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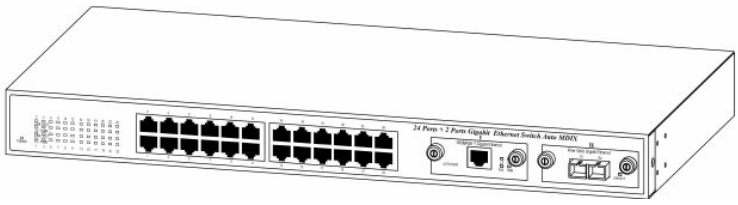
24 Port 10/100Mbps plus 2 Gigabit TX/FX Auto-MDIX Modular Gigabit Ethernet Switch

User's Manual



FCC Warning

This device has been tested and found to comply with limits 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 radiates radio frequency energy and, if not installed and used in accordance with the user's manual, may cause interference in which case 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 many be required to take adequate measures.

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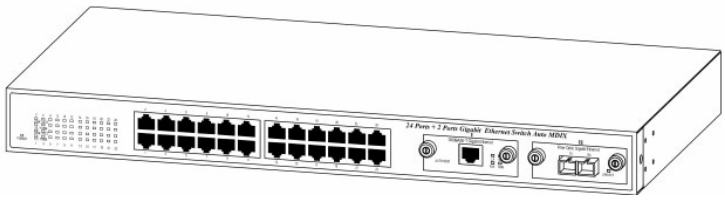
Chapter 1

24 Port 10/100Mbps plus 2 Gigabit TX/FX Auto-MDIX Modular Switch

Introduction

The Switch provides 24 10/100Mbps ports and 2 1000Mbps Optional modules for connect with twisted pair and fiber optic cabling. The Switch was designed for easy installation and high performance in an environment where traffic on the network and the number of user increase continuously.

The 19-inch standard rack-mount size was specifically designed for ROBO (Remote Office & Branch Office) and medium to large workgroups. The Switch can be installed where space is limited; moreover it provides smooth network migration and easy upgrade to network capacity.



Key Features

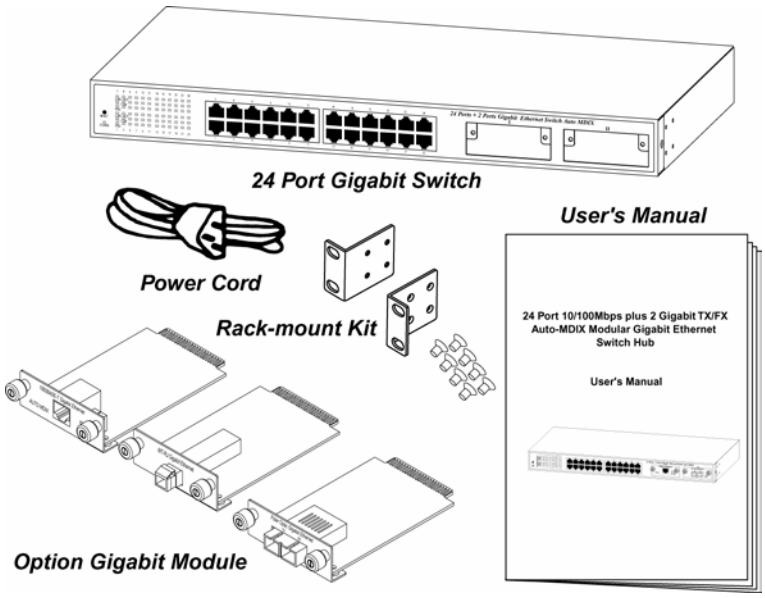
- Fully complies with IEEE 802.3 10BASE-T
  IEEE802.3u 100BASE-TX
  IEEE802.3z 1000BASE-SX, 1000BASE-LX
  IEEE802.3ab 1000BASE-T Standards.
- 24 ports 10/100Mbps Fast Ethernet switch and 2 ports Gigabit Ethernet optional slots, each allows for single-port Gigabit Ethernet Switch module 1000BASE-SX or 1000BASE-LX or 1000BASE-T.
- Provided non-blocking and non-head-of-line-blocking full wire speed forwarding.
- Built-in **14K** MAC addresses.
- Flow control fully supported:
  Half-duplex mode → Collision-based Congestion Control.
  Full duplex mode → 802.3x compliant Flow Control.
- Status LEDs:
  Gigabits copper module:
  → **100M, 1000M, Full Duplex, Activity**
  Gigabits fiber module:
  → **Link**
  10/100TX port:
  → **Link/Act, Speed,**
  System :
  → **Power**
- All 100Base-TX or 1000Base-T (twisted pair) port support **Auto MDIX** crossover capabilities.

