

TEG-S18TX
9-Port 10/100/1000Mbps NWay
Gigabit Ethernet Switch

User's Guide

FCC Warning

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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Mark Warning

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

VCCI Warning

注意

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づく第一種情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

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ABOUT THIS GUIDE

This user's guide shows you how to install your 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch and how to connect it to your network.

Terms

For simplicity, this documentation uses the terms “Switch” (first letter upper case) to refer to this 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch, and “switch” (first letter lower case) to refer to all other Ethernet switches.

Overview of this User's Guide

- ? ? ***Introduction.*** Describes the Switch and its features.
- ? ? ***Unpacking and Setup.*** Helps you get started with the basic installation of the Switch.
- ? ? ***Identifying External Components.*** Describes the front panel, rear panel, and LED indicators of the Switch.
- ? ? ***Connecting the Switch.*** Tells how you can connect the Switch to your Ethernet network.
- ? ? ***Technical Specifications.*** Lists the technical specifications of the 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch.

INTRODUCTION

This section describes the features of the 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch and provides some background information about Gigabit Ethernet, Fast Ethernet and Switching technology.

Gigabit Ethernet Technology

Gigabit Ethernet is an extension of IEEE 802.3 Ethernet, which utilizes the same packet structure, packet format, and supports CSMA/CD protocol, full duplex, flow control, and management objects. Performance wise, the theoretical throughput of the Gigabit Ethernet is ten times faster than the 100Mbps Fast Ethernet and 100 times faster than the 10Mbps Ethernet. Since it is compatible with all 10Mbps and 100Mbps Ethernet environments, Gigabit Ethernet provides a straightforward upgrade without wasting company's existing investment in hardware, software, and trained personnel.

The increased speed and extra bandwidth offered by Gigabit Ethernet are essential to cope with the network bottlenecks that caused by the traffics generated from faster computers and applications that require more bandwidth. Upgrading key components, such as your backbone and servers to Gigabit Ethernet can greatly improve network response times as well as significantly speed up the traffic between your subnets.

Fiber Gigabit Ethernet enables fast optical fiber connections to support video conferencing, complex imaging, and similar data-intensive applications. Likewise, since data transfers occur 10 times faster than

Fast Ethernet, servers outfitted with Gigabit Ethernet NIC's are able to perform 10 times the number of operations in the same amount of time.

In addition, the phenomenal bandwidth delivered by Gigabit Ethernet is the most cost-effective method to take advantage of today and tomorrow's rapidly improving switching and routing internetworking technologies. With the fast growing advanced silicon technology and digital signal processing, Gigabit Ethernet is now operating over CAT5 unshielded twisted-pair (UTP) cabling, outfitting your network with a powerful 1000Mbps capable backbone/server connection creates a flexible foundation for the next generation of network technology products.

Fast Ethernet Technology

The growing importance of LANs and the increasing complexity of desktop computing applications are fueling the need for high performance networks. A number of high-speed LAN technologies have been proposed to provide greater bandwidth and improve client/server response times. Among them, 100BASE-TX (Fast Ethernet) provides a non-disruptive, smooth evolution from the 10BASE-T technology. The non-disruptive and smooth evolution and the dominating potential market base, virtually guarantee cost effective and high performance Fast Ethernet solutions in the years to come.

100Mbps Fast Ethernet is a standard specified by the IEEE 802.3 LAN committee. It is an extension of the 10Mbps Ethernet standard with the ability to transmit and receive data at 100Mbps, while maintaining the CSMA/CD Ethernet protocol. Since the 100Mbps Fast Ethernet is compatible with all other 10Mbps Ethernet environments, it provides a

straightforward upgrade and takes advantage of the existing investment in hardware, software, and personnel training.

Switching Technology

Another key development pushing the limits of Ethernet technology is in the field of switching technology. A switch bridges Ethernet packets at the MAC address level of the Ethernet protocol transmitting among connected Ethernet or Fast Ethernet LAN segments.

