NETGEAR

MODEL FS 105

Fast Ethernet Switch

Installation Guide

Bay Networks
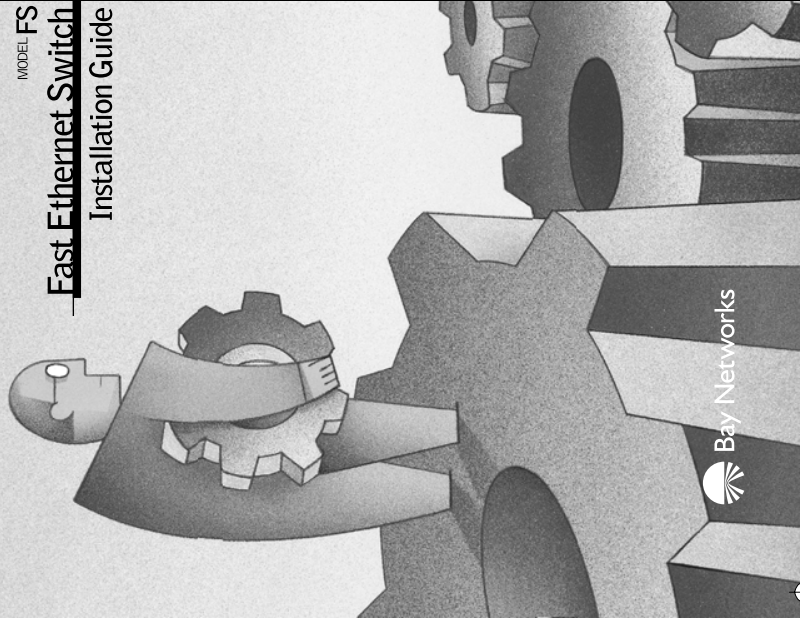
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Introduction

The NETGEAR™ Model FS105 Fast Ethernet Switch provides you with a low-cost, high-performance network solution.

Product Illustration

Front Panel of the Model FS105 Switch

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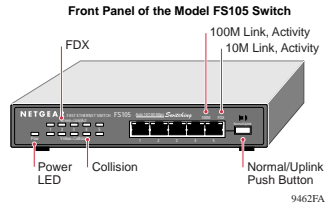
LEDs

This table describes the activity of the Model FS105 switch LEDs.

Label	Color	Activity	Description
Pwr (power)	Green	On Off	Power is supplied to the switch. Power is disconnected.
100M	Green	On	This port is operating at 100 Mbps.
		Blinking	This port is receiving/transmitting at 100 Mbps.
10M	Green	On	This port is operating at 10 Mbps.
		Blinking	This port is receiving/transmitting at 10 Mbps.
FDX	Green	On Off	The port is operating in full-duplex mode. The port is operating in half-duplex mode.
Collision	Yellow	Blinking	Data collision is occurring on the port. When a collision occurs, the connected device pauses and transmits again after waiting a specified time.

Normal/Uplink Push Button

All ports (1 through 4) are configured for normal wiring to connect to a PC. When the push button is pressed in, port 5 is configured for uplink wiring to connect to another switch or to a hub, using a straight-through twisted pair cable. When the push button is out, port 5 is configured for normal wiring to connect to a PC.

Rear Panel

The rear panel of the Model FS105 switch has a power adapter receptacle for the supplied power adapter.

# Applications

PC Workgroup

The Model FS105 switch is used as a desktop switch to build a small network that enables users to have 100 Mbps access to a file server. Compared with a hub, where the network bandwidth is shared among all users, the model FS105 switch provides dedicated 10 or 100 Mbps (megabits per second) bandwidth to each PC.

If a full-duplex adapter card is installed in the server or PC, a 200 Mbps connection is possible on the port where the server or PC is connected.

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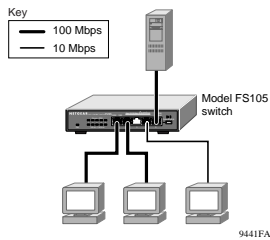
Expanded Workgroup

The Model FS105 switch is used to connect multiple PC workgroups.

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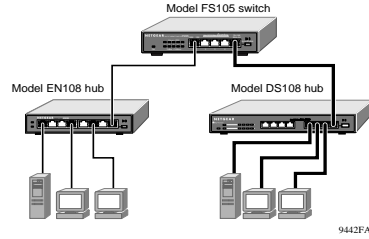
1 Preparing the Site

Before you begin installing your switch, prepare the installation site. Make sure that your operating environment meets the operating environment requirements of the equipment.

Characteristic	Requirement
Temperature	Ambient temperature between 0° and 40° C (32° and 104° F). No nearby heat sources such as direct sunlight, warm air exhausts, or heaters.
Operating humidity	Maximum relative humidity of 90%, noncondensing.
Ventilation	Minimum 2 inches (5.08 cm) on all sides for cooling. Adequate airflow in room or wiring closet.
Operating conditions	At least 6 feet (1.83 m) to nearest source of electromagnetic noise (such as photocopy machine).
Power	Adequate power source within 6 feet (1.83 m).

2 Installing the Switch

Set the switch up on a flat surface; you do not need any special tools. Be sure the switch is positioned with at least 2 inches of space on all sides for ventilation.