Chapter 2

Package Contents

Before you start to install the Switch, please verify your package that contains the following items:

- One Fast Ethernet Switch
- Rack-mount Kit For Rack Installation
- One Power Cord
- One User's Manual



Note: If any of these items is found missing or damaged, please contact your local supplier for replacement.

Chapter 3

Front Panel Layout

□. 24 RJ-45 10/100Mbps Switch Ports

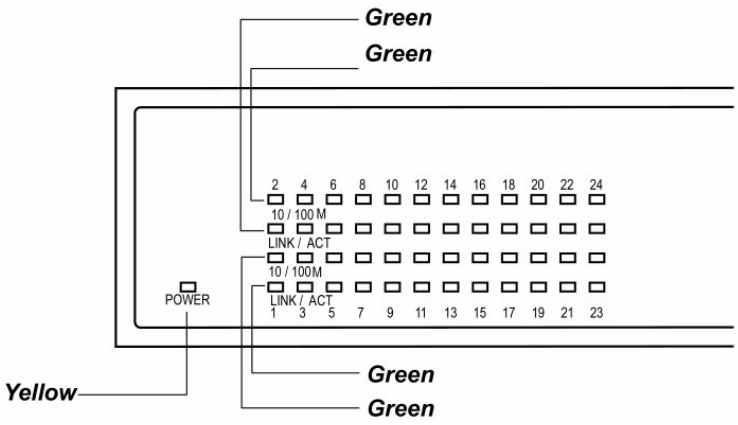
There are 24 RJ-45 connectors on the front panel for connecting to servers, workstation or other devices. The Switch provides 24 10/100Mbps switching ports that could sense the 10/100M speed and negotiate Full/Half-duplex mode automatically.

The Switch provided new Auto-MDIX technology. Besides, it can auto detect the cable signal to make optimum connection. Please make sure the CAT. 5, 5e or CAT. 6 twisted pair cable meet the E/TIA568 standards. Please refer to the appendix at page 15 for quickly trouble-shooting.

□. 2 Gigabit Optional module

The Switch provided 2 Gigabit modular slots on the front panel for connecting to servers or other gigabit switches. The Gigabit modules have copper & fiber selection. The Gigabit modules only could negotiate Full-duplex mode and do not need jumper or software to configuration.

The copper supports Auto-MDIX and Auto-negotiation function. The fiber supports multi-mode and single-mode at the SC or MT-RJ connector. Please refer to the gigabit modular list at page 7, 8, 9, 10 and 11 for detail.


Green
Green
2 4 6 8 10 12 14 16 18 20 22 24
10 / 100 M
LINK / ACT
10 / 100M
LINK / ACT
1 3 5 7 9 11 13 15 17 19 21 23
POWER
Yellow
Green
Green

lll. LED Definitions

On the 24 10/100TX port

Power LED

On	The unit is powered on and ready for use.
Off	The unit is powered off.
Flashing	Collisions occurred and the port is operating at Half-duplex mode.

10/100M LED

On	The port is on the 100Mbps status.
Off	The port is on the 10Mbps status.

LINK/ACT LED

On	The port is ready for 10/100Mbps connection.
Flashing	The data is transmitted or received on the port.

On the Gigabit module

100M LED

ON	The port link & work on the 100Mbps.

ACT LED

ON	The data is transmitted or received on the port.
Off	The port is idle.