Switching is a cost-effective way of increasing the total network capacity available to users on a Local Area Network (LAN). A switch increases capacity and decreases network loading by making it possible for a LAN to be divided into different *segments* which don't compete with each other for network transmission capacity, giving a decreased load on each.

The switch acts as a high-speed selective bridge between the individual segments. It automatically forwards traffic that needs to go from one segment to another, without interfering with any other segments. This allows the total network capacity to be multiplied, while still maintaining the same network cabling and adapter cards.

Switching LAN technology is a marked improvement over the previous generation of network bridges, which were characterized by higher latencies. Routers have also been used to segment local area networks, but the cost, the setup, and the maintenance required for the router, make it relatively impractical. Today's switches are an ideal solution to most kinds of LAN congestion problems.

Features

The 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch was designed for easy installation and high performance in an environment where traffic on the network and the number of users increase continuously.

Switch features include:

Ports

- ? ? One 10/100/1000Mbps NWay Gigabit Ethernet port (port 9).
- ? ? Eight 10/100Mbps NWay Ethernet ports (port 1 ~ 8).
- ? ? One 10/100Mbps NWay MDI-X Uplink port, shares with port 8.

Performance features

- ? ? Store and forward switching scheme capability to support rate adaptation and protocol conversion.
- ? ? Full duplex to allow two communicating stations to transmit and receive at the same time.
- ? ? Wire-speed data forwarding rate for each port.
- ? ? Wire-speed data filtering rate for each port.
- ? ? 4K active MAC address entry table per device with automatic learning and aging.
- ? ? 2M bits packet buffer per device.
- ? ? Supports broadcast storm rate filtering.

UNPACKING AND SETUP

This chapter provides unpacking and setup information for the Switch.

Unpacking

Open the shipping carton of the Switch and carefully unpack its contents. The carton should contain the following items:

- ? ? One 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch
- ? ? Four rubber feet with adhesive backing
- ? ? One AC power cord
- ? ? This User's Guide

If any item is found missing or damaged, please contact your local reseller for replacement.

Setup

The setup of the Switch can be performed using the following steps:

- ? ? The surface must support at least 5 kg.
 - ? ? The power outlet should be within 1.82 meters (6 feet) of the device.
 - ? ? Visually inspect the power cord and see that it is secured fully to the AC power connector.
-

? ? Make sure that there is adequate room for ventilation around the Switch and do not place heavy object on the Switch.

Desktop or Shelf Installation

When installing the Switch on a desktop or shelf, attach the rubber feet included with the device first. Attach these cushioning feet on the bottom at each corner of the device. Make sure there is enough ventilation space between the device and the objects around it.

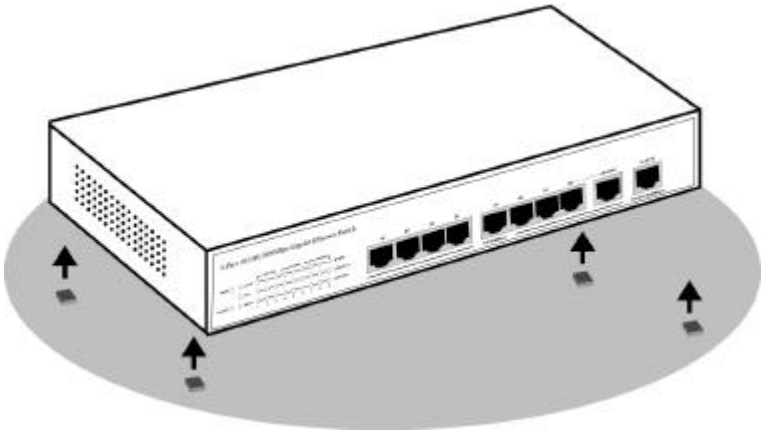


Figure 2-1. Gigabit Ethernet Switch installed on a Desktop or Shelf

Rack Installation (optional)

The 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch can be mounted on an EIA standard size, 19-inch rack, which can be placed in a wiring closet. To install, attach the mounting brackets on the switch's front panel (one on each side) and secure them with the screws provided.



