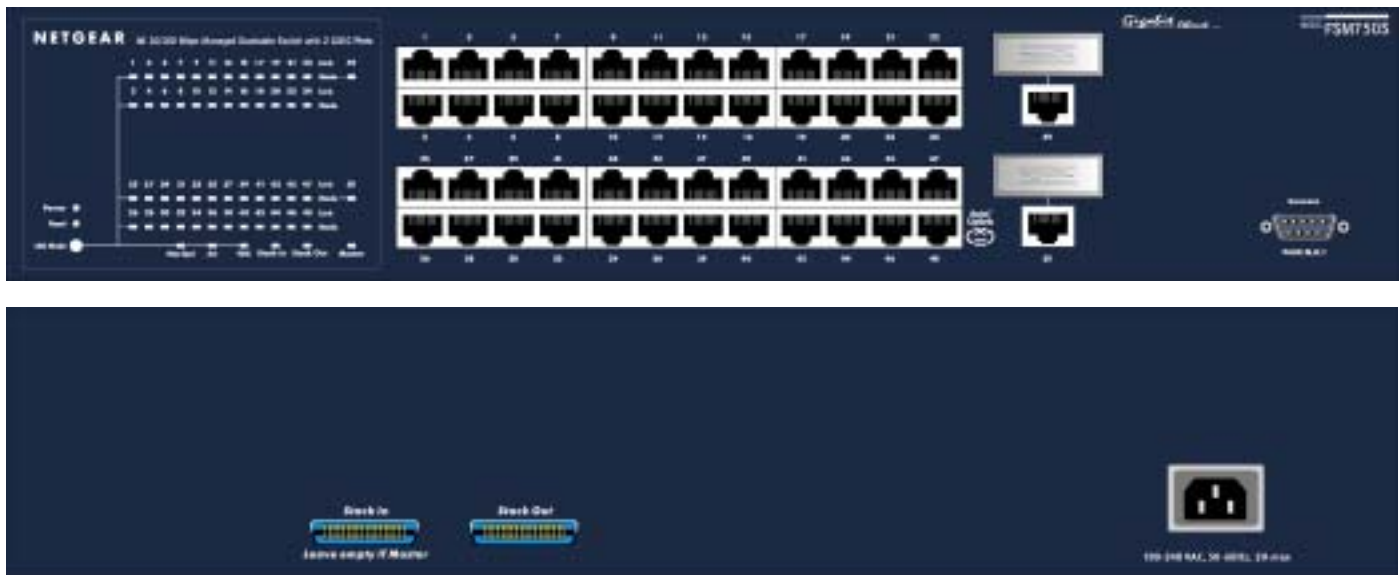


Figure 2-2. Front and Rear Panel of the FSM750S Managed Stackable Switch

10/100 Mbps RJ-45 Ports

As Figures 2-1 and 2-3 shows, the FSM726S/FSM750S Managed Stackable Switch has 24 or 48 10/100 Mbps RJ-45 ports. These ports are auto-sensing 10/100 Mbps ports: When you insert a cable into an RJ-45 port, the switch automatically ascertains the maximum speed (10 or 100 Mbps) and duplex mode (half- or full-duplex) of the attached device. The 10/100 Mbps ports support only unshielded twisted-pair (UTP) cable terminated with an 8-pin RJ-45 plug.

To simplify the procedure for attaching devices, all RJ-45 ports support Auto Uplink. This technology lets you attach devices to the RJ-45 ports using either straight-through or crossover cables. When you insert a cable into the switch's RJ-45 port, the switch automatically:

- 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 connecting the port to a PC) or an “uplink” connection (such as when connecting the port to a router, switch, or hub).
- After ascertaining this information, the switch automatically configures the RJ-45 port to enable communications with the attached device, without requiring user intervention. This way, Auto Uplink technology compensates for setting uplink connections, while eliminating concern about whether to use crossover or straight-through cables when attaching devices.

Warning! You must use Link Aggregation (a.k.a. Port Trunking) to create multiple links between switches. Using Auto Uplink to create multiple active paths between any two network devices can cause undesirable loops in the network, resulting in an endless broadcast traffic that disables your network. Loops occur when there are alternate routes between two network devices. In Figure 2-3, for example, connecting two RJ-45 ports on a NETGEAR Model FSM726S Stackable Managed Switch to a router containing a 4-port switch creates a loop. Spanning Tree Protocol will prevent loops, if that advanced feature is enabled.

