16-Port 10/100Mbps Fast Ethernet Switch (Desktop)

User Guide

UG-ASW116-1103

FCC Warning

This equipment has been tested and found to comply with the regulations 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.

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About This Guide

Congratulations on your purchase of the 16-port 10/100Mbps 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

This user guide contains the following sections:

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 Switch's front panel, rear panel, and LED indicators.

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

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 local area networks (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 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 Switch is compatible with all 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 bridges and transmits Ethernet packets at the MAC address level of the Ethernet protocol, 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. Each segment has its own bandwidth and it does not compete with others for network transmission capacity.

A switch acts as a high-speed selective bridge between the individual segments. The switch forwards traffic from origin segment to destination segment, without interfering with any other segments. 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 to eliminate problems of uplinking Fast Ethernet 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. The switch supports both traditional 10Mbps Ethernet and 100Mbps Fast Ethernet, which is also ideal for bridging between the existing 10Mbps networks and the new 100Mbps networks.

LAN switching technology is a significant improvement over the previous generation of network bridges, which were criticized because of their higher latencies. Routers are also used to segment LANs. However, since routers are expensive, difficult to setup, and require intensive maintenance, they are relatively impractical for the network. Switches, on the other hand, are less expensive, easier to set up, and practically maintenance free, which make them an ideal solution to today's LAN congestion

problems.

Features

This high-performance Switch was designed for a network environment where traffic and the number of users increase continuously.

The Switch, with their small, desktop size, was specifically designed for small to middle-sized workgroups. It provides immediate access to a rapidly growing network through a wide range of user-reliable functions.

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

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

The Switch is a perfect choice for a 10Mbps network site that might be upgraded to Fast Ethernet in the future. Ethernet workgroups can connect to the Switch now, and change adapters and hubs anytime later without changing the Switch or reconfiguring the network.

The Switch combines dynamic memory allocation with store-and-forward switching method to ensure that the buffer is effectively allocated for each port. It also controls the data flow between transmit and receive nodes to guarantee against all possible packet loss.

This Switch is an unmanaged 10/100Mbps Fast Ethernet Switch that offers solutions to increase Ethernet workgroup bandwidth. Other key features are as followed:

16-port 10/100Mbps Ethernet Switch with RJ-45 connectors

- Support Auto-negotiation for speed and duplex modes for each port
- Supports Auto-MDI/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

Unpacking & Installation

This chapter provides unpacking and setup information for the Switch.

Unpacking

Open the shipping carton and carefully unpack the contents. The carton contains the following items:

- One the 16-port 10/100Mbps Fast Ethernet Switch
- One external power adapter
- Four rubber feet to be used for shock cushioning
- This User's Guide

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

Installation

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

- Install the Switch in a fairly cool and dry place. See Technical Specification for the acceptable operating temperature and humidity ranges.
- Install the Switch in a site free from strong electromagnetic source, vibration, dust, and direct sunlight.
- Leave at least 10cm of space at the left and right hand side of the Switch for ventilation.
- Visually inspect the DC power jack and make sure that it is fully secured to the power adapter.

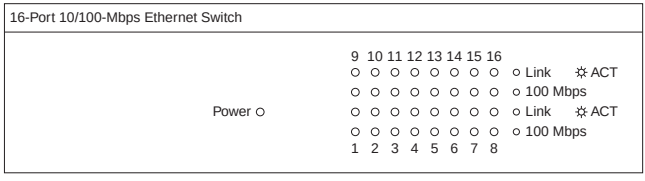
External Components

This section identifies all the major external components of the switch. Both the front and rear panel is shown, followed by a description of each panel's feature.

Front Panel

Figure 1 shows the Switch's front panel.

Figure 1. Switch Front Panel



LED Indicator Panel

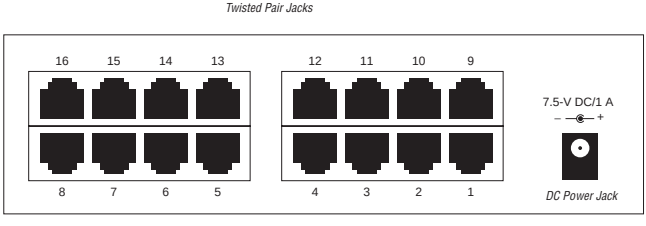
The LED indicator panel contains the following indicators:

- **Power (PWR)**—This indicator lights green when the switch is receiving power , otherwise, it is off.
- **Link/Activity (green)**—This indicator lights up green when the port is connected to a Fast Ethernet or Ethernet station. If this indicator is blinking green, the Switch is transmitting or receiving data.
- **100 Mbps (green)**—This indicator lights up green when the port is connected to a 100-Mbps Fast Ethernet station. Otherwise, the LED is off when the port is connected to a 10-Mbps Ethernet station.

Rear Panel

Figure 2 shows the Switch's rear panel. The rear panel includes the twisted-pair ports and the DC power jack.

Figure 2. Switch Rear Panel



Twisted-Pair Ports

These ports supports automatic MDI/MDIX crossover detection function gives true 'plug and play' capability without the need of confusing crossover cables or crossover ports.

With the Auto-MDI function, you just need to plug-in the network cable to the hub directly and no need to care if the end node is NIC (Network Interface Card) or switches and hubs.

DC Power Jack

Power is supplied through an external AC power adapter. Check the technical specification section for information about the AC power input voltage.

> Since the switch does not include a power switch, plugging its power adapter into a power outlet will immediately power it on.

Technical Specifications

Tables 1 to 3 provide Switch specifications.

Table 1. General Specifications

Feature	Description
Standards	IEEE 802.3 10 Base-T ethernet IEEE 802.3a 100 Base-TX fast ethernet IEEE 802.3x flow control
Protocol	CSMA/CD
Data transfer rate	Ethernet: 10 Mbps (half duplex), 20 Mbps (full duplex) Fast ethernet: 100 Mbps (half duplex), 200 Mbps (full duplex)
Topology	Star
Network cables	10 Base-T: Two-pair UTP Cat. 3, 4, 5; EIA/TIA-568 100-Ω STP 100 Base-TX: Two-pair UTP Cat. 5; EIA/TIA-568 100-Ω STP
Number of ports	16 × 10/100 Mbps auto-MDI/MDI-X ports

Table 2. Physical & Environmental Specifications

Feature	Specification
DC inputs	7.5 V, 1 A
Power consumption	6 watts (maximum)
Temperature	Operating: 0˚ to 40˚ C Storage: –10˚ to 70˚ C
Humidity	Operating: 10 to 90% Storage: 5 to 90%
Dimensions	184 × 124 × 44 mm (W × H × D)
EMI	FCC Class A, CE Mark Class A, VCCI Class A

Table 3. Performance Specifications

Feature	Specification
Transmission method	Store-and-forward
RAM buffer	512 Kbytes 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

Technical Support

E-mail: support@airlinkplus.com

Toll Free: 1-888-746-3238

Web Site: www.airlinkplus.com