Figure 2- 2A. Attaching the mounting brackets to the Switch

Then, use the screws provided with the equipment rack to mount the Switch on the rack.

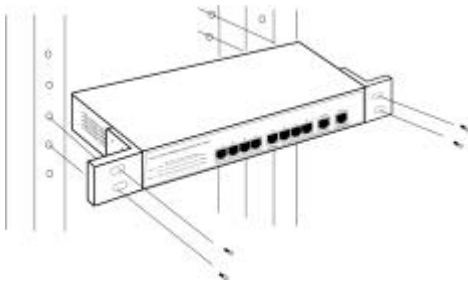


Figure 2-2B. Installing the Switch on the equipment rack

Connecting Network Cable

The 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch supports one 10/100/1000Mbps NWay Gigabit Ethernet port and eight 10/100Mbps NWay Fast Ethernet ports. Port 1 to port 8 support 10Mbps Ethernet or 100Mbps Fast Ethernet and it runs both in half and full duplex mode. Port 9 is NWay Gigabit Ethernet port and it supports 10Mbps, 100Mbps, and 1000Mbps. Port 9 runs on both half duplex and full duplex for 10Mbps or 100Mbps, **but it runs in full duplex mode only for 1000Mbps.**

Port 1 to port 8 are MDI-X type port, you can use standard cable to connect to the NIC. If you want to connect to the hub or switch, you can use standard straight-through cable and connect the uplink port to the other device's MDI-X type port.

Port 9 is Auto-MDI type port. It auto-senses the incoming connection type and switches between MDI-II and MDI-X. You can make the connection using either a straight-through or crossover cable.

Power on

The 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch can be powered with 100 - 240 VAC, 50 - 60 Hz power source. The Switch's power supply will adjust to the local power source automatically and may be powered on without having all LAN segment cables connected.

IDENTIFYING EXTERNAL COMPONENTS

This chapter describes the front panel, rear panel and LED indicators of the Switch.

Front Panel

The front panel of the Switch consists of 8 10/100Mbps NWay Ethernet ports, 1 uplink port, 1 10/100/1000Mbps NWay Gigabit Ethernet port, and LED indicators.

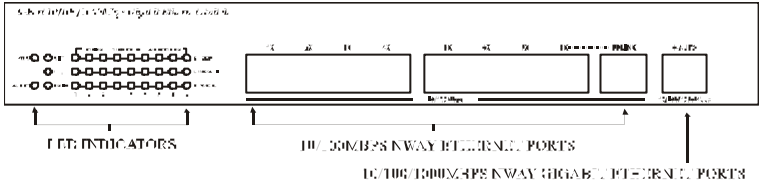


Figure 3-1. Front panel view of the 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch

- ? ? One 10/100/1000Mbps NWay Gigabit Ethernet port (port 9).
- ? ? Eight 10/100Mbps NWay Ethernet ports (port 1 ~ 8).
- ? ? One 10/100Mbps MDI-II Uplink port, shares with port 8.
- ? ? Comprehensive LED indicators that display the condition of the Switch and status of the network. See *LED Indicators* for a description of these LED indicators.

Rear Panel

The rear panel of the Switch consists of an AC power connector and an on/off switch. The following figure shows the rear panel of the Switch.



Figure 3-2. Rear panel view of the 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch

- ? ? **AC Power Connector** This is a three-pronged connector that supports the power cord. Plug in the female connector of the provided power cord into this connector, and the male into a power outlet. Supported input voltages range from 100 ~ 240 VAC at 50 ~ 60 Hz.
- ? ? **On/Off Switch** This is the power on/off switch. After the power cord is connected, push “ - ” to power on the Switch and push “ o ” to power it off.

LED Indicators

The LED indicators of the Switch including Power, ALERT, HTTP, ICQ, SMTP, SPEED, LINK/ACT and FDX/COL. The following shows

the LED indicators of the Switch along with an explanation of the function of each indicator.