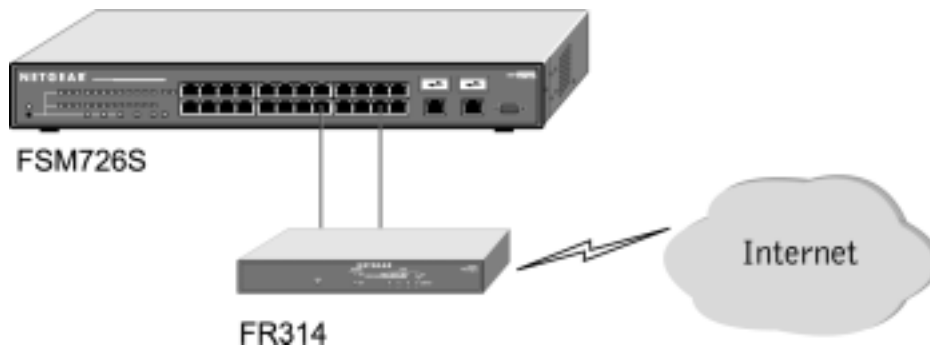


Figure 2-3 Warning! Creating Redundant Paths between Network Devices

Gigabit Ethernet Ports (RJ-45 and GBIC module bay)

Your NETGEAR Model FSM726S/FSM750S Managed Stackable Switch has two Gigabit Ethernet ports that can be used as either a 1000BASE-T port or as a GBIC module bay. The default setting for those ports are for the built-in RJ-45 connector to be active, but they can be independently configured to activate either the RJ-45 or the GBIC module, enabling multiple combinations of fiber and copper connections. The Gigabit Ethernet ports provide a full-duplex 1000 Mbps (1 Gbps) connection that effectively doubles throughput to 2 Gbps.

The GBIC bay accommodates a standard GBIC module, such as the NETGEAR AGM721F 1000BASE-SX GBIC module. This module has an SC connector that is compatible with the IEEE 802.3z 1000BASE-SX standard.

LED Descriptions

The front panel of the NETGEAR Model FSM726S/FSM750S Managed Stackable Switch has LEDs that provide a quick and accurate display of port speed, activity, collisions, and duplex mode. The Gigabit Ethernet ports also have LEDs that show link and mode status. Table 2-1 summarizes the LEDs on the switch and Gigabit Ethernet module.

Table 2-1. Front Panel LEDs:

Label	Color	Activity	Description
Power	Green Yellow	On On Blinking Off	Power is supplied to the switch. Power On Self Test (POST) in progress Hardware failure during POST Power is disconnected
Link (the port number)	Green	On Off	Port has a valid link connection. A valid link has not been established on the port.
LED Mode in (Three LEDs)			
Max Spd	Green	On Off	Port has made a connection at the fastest speed possible for that port. For 10/100 Mbps ports, it indicates a 100 Mbps connection. For a 10/100/1000 Mbps port, it indicates a 1 Gbps connection. Port is not operating at the fastest speed possible.
ACT	Green	Blinking Off	Data transmission is occurring on the port. No data transmission is occurring on the port.
FDX	Green Yellow	On On Blinking	Port is operating in full-duplex mode. Port is operating in half-duplex mode. Collision is occurring.
Stack-In	Green	On Off	Stack In port has a valid link connection. Stack In port does not have a valid link connection
Stack-Out	Green	On Off	Stack Out port has a valid link connection. Stack Out port does not have a valid link connection
Master	Green	On Off	Switch acts as a master unit in a stack of FSM700S switches. Switch acts as a slave unit in a stack of FSM700S switches.

Console Port

Your NETGEAR Model FSM726S/FSM750S Managed Stackable Switch has a console port on the front panel. This port is labeled **Console** and is **required for initial management configuration** of the switch. It also lets you manage the switch using a directly connected VT-100 terminal, personal computer (PC), Apple Macintosh, or UNIX workstation. The terminal, computer, or workstation connects to the console port using the null-modem cable supplied with your switch.

The console port is configured to use the following settings:

- Baud rate: 9,600 bps
- Data bits: 8
- Parity: none
- Stop bit: 1
- Flow control: none

These settings appear below the connector on the switch front panel.

In addition to using the console port, you can manage the switch using a Web browser or a Simple Network Management Protocol (SNMP) management program.

Note: You must use the console port for the initial management configuration.

For more information about console-port connections, see “Connecting to the Console Port” in Chapter 3 Installation. For more information about managing the switch, see the User Manual located on the CD-ROM.

