16-Port and 24-Port 10/100/1000 Gigabit Switches

Use this guide to install the following products:

SR2016	16-Port 10/100/1000 Gigabit Switch
SR2024	24-Port 10/100/1000 Gigabit Switch

User Guide

LINKSYS®

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Please direct all inquiries to: Linksys, P.O. Box 18558, Irvine, CA 92623.

FCC STATEMENT

Every 10/100/1000 Gigabit Switch has been tested and complies 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 according to 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 is found 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 or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

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Chapter 1: Introduction

The 10/100/1000 Gigabit Switch

The 16- or 24-Port 10/100/1000 Gigabit Switch provides non-blocking, wire speed switching for your 10, 100, and 1000 megabit network clients. Drop this switch in place of your current workgroup hub or switch, and you can upgrade your high-requirement workstations to full Gigabit speeds as necessary, while continuing to service other clients at their current speeds. Or build your network from the ground up, with appropriate link speeds for each user's requirements. Either way, it's perfect for graphics, multimedia, and other applications that have to move large files across the network quickly. And with the 24-Port 10/100/1000 Gigabit Switch, when you need to expand your network even further, its two Mini-GBIC ports let you add fiber-optic capability easily and cost effectively.

With the 16- or 24-Port 10/100/1000 Gigabit Switch, you can connect your existing 10/100 Ethernet network to a Gigabit server backbone without any additional equipment. All ports have automatic MDI/MDI-X crossover detection, so you don't have to worry about the cable type. Each port independently and automatically negotiates for best speed and whether to run in half- or full-duplex mode. Address learning and aging is supported, as well as 802.3x flow control with head-of-line blocking prevention to keep your high-speed clients from bogging down in lower-speed traffic. Fast store-and-forward switching prevents damaged packets from being passed on into the network.

World famous Linksys reliability and the limited lifetime warranty give you peace of mind and the rackmount form factor integrates smoothly into your network infrastructure. Let the Linksys 16- or 24-Port 10/100/1000 Gigabit Switch kick your network into high gear.

Features

- 16 or 2 RJ-45 ports for 10BASE-T/100BASE-TX/1000BASE-TX connections
- Supports half duplex and full duplex modes auto-negotiation for all ports
- Auto MDI/MDI-X support on all ports for easy cable detection
- Efficient MAC Address learning engine supports up to 32K MAC Addresses
- Provides store-and-forward forwarding scheme
- Standard width and mounting kit (included) make it easy to be installed into a rack
- For the 24-Port 10/100/1000 Switch, two mini-GBIC ports for easy expansion to other mini-GBIC equipped switches

Chapter 2: Getting to Know the 10/100/1000 Gigabit Switch

Overview

The 16- and 24-Port 10/100/1000 Gigabit Switches differ in number of LEDs and ports. The 16-Port Switch has a security slot, while the 24-Port Switch has two gigabit interface converter (GBIC) module slots.

The 16-Port or 24-Port Switch's Front Panel

Figure 2-1

The LEDs and network ports are located on the front panel of the Switch.

Note: The 24-Port Switch is shown in Figure 2-1. (The 16-Port Switch does not feature GBIC module slots.)

System — *Green.* The System LED will light up when the Switch is powered on.

1-16 or **1-24** — *Green.* Each LED will light up when there is a connection made through its corresponding port. It will flash when there is activity on its corresponding port.

1-16 or **1-24** — These ports are connection points for PCs and other network devices, such as additional switches.

Mini GBIC1, **Mini GBIC2** — Featured on the 24-Port Switch only, the mini-GBIC (gigabit interface converter) ports are connection points for mini-GBIC modules.

These ports are shared. If you use the Mini GBIC1 port, then you cannot use port 12. If you use the Mini GBIC2 port, then you cannot use port 24.

The 16-Port or 24-Port Switch's Back Panel

Figure 2-2

The power port is located on the back panel of the Switch.

(power) — The power port is where you will connect the included power cord.

The 16-Port Switch's Side Panel

Figure 2-3

Featured only on the 16-Port Switch, the security slot is located on a side panel (see Figure 2-3).

(security slot) — The security slot is where you can attach a lock so the 16-Port Switch will be protected from theft.

Chapter 3: Connecting the 10/100/1000 Gigabit Switch

Overview

This chapter will explain how to connect network devices to the Switch. For an example of a typical network configuration, see the application diagram shown in Figure 3-1.