1G LED

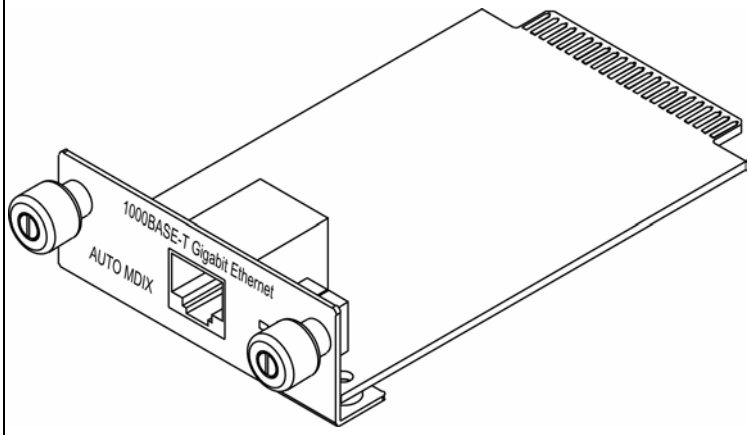
ON	The port link & work on the 1000Mbps.

FDX LED

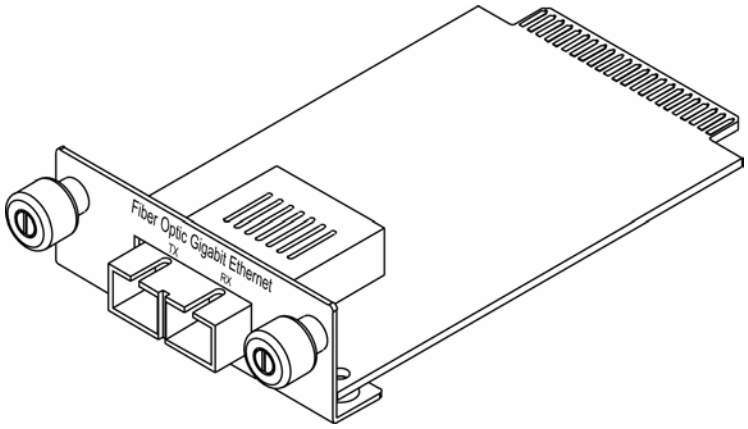
ON	The port is operating at full-duplex.
Off	The port is operating at half-duplex.

IV. Gigabit Optional module series:

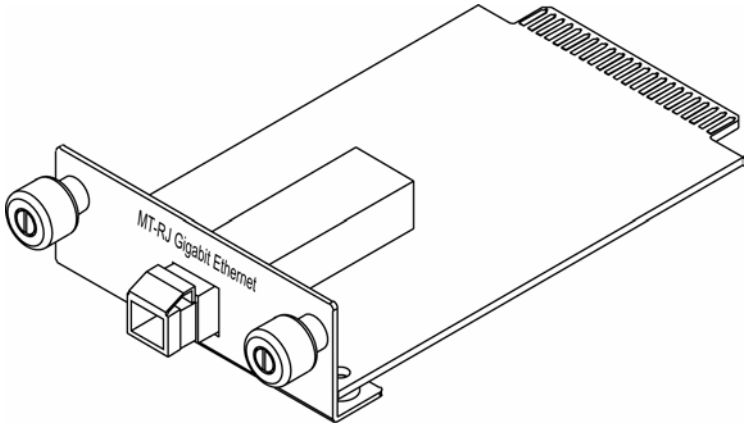
Gigabit 1000Base-T Gigabit Ethernet Module

Model Name	Description
EM-001GT	■ Complies with IEEE802.3ab 1000Base-T Std. ■ 1 x 1000Mbps STP port (RJ-45 connector). ■ Support Auto-MDIX & Auto-negotiation. ■ Supports Cat. 5, 5e or 6 twisted pair cable. ■ Jumper-less configuration. ■ Full duplex operation only. ■ LED-indicators for 1000M, 100M, LINK/ACT, FDX.
	