Stacking Ports

Your NETGEAR Model FSM726S or FSM750S Managed Stackable Switch has two stacking ports on the back panel, each with a full-duplex throughput of 2.6 gigabit per second (Gbps). These ports are labeled **Stack In** and **Stack Out**. You can use the stacking ports to cascade NETGEAR Model FSM726S and FSM750S Managed Stackable Switches as your network grows to a maximum of 144 10/100 Mbps ports. The front panel of the switch contains **Stack In** and **Stack Out** LEDs that show link on these stacking ports. For more information about stacking switches, see “Connecting Multiple Switches Through the Stacking Ports at the Rear Panel” on page 18.

CHAPTER 3: INSTALLATION

This chapter describes the installation procedures for your NETGEAR Model FSM726S/FSM750S Managed Stackable Switch. Switch installation involves the following steps:

- Step 1: Preparing the site
- Step 2: Installing the switch
- Step 3: Checking the installation
- Step 4: Applying AC power
- Step 5: Connecting devices to the switch
- Step 6: Installing a GBIC module
- Step 7: Connecting to the console port to manage the switch (initial configuration)
- Step 8: Connecting multiple switches through the use of stacking ports at the rear panel

Step 1: Preparing the Site

Before you install your switch, be sure your operating environment meets the operating environment requirements in Table 3-1.

Table 3-1. Site Requirements

Characteristics	Requirements
Mounting Desktop installations: Rack-mount installations:	Provide a flat table or shelf surface. Use a 19-inch (48.3-centimeter) EIA standard equipment rack that is grounded and physically secure. You also 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 is shown in Appendix C. Be sure the AC outlet is not controlled by a wall switch, which can accidentally turn off power to the outlet and the switch.
Environmental Temperature: Operating humidity:	Install the switch in a dry area, with ambient temperature between 0 and 40°C (32 and 104°F). Keep the switch away from heat sources such as direct sunlight, warm air exhausts, hot-air vents, and heaters. The installation location should have a maximum relative humidity of 90%, non-condensing.
Ventilation: Operating conditions:	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 there is adequate airflow in the room or wiring closet where you intend to install the switch. Keep the switch at least 6 ft (1.83 m) away from nearest source of electromagnetic noise, such as a photocopy machine.

Step 2: Installing the Switch

You can install your NETGEAR Model FSM726S/FSM750S Managed Stackable 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/vibrations.

Installing the Switch in a Rack

To install the switch in a rack, use the following procedure (and refer to Figure 3-1). To perform this procedure, you need the 19-inch rack-mount kit supplied with your switch.

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 #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 #2 Phillips screwdriver to secure the switch in the rack.



Figure 3-1. Attaching Mounting Brackets

Step 3: Checking the Installation

Before you apply power:

- o Inspect the equipment thoroughly.
- o Verify that all cables are installed correctly.
- o Check cable routing to make sure cables are not damaged or create a safety hazard.
- o Be sure all equipment is mounted properly and securely.

Step 4: Applying AC Power

NETGEAR Model FSM726S/FSM750S Managed Stackable Switch does not have an ON/OFF switch; the only method of applying or removing AC power is by connecting or disconnecting 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, use the following procedure to apply AC power.

1. Connect the female end of the supplied AC power adapter cable to the power receptacle on the back of the switch.
2. Connect the 3-pronged end of the AC power adapter cable to a grounded 3-pronged AC outlet.

When you apply power, the **Power** LED on the switch's front panel will be Yellow, as it conducts a Power On Self Test (POST). After the switch passes the POST, the **Power** LED will change to Green and the switch is functional and ready to pass data.

If the **Power** LED does not go on, check that the power cable is plugged in correctly and that the power source is good. If this does not resolve the problem, refer to Appendix B, Troubleshooting.

Step 5: Connecting Devices to the Switch

The following procedure describes how to connect devices to the switch's RJ-45 ports. Your NETGEAR Model FSM726S/FSM750S Managed Stackable Switch contains Auto Uplink™ technology, which allows you to attach devices using either straight-through or crossover cables.