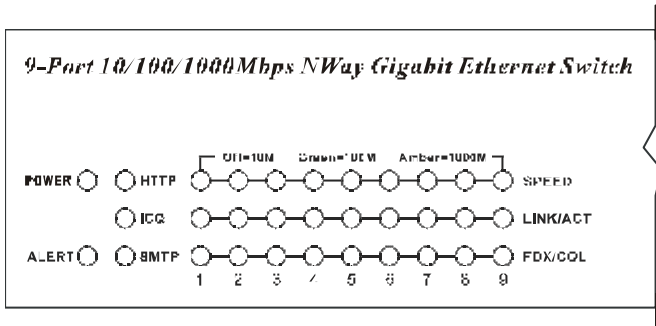


Figure 3-4. The 9-port 10/100/1000Mbps NWay Gigabit Ethernet Switch LED indicators

- ?? **POWER** After turning on the power, the Power indicator on the front panel should light to indicate the Switch is receiving power.
- ?? **ALERT** When power on, the alert will light up, after self-testing , the light turns off. If the led always light up, there is problem with the Switch, please contact your dealer.
- ?? **HTTP** When this indicator blinks green, the HTTP (Internet traffic) packets are transmitting or receiving on the Switch.
- ?? **ICQ** When this indicator blinks green, the ICQ (Online chat program) packets are transmitting or receiving on the Switch.
- ?? **SMTP** When this indicator blinks green, the SMTP (E-Mail) packets are transmitting or receiving on the Switch.

- ? ? **SPEED** The indicator lights amber when the port is connected to 1000Mbps Gigabit Ethernet station (port 9 only), and the indicator lights green when the port is connected to 100Mbps Fast Ethernet station. This indicator remains off when the port is connected to a 10Mbps Ethernet station.
- ? ? **LINK/ACT** This indicator light green when this port is connected to a station successful, if this indicator blinking green means this port will be transmitting or receiving data on the network.
- ? ? **FDX/COL** This LED indicator lights green when a respective port is in full duplex (FDX) mode. It blinks green when collision occurs on the respective port.

TECHNICAL SPECIFICATIONS

General	
Standards:	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet ANSI/IEEE 802.3 NWay Auto-Negotiation IEEE 802.3x Full duplex Flow Control
Protocol:	CSMA/CD
Data Transfer Rate:	Ethernet: 10Mbps (half-duplex), 20Mbps (full-duplex) Fast Ethernet: 100Mbps (half-duplex), 200Mbps (full-duplex) Gigabit Ethernet: 2000 Mbps (full-duplex)
Topology	Star
Network Cables:	Ethernet (10Mbps): 2-pair UTP CAT. 3/4/5, EIA/TIA- 568 STP Fast Ethernet (100Mbps): 2pair UTP CAT. 5, EIA/TIA-568 STP Gigabit Ethernet: 4-pair UTP CAT. 5, EIA/TIA-568 STP
Number of Ports:	1 x 10/100/1000Mbps NWay Gigabit Ethernet Auto-MDI port 8 x 10/100Mbps NWay Ethernet MDI-X port 1 x 10/100Mbps NWay Ethernet MDI-II port, shares with port 8 (Uplink port)

Physical and Environmental	
AC inputs:	100 – 240 VAC, 50/60 Hz
Power Consumption:	30 watts maximum
Operating Temperature:	0 ~ 50 degrees Celsius
Storage Temperature:	-5 ~ 55 degree Celsius
Humidity:	5% ~ 95% RH, non-condensing
Dimensions:	280 mm x 180 mm x 44 mm
EMI:	FCC Class B, CE Mark Class B, VCCI-B
Safety:	UL (UL 1950), TUV/GS (EN60950)
Performance	
Transmission Method:	Store-and-forward
RAM Buffer:	2M bits per device
Filtering Address Table:	4K MAC address per device
Packet Filtering / Forwarding Rate:	Ethernet: 14,880pps Fast Ethernet: 148,800pps Gigabit Ethernet: 1,488,000pps

Physical and Environmental

MAC Address
Learning:

Self-learning, Auto-aging