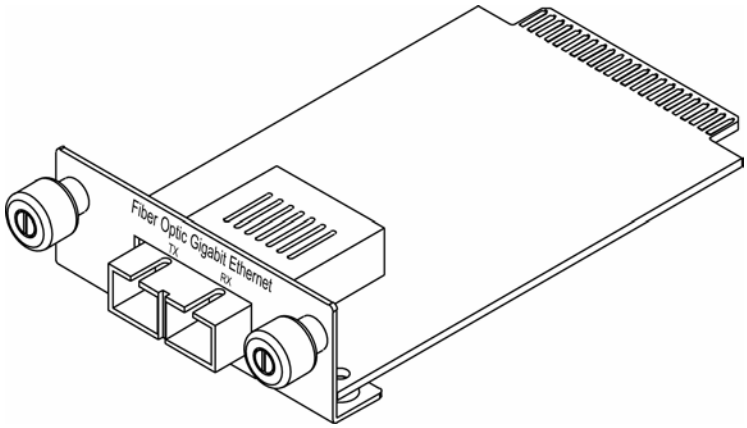
Gigabit 1000Base-SX Fiber Module (Multi-Mode)

Model Name	Description
EM-001GSS	■ Complies with IEEE802.3z 1000Base-SX Std. ■ 1 x 1000Base-SX Fiber port (SC connector). ■ Supports 62.5/125um or 50/125um multi-mode optic cable. ■ Jumper-less configuration. ■ Full duplex operation only. ■ LED-indicators for LINK.
Distance: Use the 62.5/125um MMF optic cable for 220m (721 ft) links. Use the 50/125um MMF optic cable for 500 (1640 ft) links.	
	

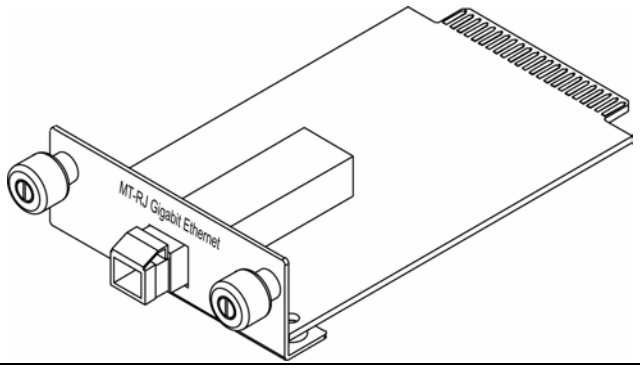
Gigabit 1000Base-SX Fiber Module (Multi-Mode)

Model Name	Description
EM-001GSM	■ Complies with IEEE802.3z 1000Base-SX Std. ■ 1 x 1000Base-SX Fiber port (MT-RJ connector) ■ Supports 62.5/125um or 50/125um multi-mode optic cable. ■ Jumper-less configuration. ■ Full duplex operation only. ■ LED-indicators for LINK.
Distance: Use the 62.5/125um MMF optic cable for 220m (721 ft) links. Use the 50/125um MMF optic cable for 500 (1640 ft) links.	
	

Gigabit 1000Base-LX Fiber Module (Single-Mode)

Model Name	Description
EM-001GLS	■ Complies with IEEE802.3z 1000Base-LX Std. ■ 1 x 1000Base-LX Fiber port (SC Connector) ■ Supports 62.5/125um, 50/125um multi-mode and 9/125um single-mode optic cable. ■ Jumper-less configuration. ■ Full duplex operation only. ■ LED-indicators for Link.
Distance: Use the 62.5/125um MMF optic cable for 550m (721 ft) links. Use the 50/125um MMF optic cable for 550 (1640 ft) links. Use the 9/125um SMF optic cable for 10Km links.	
	