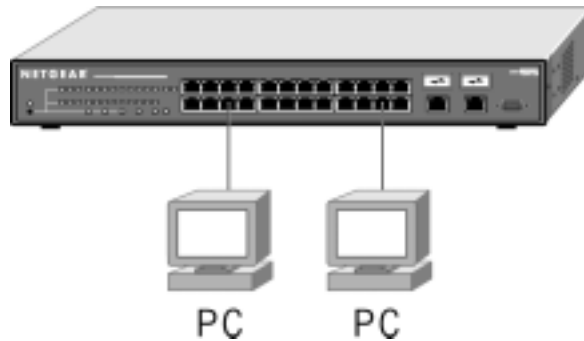


Figure 3-2. Connecting Devices to the Switch

Connect each device to an RJ-45 network port on the switch's front panel (see Figure 3-2). Use Category 5 (Cat5) unshielded twisted-pair (UTP) cable terminated with an RJ-45 connector to make these connections. Note: Ethernet specifications limit the cable length between the switch and the attached device to 100 m (328 ft).

Step 6: Installing a GBIC Module

The following procedure describes how to install a GBIC Gigabit Ethernet module, such as the NETGEAR AGM721F, in the switch's Gigabit module bays. The AGM721F is sold separately from the FSM726S/FSM750S. If you do not want to install a GBIC module at this time, skip this procedure.

To install a GBIC module:

1. Insert the GBIC module into the GBIC module bay. Press firmly to ensure the module seats into the connector.
2. After the switch has been configured for management (Step 7), use one of the management interfaces (web browser or console interface) to configure the port with the GBIC module installed to the GBIC option.
3. To install a second Gigabit Ethernet module, repeat this procedure using the second module and the unoccupied module bay.



Figure 3-3. Installing a Gigabit Ethernet Module into an FSM726S

Step 7: Connecting to the Console Port to Manage the Switch (initial configuration)

Your NETGEAR Model FSM726S/FSM750S Managed Stackable Switch contains software for viewing, changing, and monitoring the way it works. This management software is not required for the switch to work. You can use the 10/100 Mbps ports, and the built-in RJ-45 Gigabit ports without using the management software. However, the management software can let you improve the efficiency of the switch and, as a result, improve its overall performance as well as the performance of your network. This step describes how to access the management software.

You can access the management features using the console interface, and if you know the IP address of the switch, you can also use a web browser, telnet program, or SNMP management application to access the switch remotely. To learn the IP address, you must first access the management via the console interface.

After you power-up the switch for the first time, you can connect to it using a VT100/ANSI terminal or a PC, Apple Macintosh, or UNIX workstation that is directly connected to the switch's console port.

To connect a console to the switch:

1. Connect a VT100/ANSI terminal or a PC, Apple Macintosh, or UNIX workstation to the switch's console port, labeled Console, using the null-modem cable supplied with the switch. The supplied null-modem cable has 9-pin connectors on each end.
2. If you attached a PC, Apple Macintosh, or UNIX 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.
3. 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
4. Hit the return key, and the below screen should appear.

```
FSM726S Managed Stackable Switch
System Information

Uptime: 0 Days 0 hr. 2 min. 34 sec.

System Description: FSM726S Managed Stackable Switch
System Name: Financial Department
System Contact: Fred Blake
System Location: Headquarter
MAC Address: 00:09:5b:26:4c:72
IP Address: 172.16.7.1
Default Gateway: 172.16.7.97
Subnet Mask: 255.255.240.0
Software Version: 1.0.3 (2324)

<ESC> Back *To configure this page, goto the Set-up windows <Ctrl-L> Refresh
```

Figure 3-4. System Information

5. If you want to use your web browser, or telnet session to manage your switch, note the IP address on this page. To use your web browser, simply type the IP address in the URL address bar and hit enter. If you want to use an SNMP management application, you will need to note the IP address and to configure the SNMP settings in your switch so that it will respond to SNMP requests. The SNMP configuration can be done through either the console or web browser GUI.

Note: You need to know the IP address of the switch in order to use your browser or SNMP application to manage the switch. If you leave the switch IP mode in the default DHCP mode, the IP address of your switch could change, and you would have to reconnect to the switch via the console port to discover the new IP address. NETGEAR recommends changing the IP mode to Manual for a more reliable connection. If you need help changing the IP mode, please refer the User Manual on the Managed Switches CD-ROM.

Note: Step 5 of the installation process assumes that you have a DHCP server in your network. If you do not, you will have to manually assign an IP address. To do so,

1. Hit the Escape key
2. Select 'C' for Set-up
3. Select 'B' for IP configuration
4. Enter in the IP address, Subnet mask, and Default Gateway
5. Hit Ctrl-W to save the settings to NVRAM
6. Hit the Escape key twice to exit to the main menu
7. Select 'D' for the Tools page
8. Select 'D' for reset, and confirm with a 'Y'

To continue using the console interface to manage your switch, e.g. set GBIC ports, hit 'ESC' to go to the main menu. To set the GBIC ports, go to Set-up, then Port Configuration. Use your arrow keys to move the cursor down to port 25 or 26, and hit the space bar to toggle between the RJ-45 port and the GBIC port.

