Micro-*Switch*/16
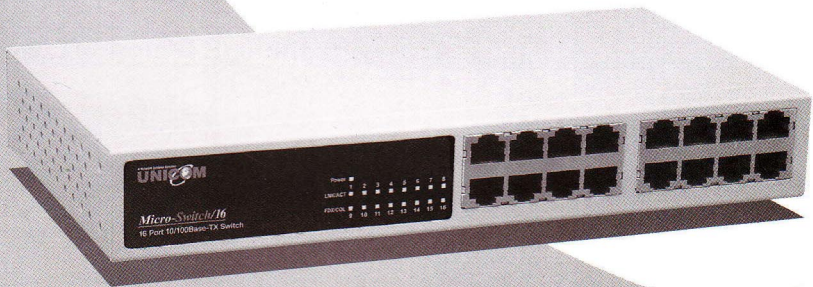
16 Port 10/100Mbps
Desktop Fast Ethernet Switch
(Auto MDI/MDIX)

FEP-32016T

USER'S MANUAL

Content

1. Introduction

The 16 Port Micro-Switch/16 Desktop Fast Ethernet Switch is a multi-port Switch that can be used to build high-performance switched workgroup networks. This switch is a store-and-forward device that offers low latency for high-speed networking. It is targeted at workgroup, department, or backbone computing environments in SME (small, medium enterprise) businesses.

The Micro-Switch/16 features a "store-and-forward "switching scheme. This allows the switch to auto-learn and store source addresses on a 4K-entry MAC address table.

Features

- Conforms to IEEE 802.3, 802.3u and 802.3x
- Sixteen (16) 10/100 Base-TX RJ-45 Ethernet ports
- Auto-MDIX on all ports
- IEEE 802.3x flow control support
  - ➢ Flow control on full-duplex
  - ➢ Back pressure on half-duplex
- N-Way Auto-Negotiation supported
- Store-and-Forward switching architecture and no-blocking full wire speed
- Back plane Bandwidth 4.8 Gbps)
- Embedded 1.25Mbits memory buffer
- 4K MAC address table
- Compact 10" size

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Package Contents

Unpack the contents of the Micro-Switch/16 Desktop Fast Ethernet Switch and verify them against the checklist below.

- Micro-Switch/16 Desktop Fast Ethernet Switch
- User Guide
- Power Cord
- Four Rubber Feet

Micro-Switch/16

User Guide

Power Cord

Rubber Feet

Figure 1-1. Package Contents

Compare the contents of your Micro-Switch/16 package with the standard checklist above. If any item is missing or damaged, please contact your local dealer for service.

Ethernet Switching Technology

Ethernet Switching Technology dramatically boosted the total bandwidth of a network, eliminated congestion problems inherent with Carrier Sense multiple access with Collision Detection (CSMA/CD) protocol, and greatly reduced unnecessary transmissions.

This revolutionized networking in a number of ways. First, by allowing two-way, simultaneous transmissions over the same port (Full-duplex) which essentially doubled the bandwidth. Second, by reducing the collision domain to a single switch-port which eliminated the need for carrier sensing. Third, by using the store-and-forward technology's approach of inspecting each packet to intercept corrupt or redundant data and switching eliminated, unnecessary transmissions that slow the network. Also employing an address learning function, Ethernet replaced inefficient receiving ports.

Auto-negotiation regulates the speed and duplex of each port, based on the capability of both devices. Flow-control allows transmission from a 100Mbps node to a 10Mbps node without loss of data. Auto-negotiation and flow-control may require disablement of some networking operations that involve legacy equipment. Disabling the auto-negotiation is accomplished by manually setting the speed or duplex of a port.

Ethernet Switching Technology supplied higher performance at costs lower than other solutions. Wider bandwidth, no congestion, and the reduction in traffic is why switching is replacing expensive routers and inefficient hubs as the ultimate networking solution. Switching brought a whole new way of thinking to networking.

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2. Hardware Description

This Section describes the hardware of the Micro-Switch/16 Desktop Fast Ethernet Switch/.