Gigabit 1000Base-LX Fiber Module (Single-Mode)

Model Name	Description
EM-001GLM	■ Complies with IEEE802.3z 1000Base-LX Std. ■ 1 x 1000Base-LX Fiber port (MT-RJ Connector) ■ Supports 62.5/125um, 50/125um multi-mode and 9/125um single-mode optic cable. ■ Jumper-less configuration. ■ Full duplex operation only. ■ LED-indicators for Link/ACT
Distance: Use the 62.5/125um MMF optic cable for 550m (721 ft) links. Use the 50/125um MMF optic cable for 550 (1640 ft) links. Use the 9/125um SMF optic cable for 10Km (6.2mile) links.	
	

Rear Panel Layout

AC input

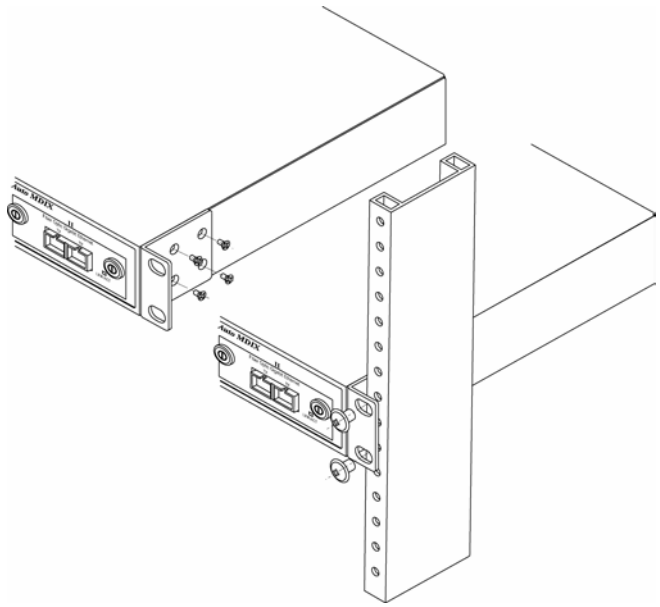
AC input (90-260V/AC, 50-60Hz) UL Safety.

Chapter 4

Rack Mounting

Optional Rack-mounting brackets are available to mount Switch in standard EIA 19-inch rack. 24 Port 10/100Mbps plus 2 Gigabit TX/FX Auto-MDIX Modular Switch is supplied with two mounting brackets and eight screws.

First, put the Switch on the flat surface. Locate the mounting bracket on the sides of the Switch with the mounting holes on each. Next, insert the screw through the bracket and into the bracket mounting holes in the Switch. Then, place the Switch in to 19-inch rack.