To learn more about the managed features on your switch, refer to the User Manual on the Managed Switches CD-ROM.

Step 8: Connecting Multiple Switches Through the Stacking Ports At the Rear Panel

Your NETGEAR Model FSM726S or FSM750S Managed Stackable Switch provides two stacking connectors. You can use these connectors to cascade up to 144 10/100 Mbps ports to create one large virtual switch. You can see an example of a switching stack in the figure next page. When multiple switches are stacked together, they behave as one single switch and you can manage them as such. This saves considerable effort on the user's part when configuring them is required.

Observe the following guidelines when installing the switches in a stacked configuration.

Connecting Stacking Ports

When connecting two Managed Stackable Switches, one stacking cable connects the stacking port on one switch to the stacking port on the other switch.

Connect Straight-in

To prevent bent pins, do not install the stack port cable connector at an angle. Use extra care to insert the cable connector straight into the switch's stacking connector.

The following procedure describes how to stack three FSM726S Managed Stackable Switches. This procedure is the same if you are stacking FSM750S Managed Stackable Switches or a combination of the two. Figure 3-5 shows these connections:

1. Connect either end of the supplied stacking cable to the Stack In connector on the first switch. Connect the other end of the cable to the Stack Out connector on the second switch.
2. Connect either end of another stacking cable to the Stack In connector on the second switch. Connect the other end of the cable to the Stack Out connector on the third switch. The third switch will be the master switch.

Note: Stacked Switches can be assigned a single IP address using the switches' management software. The stack can then be treated as a single manageable unit with one IP address. The switch with that IP address is considered the master unit, while the other switches in the stack are called slave units.

Note: The switch that is acting as the master unit should have the **Stack In** port empty.

Adding or Removing Switches to the stack

For the master unit to properly manage the stack, we recommend the following steps when adding or removing a switch from the stack

1. Power down all switches in the stack.

Note: Do not add or remove stacking cables while the switch is powered up.

2. Remove/Add the necessary switches

Note: the Stack In port on the master unit is always empty.

3. Power up the slave units in the stack.

4. Power up the master unit



Figure 3-5. Cabling Three FSM726S Stacked Switches

APPENDIX A: TECHNICAL SPECIFICATIONS

This appendix provides technical specifications for the NETGEAR Model FSM726S or FSM750S Managed Stackable Switch.

Network Protocol and Standards Compatibility

IEEE 802.3 10BASE-T
IEEE 802.3u 100BASE-TX
IEEE 802.3z 1000BASE-SX
IEEE 802.3ab 1000BASE-T
IEEE 802.3x flow control

Management

IEEE 802.1Q Static VLAN (Up to 64)
IEEE 802.1p Class of Service (CoS)
IEEE 802.1D Spanning Tree Protocol
Port Trunking - Manual as per IEEE802.3ad Link Aggregation
IGMP v1, v2 Snooping Support
Port Mirroring support
SNMP v1
RFC1757 RMON 1 groups 1,2,3, and 9
RFC1213 MIB II
RFC1643 Ethernet Interface MIB
RFC1493 Bridge MIB
RFC2131 DHCP client (& BootP)
RFC2138 RADIUS client
Broadcast storm control
Private Enterprise MIB
Configuration file upload, download (TFTP)

Interface

(FSM750)

48 RJ-45 connectors for 10BASE-T, 100BASE-TX, and 1000BASE-T (Auto Uplink™ on all ports)
2 Gigabit Interface Converter (GBIC) slots for GBIC modules
RS-232 Console Port

(FSM726)

26 RJ-45 connectors for 10BASE-T, 100BASE-TX, and 1000BASE-T (Auto Uplink™ on all ports)
2 Gigabit Interface Converter (GBIC) slots for GBIC modules
RS-232 Console Port

LEDs

Per port (10/100 and Gigabit): Link, Speed, Duplex, Activity, and Collision
Per device: Power

Performance Specifications

Forwarding modes: Store-and-forward
Bandwidth: 12.8 Gbps (Non-blocking) in FSM726S, 19.2Gbps (Non-blocking) in FSM750S