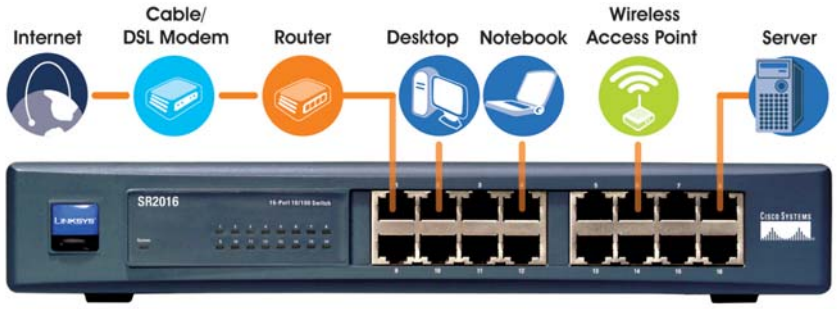

Figure 3-1

When you connect your network devices, make sure you don't exceed the maximum cabling distances, which are listed in the following table:

Maximum Cabling Distances

From	To	Maximum Distance
Switch	Switch or Hub*	100 meters (328 feet)
Hub	Hub	5 meters (16.4 feet)
Switch or Hub	Computer	100 meters (328 feet)

**A hub refers to any type of 100Mbps hub, including regular hubs and stackable hubs. A 10Mbps hub connected to another 10Mbps hub can span up to 100 meters (328 feet).*

Connecting Network Devices

To connect network devices to the Switch, follow these instructions:

1. Make sure all the devices you will connect to the Switch are powered off.
2. Connect a Category 5 Ethernet network cable to one of the numbered ports on the Switch.

Figure 3-2

Note: Use Category 5e Ethernet network cables for your Gigabit connections.

3. Connect the other end to a PC or other network device.
4. Repeat steps 2 and 3 to connect additional devices.

Note for users of the 24-Port Switch: The mini-GBIC ports are shared. Do not use port 12 if you are using the Mini GBIC1 port, and do not use port 24 if you are using the Mini GBIC2 port.

For instructions on how to connect mini-GBIC modules to the 24-Port Switch's mini-GBIC ports, refer to the module's documentation.

5. Connect the supplied power cord to the Switch's power port, and plug the other end into an electrical outlet.
6. Power on the devices connected to the Switch. Each active port's corresponding LED will light up on the Switch.

If you are installing the 16-Port Switch, proceed to the following section, "Placement Options for the 16-Port Switch."

If you are installing the 24-Port Switch, proceed to the following section, "Placement Options for the 24-Port Switch."

Placement Options for the 16-Port Switch

There are three ways to physically install the 16-Port Switch: set the Switch on its four rubber feet, mount the Switch in a standard-sized, 1U high rack, or hang the Switch on a wall using its wall-mount slots.

To rack mount the Switch, follow these instructions:

1. The Switch has four mounting holes on each side. Screw an included mounting bracket into each side.

2. Place the Switch in the rack, and secure the brackets with additional screws.

To hang the Switch on a wall, follow these instructions:

1. The wall-mount slots are two criss-cross slots on the Switch's bottom panel (see Figure 3-3). The distance between the two slots is 95 mm. Attach two screws to the wall, so that the Switch's wall-mount slots line up with the two screws.

Figure 3-3

2. Maneuver the Switch so the screws are inserted into the two slots.

Congratulations! The installation of the 16-Port 10/100/1000 Gigabit Switch is complete.

Placement Options for the 24-Port Switch

There are two ways to physically install the 24-Port Switch; set the Switch on its four rubber feet or mount the Switch in a standard-sized, 1U high rack.

For rack-mounting, the Switch has four mounting holes located on each side. Place the Switch in the rack, and secure it with screws.

Congratulations! The installation of the 24-Port 10/100/1000 Gigabit Switch is complete.

Appendix A: Glossary

10BaseT - An Ethernet standard that uses twisted wire pairs.

100BaseTX - IEEE physical layer specification for 100 Mbps over two pairs of Category 5 UTP or STP wire.

1000Base-T - Provides half-duplex and full-duplex 1000Mbps Ethernet service over Category 5 links as defined by ANSI/TIA/EIA-568-A. Topology rules for 1000Base-T are the same as those used for 100BaseT. Category 5 link lengths are limited to 100 meters by the ANSI/TIA/EIA-568-A cabling standard.

Auto MDI/MDI-X - On a network hub or switch, an auto MDI/MDI-X port automatically senses if it needs to act as a MDI or MDI-X port. The auto-MDI/MDI-X capability eliminates the need for crossover cables.

Auto-negotiate - To automatically determine the correct settings. The term is often used with communications and networking. For example, Ethernet 10/100 cards, hubs and switches can determine the highest speed of the node they are connected to and adjust their transmission rate accordingly.