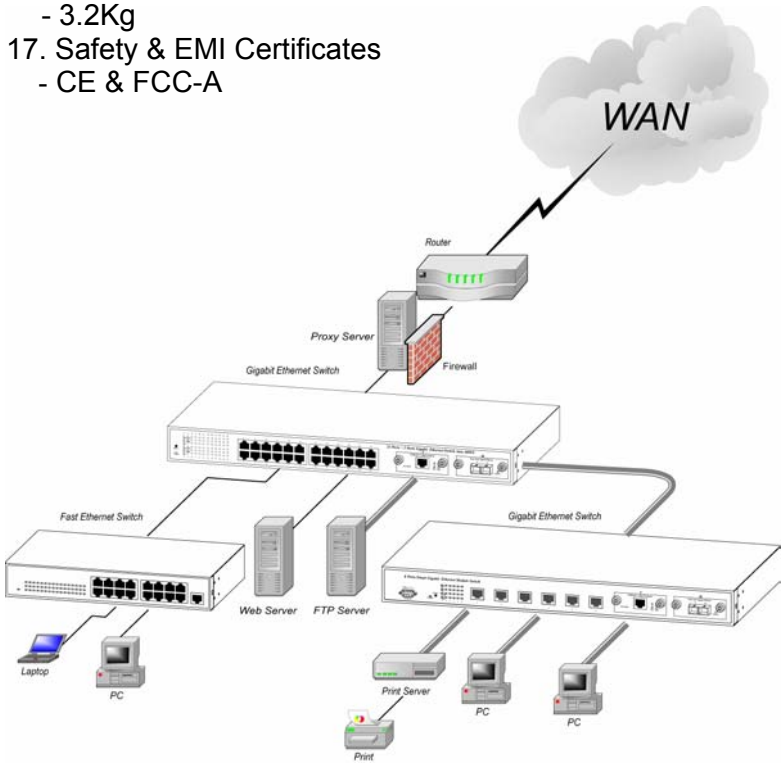


Chapter 5

Technical Specifications

1. Standards Compliance
   - IEEE 802.3 10BASE-T; IEEE 802.3u 100BASE-TX
   - IEEE802.3z 1000BASE-SX, 1000BASE-LX
   - IEEE802.3ab 1000BASE-T
2. Protocol:
   - CSMA/CD
3. Number Of Ports
   - 24 integrated ports (10/100Mbps Nway port)
   - 2 optional Gigabit Ethernet modules
4. Fully Flow Control Supported
   - Half-duplex mode: Backpressure
   - Full-duplex mode: IEEE 802.3x
5. Network Transmission Media
   - 10Base–T Cat. 3, 4, 5 UTP/STP
   - 100Base–TX Cat. 5 UTP/STP
   - 1000Base-T Cat. 5, 5e, 6 UTP/STP
6. Network Status Monitoring LEDs
   - System: POWER
   - 10/100TX port: LINK/ACT, 10/100M.
   - Gigabit TP port: 100M, 1G, ACT and FDX
   - Gigabit Fiber port: LINK.
7. Buffer Memory
   - RAM: 3Mbits per device
8. Filter/Forward Rate
   - Packet Filtering/ Forwarding Rates
   (By 64 packet length)
   -1000Mbps: 1488,000pps
   -100Mbps: 148,800pps
   -10Mbps: 14,880pps
9. MAC Address
   - Up to 14K per device

10. Power
    - AC input (90-240V/AC, 50-60Hz) UL Safety
11. Power Consumption
    - 20 Watts (Max)
12. Operating Temperature
    - 0□~ 60□
13. Store Temperature
    - -20□~ 90□
14. Humidity
    - 10% ~90% RH (Non-condensing)
15. Dimension (L × W × H)
    - 440mm × 220mm × 44mm
16. Weight
    - 3.2Kg
17. Safety & EMI Certificates
    - CE & FCC-A



Appendix

I. ANSI/TIA/EIA-568-A PLUG & Twisted-pair Cable

The IEE802.3ab Standards permits the use of category 5 or better balanced cable pairs, installed according to ANSI/EIA-568-A. This appendix provides pinout and brief information for the CAT5 unshielded twisted pair cables

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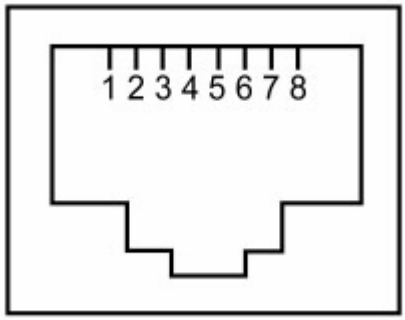
II. EIA568A pin assignment:

Pin Number	Assignment
1	Data Pair 3 +
2	Data Pair 3 -
3	Data Pair 2 +
4	Data Pair 1 +
5	Data Pair 1 –
6	Data Pair 2 -
7	Data Pair 4 +
8	Data Pair 4 -



III Recommend CAT5 UTP specifications

Physical:

- FR-PVC cable construction
- Cable Type: 4-pair unshielded-twisted pair solid copper
- Conductors: 24 AWG, solid bare annealed copper
- Operating temperature: -20 ^{0}C to +75 ^{0}C

Electrical:

- Impedance: 100 Ω±15 %
- Near-End Cross-talk: 38dB @ 100 MHz
- Attenuation: 22 dB/100 m typical @ 100 MHz
- Maximum DC resistance: 9.38 Ω /100 m (24 AWG) at 20 ^{0}C
- Maximum DC insulation resistance: 150M Ω /km