Network latency: Less than 80 microseconds for 64-byte frames in store-and-forward mode for 10 Mbps to 100 Mbps transmission
Address database size: 8,000 media access control (MAC) addresses per system
Addressing: 48-bit MAC address
10/100 buffer memory: 735 KB embedded memory for 24 ports
Gigabit buffer memory: 122 KB embedded memory per port
Acoustic noise: (ANSI-S10.12): 45 dB
Heat Dissipation: 18.99 Btu/hr
Mean Time Between Failure (MTBF): 58,300 hours (~ 6.5 years)

Power Supply

(FSM750S)

Power Consumption: 43 W maximum
100-240VAC/50-60 Hz universal input

(FSM726)

Power Consumption: 36 W maximum
100-240VAC/50-60 Hz universal input

Physical Dimensions

(FSM750S)

440 x 253 x 86 mm (W x D x H)
17.32 x 9.96 x 3.38 inch

(FSM726S)

440 x 253 x 43 mm (W x D x H)
17.32 x 9.96 x 1.7 inch

Environmental Specifications

Operating temperature: 0 to 40°C

Storage temperature: -20 to 70°C

Operating humidity: 90% maximum relative humidity, non-condensing

Storage humidity: 95% maximum relative humidity, non-condensing

Operating altitude: 10,000 ft (3,000 m) maximum

Storage altitude: 10,000 ft (3,000 m) maximum

Electromagnetic Emissions

CE mark, commercial

FCC Part 15 Class A

VCCI Class A

EN 55022 (CISPR 22), Class A

C-Tick

Electromagnetic Immunity

EN 50082-1

EN 55024

Safety

CE mark, commercial

CSA certified (CSA 22.2 #950)

TUV licensed (EN 60 950)

UL listed (UL 1950)/cUL IEC950/EN60950

Modules

AGM721F GBIC SX module for 1000BASE-SX connections with SC connectors for 50um or 62.5um multi-mode fiber cable

APPENDIX B: TROUBLESHOOTING

This chapter provides information about troubleshooting the NETGEAR Model FSM726S/FSM750S Managed Stackable Switch. Topics include:

- o Troubleshooting chart
- o Additional troubleshooting suggestions

Troubleshooting Chart

Table B-1 lists symptoms, causes, and solutions of possible problems.

Table B-1. Troubleshooting Chart

Symptom	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 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 all cables used are correct and comply with Ethernet specifications. See Appendix D. Check for a defective adapter card, cable, or port by testing them 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 the attached device is set to auto negotiate.
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 all connectors are securely positioned in the required ports. Equipment may have been accidentally disconnected.
FDX LED is blinking yellow excessively.	Collisions are occurring on the connected segment. Duplex modes are mismatched.	Some collisions are normal when the connection is operating in half-duplex mode. Recheck the settings of the device attached to the RJ-45 port. Make sure the attached device is set to auto negotiate.
ACT LED is flashing continuously on all connected ports and the network is disabled	A network loop (redundant path) has been created (see Figure 2-3).	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 B-1 do not resolve your problem, refer to the troubleshooting suggestions in this section.

Network Adapter Cards

Make sure the network adapter cards installed in the PCs are in working condition and the software driver has been installed.

Configuration

If problems occur after altering 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 required, 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. In North America, call 1-888-NETGEAR. If you are outside of North America, please refer to the support information card included with your product.

Auto Negotiation

The 10/100 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 only determines the speed correctly and the duplex mode defaults to half-duplex.

The gigabit port on the Gigabit module negotiates speed, duplex mode, and flow control, provided that the attached device supports auto-negotiation.

APPENDIX C: Default Settings

This appendix provides the default settings for the NETGEAR Model FSM726S/FSM750S Managed Stackable Switch.

Feature	FSM726S/FSM750S Default Setting
Port Speed	Auto-negotiation
Port Duplex	Auto-negotiation
Flow Control (half duplex)	Enabled
Flow Control (full duplex)	Enabled
Broadcast Storm Control	Enabled (3000 packets per second)
Gigabit ports	RJ-45 enabled
IP Configuration	DHCP enabled
Password protection	Disabled
User Name	Admin
Password	1234
VLAN	All ports belong to Default VLAN (VLAN 1) as untagged ports
IP Multicast Filtering	Disabled
Spanning Tree Protocol	Enabled
Fast Link	Disabled
Traffic Prioritization 802.1p DiffServe	Optimized for flow control, all ports normal priority 0-31 normal priority, 32 – 63 high priority
MAC address aging	300 seconds
SNMP Community	Public (you must add application to Host table before switch will respond to SNMP requests)

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