CAT 5 - ANSI/EIA (American National Standards Institute/Electronic Industries Association) Standard 568 is one of several standards that specify "categories" (the singular is commonly referred to as "CAT") of twisted pair cabling systems (wires, junctions, and connectors) in terms of the data rates that they can sustain. CAT 5 cable has a maximum throughput of 100 Mbps and is usually utilized for 100BaseTX networks.

CAT 5e - The additional cabling performance parameters of return loss and far-end crosstalk (FEXT) specified for 1000BASE-T and not specified for 10BASE-T and 100BASE-TX are related to differences in the signaling implementation. 10BASE-T and 100BASE-TX signaling is unidirectional-signals are transmitted in one direction on a single wire pair. In contrast, Gigabit Ethernet is bi-directional-signals are transmitted simultaneously in both directions on the same wire pair; that is, both the transmit and receive pair occupy the same wire pair.

Ethernet - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium. Has a transfer rate of 10 Mbps. Forms the underlying transport vehicle used by several upper-level protocols, including TCP/IP and XNS.

Fast Ethernet - A 100 Mbps technology based on the 10Base-T Ethernet CSMA/CD network access method.

Hub - The device that serves as the central location for attaching wires from workstations. Can be passive, where there is no amplification of the signals; or active, where the hubs are used like repeaters to provide an extension of the cable that connects to a workstation.

Mbps (**M**ega**b**its **p**er **s**econd) - One million bits per second; unit of measurement for data transmission.

MDI (**M**edium **D**ependent **I**nterface) - On a network hub or switch, a MDI port, also known as an uplink port, connects to another hub or switch using a straight-through cable. To connect a MDI port to a computer, use a crossover cable.

MDI-X (**M**edium **D**ependent **I**nterface Crossed) - On a network hub or switch, a MDI-X port connects to a computer using a straight-through cable. To connect a MDI-X port to another hub or switch, use a crossover cable.

Network - A system that transmits any combination of voice, video and/or data between users.

Switch - 1. A data switch connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

Topology - A network's topology is a logical characterization of how the devices on the network are connected and the distances between them. The most common network devices include hubs, switches, routers, and gateways. Most large networks contain several levels of interconnection, the most important of which include edge connections, backbone connections, and wide-area connections.

UTP - Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company. To reduce crosstalk or electromagnetic induction between pairs of wires, two insulated copper wires are twisted around each other. Each signal on twisted pair requires both wires. Since some telephone sets or desktop locations require multiple connections, twisted pair is sometimes installed in two or more pairs, all within a single cable.

Appendix B: Specifications

Model Number	SR2016 16-Port 10/100/1000 Gigabit Switch SR2024 24-Port 10/100/1000 Gigabit Switch
Standards	IEEE 802.3, 802.3u, 802.3x, 802.3ab
Ports	
SR2016	16 RJ-45 10/100/1000
SR2024	24 RJ-45 10/100/1000 + 2 Mini-GBIC ports
Cabling Type	Category 5e or better
LEDs	
SR2016	System, 1 through 16
SR2024	System, 1 through 24

Environmental

Dimensions	
SR2016	11.00" x 1.75" x 9.45" (279.4 mm x 44.5 mm x 240 mm)
SR2024	17.01" x 1.75" x 13.74" (432 mm x 44.5 mm x 349 mm)
Unit Weight	
SR2016	4.75 lbs. (2.155 kg)
SR2024	7.98 lbs. (3.621 kg)
Power	
SR2016	12V DC / 500 mA
SR2024	110-120V AC, 100 W
Certifications	FCC Class B, CE
Operating Temp.	0ºC to 50ºC (32ºF to 122ºF)
Storage Temp.	-40ºC to 70ºC (-40ºF to 158ºF)
Operating Humidity	20% to 95%, Non-Condensing
Storage Humidity	5% to 95%, Non-Condensing

Appendix C: Warranty Information

BE SURE TO HAVE YOUR PROOF OF PURCHASE AND A BARCODE FROM THE PRODUCT'S PACKAGING ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE.

IN NO EVENT SHALL LINKSYS'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION. LINKSYS DOES NOT OFFER REFUNDS FOR ANY PRODUCT.

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Appendix D: Contact Information

For help with the installation or operation of this 10/100/1000 Gigabit Switch, contact Linksys Technical Support at one of the phone numbers or Internet addresses below.

Sales Information	800-546-5797 (LINKSYS)
Technical Support	800-326-7114
RMA (Return Merchandise Authorization) Issues	www.linksys.com (or call 949-271-5461)
Fax	949-265-6655
E-mail	support@linksys.com
Web	http://www.linksys.com
FTP Site	ftp.linksys.com

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