3 Connecting Devices

To connect devices to the switch:

1. **Connect the devices to the 10/100 Mbps ports on the switch, using Category 5 UTP cable and an RJ-45 plug.**

   Note: Ethernet specifications limit the cable length between your PC or server and the switch to 328 feet (100 meters).

2. **Set the Normal/Uplink push button:**
   - To connect to a router.
   - To connect to a hub or another switch.

3. **Connect one end of the DC power adapter cable to the power outlet on the rear panel of the switch and the other end of the power adapter cable to the wall outlet.**

4 Verifying Installation

When power has been applied to the switch:
- The green Pwr (power) LED on the front panel is on.
- The green Link LED on each connected port is on.

When the switch is connected and operating, refer to the table in "LEDs" for information about the LEDs and their activity.

▶ Troubleshooting Information

Symptom	Cause	Solution
10M or 100M Link LED is off on a connected port.	Port connection is not functioning.	Make sure the attached device is powered and there is a proper UTP connection. Make sure the network adapter card installed in the PC is working. Verify that the network adapter card is operating at the proper speed (10 Mbps or 100 Mbps). Make sure the proper cable is installed. Check for miswired cable pairs or loose connectors. For 100 Mbps operation, only Category 5 or better grade cable should be used. For 10 Mbps operation, Category 3 cable can be used. Make sure the length of the UTP cable from the switch to the device does not exceed 328 feet (100 meters).
100M link and 10M link are off on port 5.	Port connection is not functioning.	Check the Normal/Uplink push button on the front panel. Toggle the switch to the alternate position for 10 seconds to see if link comes on (refer to "Normal/Uplink Push Button" section in this document for the correct settings.
Green 100M LED is off when operating in a Fast Ethernet network.	Port is operating in 10 Mbps mode.	Make sure the adapter card is capable of and set for 100 Mbps operation if it is not autosensing.
Green Link 10M or 100M LED is on and Green FDX LED is off when connected to a full-duplex network.	Port is operating in half-duplex mode.	Make sure the connected device is capable of full-duplex transmission, using autosensing. The Model FS105 switch will not support a full-duplex link that is not advertised using autosensing.
Yellow Collision LED is blinking excessively.	Data collision is occurring on the port.	The port and switch might be functioning correctly. However, check the following to make sure that excessive collisions are normal (as in most Ethernet networks) and not caused by: Incorrect cabling or connectors Wiring techniques Mismatched duplex operating mode settings

▶ Technical Specifications

Type	Specification
Standards Compatibility	ISO/IEC 802-3 (ANSI/IEEE 802.3i) 10BASE-T Ethernet IEEE 802.3u,100BASE-TX Fast Ethernet compatible with major network software, including Windows® networking, NetWare, and Linux
Data Rate	100 Mbps with 4B/5B encoding and MLT-3 physical interface for 100BASE-TX 10 or 100 Mbps half-duplex 20 or 200 Mbps full-duplex
Network Interface	RJ-45 connector for 10BASE-T or 100BASE-TX Ethernet interface
Power	7.5 w max 7.5 v DC input

Physical Specifications

Dimensions:	9.27 x 1.06 x 4.1 in. 23.0 x 2.7 x 10.3 cm
Weight:	1.25 lb; 0.6 kg

Environmental Specifications

Operating temperature:	0° to 40° C (32° to 104° F)
Operating humidity:	90% maximum relative humidity, noncondensing
Electromagnetic Compliance	CE mark, commercial; FCC Part 15, Class B; EN 55 022 (CISPR 22), C-Tick
Safety Agency Approvals for the Power Adapter	CE mark, Commercial UL listed (UL 1950)

Performance Specifications

Frame filter rate:	14,800 frames/sec max for 10M port 148,800 frames/sec max for 100M port
Frame forward rate:	14,800 frames/sec max for 10M port 148,800 frames/sec max for 100M port
Network latency (using 64-byte packets):	10 Mbps to 10 Mbps: 70 µs max 10 Mbps to 100 Mbps: 40 µs max 100 Mbps to 10 Mbps: 60 µs max 100 Mbps to 100 Mbps: 70 µs max
Address database size:	1000 MAC addresses
Addressing:	48-bit MAC address
Queue buffer:	200 kilobytes of buffer space per port

Trademarks

Bay Networks is a registered trademark of Bay Networks, Inc.
NETGEAR is a trademark of Bay Networks, Inc.
Microsoft and Windows are registered trademarks of Microsoft Corporation.
All other trademarks and registered trademarks are the property of their respective owners.

Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, NETGEAR reserves the right to make changes to the product described in this document without notice.

NETGEAR does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

Certificate of the Manufacturer/Importer

It is hereby certified that the NETGEAR Model FS105 Fast Ethernet Switch has been suppressed in accordance with the conditions set out in the BMPT-AmtsblVfg 243/1991 and Vfg 46/1992. The operation of some equipment (for example, test transmitters) in accordance with the regulations may, however, be subject to certain restrictions. Please refer to the notes in the operating instructions.
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.

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 B 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 to 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 FS105 Fast Ethernet 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 B (CISPR 22).

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (NETGEAR Model FS105 Fast Ethernet Switch) does not exceed the Class B 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 FS105 Fast Ethernet 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.