The physical dimensions of the Micro-Switch/16 are: **250mmx 133 mm x 37mm (L x W x H)**

Front Panel

The Front Panel of the Micro-Switch/16 consists of sixteen (16) 10/100Base-TX RJ-45 ports. The LED Indicators are also located on the front panel of the Switch.
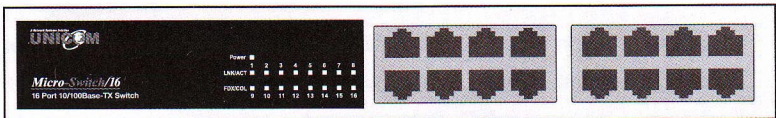

Figure 2-1. The Front panel

RJ-45 ports (Auto MDI/MDIX): Sixteen (16) 10/100Mbps auto-sensing ports for 10Base-T or 100Base-TX device connection.

[**Auto MDI/MDIX** means that you can connect to another switch or workstation with either straight-through or crossover cabling.]

LED Indicators

The LED Indicators gives real-time information of systematic operation status. The following table provides descriptions of LED status.
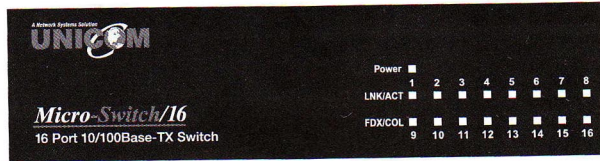
4

Figure 2-2. LED Indicators

LED	Status	Description
Power	Green	Power is supplied
	Off	Power is not connected
LK/ACT	Green	The port is connecting with the device
	Blinks	The port is receiving or transmitting data
	Off	No device attached

Table 2-1. Descriptions of LED Indicators

Rear Panel

The 3-pronged power plug is located at the rear panel of the Micro-Switch/16 as shown in Figure 2-3. The Switch will work with AC in the range 100-240V AC, 50-60Hz.
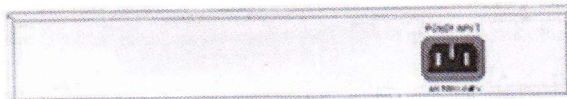

Figure 2-3. The Rear Panel of the Micro-Switch/16

Desktop Installation

Set the Switch on a sufficiently large flat space with a power outlet nearby. The surface should be clean, smooth, level, and sturdy. Ensure there is enough clearance around the Switch to allow air circulation and the attachment of the power cord and cables.

Attaching Rubber Feet

A. Make sure mounting surface on the bottom of the Switch is grease and dust free.

B. Remove adhesive backing from your Rubber Feet.

C. Apply the Rubber Feet to each corner on the bottom of the Switch. These footpads protect the Switch from shock and vibration.
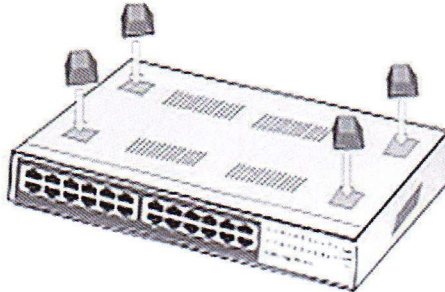

Figure 2-4. Attaching Rubber Feet to each corner on the bottom of the Switch

Power On

Connect the power cord to the power socket on the rear panel of the Switch. The other side of power cord connects to the power outlet. The internal power supply in the Switch works with AC in the voltage range 100-240VAC, frequency 50~60Hz.Check the power indicator on the front panel to ensure that power is properly supplied.

3. Network Application

This section provides a few samples of network topology in which the Switch is used. In general, the Micro-Switch/16 Desktop Fast Ethernet Switch is designed as a segment switch. That is, with its large address table (4K MAC address) and high performance, it is ideal for interconnecting networking segments.

You can also use the Micro-Switch/16 to connect PCs, workstations, and servers to each other by connecting these devices directly to the Switch. The switch automatically learns node addresses, which are subsequently used to filter and forward all traffic based on the destination address. The Switch can connect with another switch or hub to interconnect each of your small, switched workgroups to form a larger switched network.

