TE100-S16
16-Port 10/100Mbps
Fast Ethernet Switch

User's Guide

FCC Warning

This equipment has been tested and found to comply with the regulations 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 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 A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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。

UL Warning

a) Elevated Operating Ambient Temperature-If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

b) Reduced Air Flow- Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

c) Mechanical Loading-Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

d) Circuit Overloading- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

e) Reliable Earthing-Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

TABLE OF CONTENTS

ABOUT THIS GUIDE

Congratulations on your purchase of the 16-port 10/100Mbps Auto-negotiation Fast Ethernet Switch. This device integrates 100Mbps Fast Ethernet and 10Mbps Ethernet network capabilities in a highly flexible package.

Purpose

This guide discusses how to install your 16-port 10/100Mbps Fast Ethernet Switch.

Terms/Usage

In this guide, the term "**Switch**" (first letter upper case) refers to your 16-port 10/100Mbps Fast Ethernet Switch, and "**switch**" (first letter lower case) refers to other Ethernet switches.

Overview of this User's Guide

Introduction. Describes the Switch and its features.

Unpacking and Installation. 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.

Technical Specifications. Lists the technical (general, physical and environmental, and performance) specifications of the Switch.

INTRODUCTION

This chapter describes the features of the Switch and some background information about Ethernet/Fast Ethernet switching technology.

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-T (Fast Ethernet) provides a non-disruptive, smooth evolution from the current 10BASE-T technology. The non-disruptive and smooth evolution nature, 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 new 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 10/100Mbps 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 approach to pushing beyond the limits of Ethernet technology is the development of switching technology. A switch bridge 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. A switch increases capacity and decreases network loading by dividing a local area network into different *segments*, which don't compete with each other for network transmission capacity.

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

For Fast Ethernet networks, a switch is an effective way of eliminating problems of chaining hubs beyond the "two-repeater limit." A switch can be used to split parts of the network into different collision domains, making it possible to expand your Fast Ethernet network beyond the 205-meter network diameter limit for 100BASE-TX networks. Switches supporting both traditional 10Mbps Ethernet and 100Mbps Fast Ethernet are also ideal for bridging between the existing 10Mbps networks and the new 100Mbps networks.

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 of a router, the setup and maintenance required make routers relatively impractical. Today switches are an ideal

solution to most kinds of local area network congestion problems.

Features

The Switch were designed for easy installation and high performance in an environment where traffic on the network and the number of user increase continuously.

The Switch with its standard EIA-19 rack-mountable size is specifically designed for middle to large workgroups. The Switch provides immediate access to a rapidly growing network through a wide range of user-reliable functions.

The Switch is ideal for deployment with multiple high-speed servers for shared bandwidth 10Mbps or 100Mbps workgroups. With the highest bandwidth 200Mbps (100Mbps full-duplex mode), any port can provide workstations with a congestion-free data pipe for simultaneous access to the server.

The Switch is expandable by cascading two or more switches together. As all ports support 200Mbps, the Switch can be cascaded from any port and to any number of switches.

The Switch is a perfect choice for a site that may upgrade to Fast Ethernet in the future. Ethernet workgroups can connect to the Switch now, and change adapters and hubs anytime later without needing to change the Switch or reconfigure the network.

The Switch combines dynamic memory allocation with store-and-forward switching to ensure that the buffer is effectively allocated for each port, while controlling the data flow between the transmit and receive nodes to guarantee against all possible packet

loss.

The Switch is an unmanaged 10/100 Fast Ethernet Switch that offers solutions in accelerating Ethernet Workgroup's bandwidth. Other key features are:

- **16-port 10/100BASE Ethernet Switch with RJ-45 connectors**
- **Support Auto-negotiation for speed and duplex modes for each port**
- **Supports Auto-MDI-II/MDI-X for each port**
- **Wire speed reception and transmission**
- **Store-and-Forward switching method**
- **Integrated address Look-Up Engine, supports 8K absolute MAC addresses**
- **Supports 512Kbytes RAM for data buffering**
- **Front-panel diagnostic LEDs**
- **Broadcast storm protection**
- **IEEE 802.3x flow control for full-duplex**
- **Back pressure flow control for half-duplex**
- **Standard 19" Rack-mountable size**

UNPACKING AND INSTALLATION

This chapter provides unpacking and setup information for the Switch.

Unpacking

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

- ?? **One the 16-port 10/100Mbps Fast Ethernet Switch**
- ?? **One AC power cord, suitable for your area's electrical power connections**
- ?? **Four rubber feet for shock cushioning**
- ?? **Screws and two mounting brackets**
- ?? **This User's Guide**

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

Installation

The site where you install the Switch stack may greatly affect its performance. When installing, consider the following pointers:

Install the Switch in a fairly cool and dry place. See *Specifications* for the acceptable temperature and humidity operating ranges.