Small Workgroup

The Micro-Switch/16 can be used as a standalone switch to which personal computers, servers, and printer servers are directly connected to form a small workgroup.
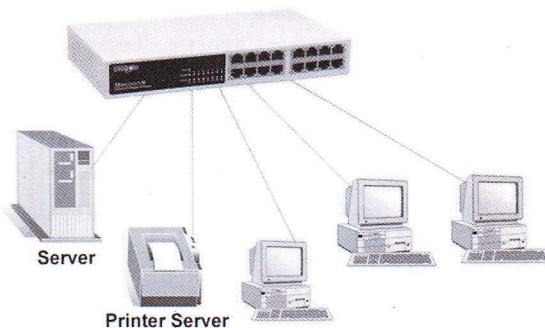
Server

Printer Server

Figure 3-1. Small Workgroup Application

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Segment Bridge

For enterprise networks where large data broadcasts are constantly processed, this switch is an ideal solution for department users to connect to the corporate backbone.

In the illustration below, two Ethernet switches with PCs, a print server, and a local server are both connected to the Micro-Switch/16. All devices in this network can then communicate with each other through the Micro-Switch/16. Connecting servers to the Switch allow other users to access the server's data.
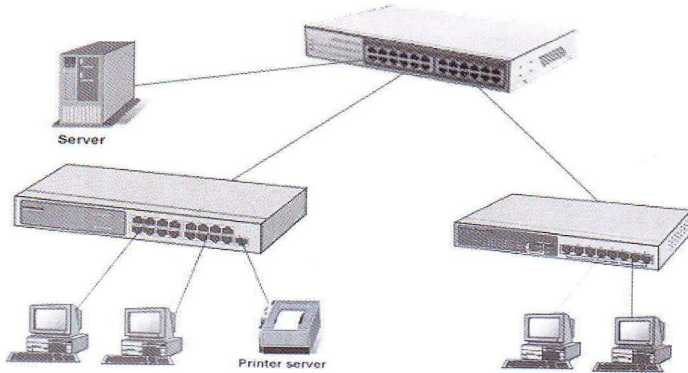
Figure 3-2 Department Bridge Application

4.Troubleshooting

This section is intended to help you solve the most common problems on the Micro-Switch/16

Incorrect connections

▓ **Faulty or loose cables**

Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If this does not correct the problem, try a different cable.

▓ **Non-standard cables**

Non-standard and miswired cables may cause numerous network collisions and other network problems that can seriously impair network performance. A Category 5 cable tester is a recommended tool for every 100Base-T network installation.

▓ **Improper Network Topologies**

It is important to make sure that you have a valid network topology. Common topology faults include excessive cable length and too many repeaters (hubs) between end nodes. In addition, you should make sure that your network topology contains no data path loops. Between any two end nodes, there should be only one active cabling path at any given time. Data path loops will cause broadcast storms that will severely impact your network performance.

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Diagnosing LED Indicators

The Switch can be easily monitored through panel indicators to assist in identifying common problems you may encounter and where you can find possible solutions.

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with power cord. Than check for loose power connections, power losses, or surges at power outlet. If you still cannot resolve the problem, contact your local dealer for assistance.

Cabling

RJ-45 ports: Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: 100m. of Category 3, 4, or 5 cable for 10Mbps connections or 100m. of Category 5/5e or 5e cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

5.Technical Specifications

Standard	IEEE 802.3 10Base-T Ethernet, IEEE 802.3u 100Base-TX Fast Ethernet IEEE802.3x Flow Control and Back-pressure IEEE ANSI/IEEE802.3 N-Way Auto-negotiation
Protocol	CSMA/CD
Technology	Store and Forward switching architecture
Transfer Rate	14,880 pps Ethernet port 148,800 pps Fast Ethernet port
MAC address	4K Mac address table
Memory Buffer	1.25Mbits
Network Cable	10Base-T: 2-pair UTP/STP Cat. 3/4/5 cable EIA/TIA-568 100-ohm (up to 100m) 100Base-TX: 2-pair UTP/STP Cat. 5/5e cable EIA/TIA-568 100-ohm (up to 100m)
LED Indicators	Per port: Link/Activity Per unit: Power
Back-plane	4.8Gbps
Dimensions	250mmx 133 mm x 37mm (L x W x H) 9.85" x 4.45" x1.46"
Operational Temp.	O˚ to 45˚ C (32˚ to 113˚ F)
Operational Humidity	10% to 90% (Non-condensing)
Power Supply	100-240 VAC, 50~60Hz
Power Consumption	19 Watts (maximum)
EMI	FCC Class A, CE
Safety	CE/EN60950, UL, cUL

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