Install the Switch in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.

Leave at least 10cm of space on the left and right hand side of the Switch for ventilation.

Install the Switch on a sturdy, leveled surface that can support its weight, or in an EIA standard-size equipment rack. For information on rack installation, see the next section, *Rack Mounting*.

When installing the Switch on a level surface, attach the rubber feet on the corners at the bottom of the Switch. The rubber feet cushion the Switch and protect the Switch case from scratching.

Rack Mounting

The Switch can be mounted in an EIA standard-size, 19-inch rack, which can be placed in a wiring closet with other equipment. Attach the mounting brackets at the Switch's front panel (one on each side), and secure them with the provided screws.
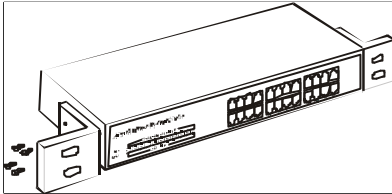
Then, use screws provided with the equipment rack to mount the Switch on the rack.
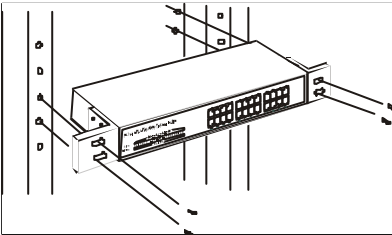
IDENTIFYING EXTERNAL COMPONENTS

This section identifies all the major external components of the switch.
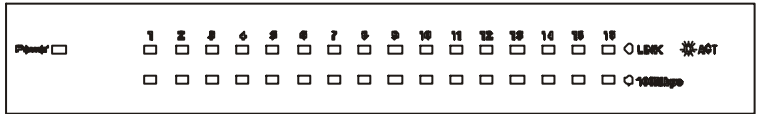
Front Panel

The figure below shows the front panels of the switch.

16-port 10/100Mbps Fast Ethernet Switch

LED Indicator Panel

Refer to the detailed information about each of the switch's LED indicators.

?? **PWR   (Power)**

This indicator lights green when the switch is receiving power. This LED is off indicating no power.

?? **LINK / ACT   Link/Activity (green)**

This indicator lights green when the port establishes a valid 10Mbps or 100Mbps connection. It blinks green when the port is transmitting or receiving data on the network. This LED is off when there is no connection on this port

?? **100Mbps (green)**

This LED indicator light green when the port establishes a valid 100Mbps Fast Ethernet connection. The LED is off when the

connection is 10Mbps or there is no connection.

Twisted-Pair Ports

These ports supports automatic MDI-II/MDI-X crossover detection function gives true "plug-and-play" capability without the need of confusing crossover cables or crossover uplink ports.

With the Auto-MDI function, you just need to connect the network cable to the Switch; it does not matter if the end node is NIC (Network Interface Card) or other Ethernet port.

Rear Panel
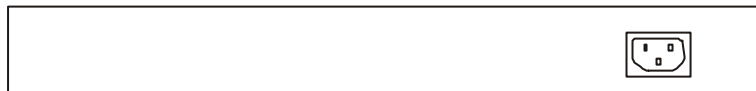
AC Power Connector

Connect the power cord's female end to this connector. Please note that there is no Power On/Off switch on this Switch. When the power cord is connected to the Switch and the correct power source, the Switch is powered on.

TECHNICAL SPECIFICATION

General	
Standards	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet
Protocol	CSMA/CD
Data Transfer Rate	Ethernet: 10Mbps (half duplex), 20Mbps (full-duplex) Fast Ethernet: 100Mbps (half duplex), 200Mbps (full- duplex)
Topology	Star
Network Cables	10BASET: 2-pair UTP Cat. 3,4,5, EIA/TIA-568 100-ohm STP 100BASE-TX: 2-pair UTP Cat. 5, EIA/TIA-568 100-ohm STP
Number of Ports	16 x 10/100Mbps Auto-MDI-II/MDI-X ports

Physical and Environmental	
AC inputs	100 to 240 VAC, 50 or 60 Hz internal universal power supply
Power Consumption	6 watts. (max.)
Temperature	Operating: 0? ~ 40? C, Storage: -10? ~ 70? C
Humidity	Operating: 10% ~ 90%, Storage: 5% ~ 90%
Dimensions	440 x 140 x 44 mm (W x H x D)
EMI:	FCC Class A, CE Mark Class A, VCCI Class A
Safety	CUL, CB

Performance	
Transmits Method:	Store-and-forward
RAM Buffer:	512KBytes per device
Filtering Address Table:	8K entries per device
Packet Filtering/Forwarding Rate:	10Mbps Ethernet: 14,880/pps 100Mbps Fast Ethernet: 148,800/pps
MAC Address Learning:	Automatic update