User's Manual for
16/24 P Gigabit Switch

Overview

16/24-port Gigabit switch is a standard switch that meets IEEE 802.3/u/x/z Gigabit and Fast Ethernet specifications. The switch includes 14/22 10/100/1000Mbps TP and 2 Gigabit TP/SFP Fiber Ethernet ports. The switch seamlessly integrates with the rest of the network through its auto-negotiating and non-blocking design. To break through the bottlenecks at the core of network, the switch provides up to 32/48 Gbps aggregate bandwidth and seamless migration and the most cost effective method for bringing high-speed networking to the desktop.

In this switch, Port 15, 16 (or Port 23, 24 in the 24-port Gigabit switch) includes two types of media --- TP and SFP Fiber (LC, BiDi-LC…); this port supports 10/100/1000Mbps TP or 1000Mbps SFP Fiber with auto-detected function. 1000Mbps SFP Fiber transceiver is used for high-speed connection expansion.

2. Checklist

Before you start installing the Switch, verify that the package contains the following:

— The 16/24 Port Gigabit Switch
— AC Power Cord
— SFP Modules (optional)
— Mounting Accessory (for 19" Rack Shelf)
— This User's Manual

Please notify your sales representative immediately if any of the aforementioned items is missing or damaged.
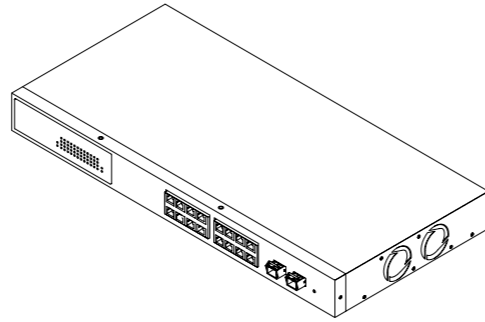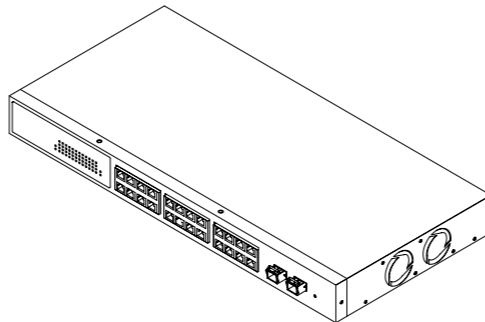

Fig. 1 the 16 Port Gigabit Switch

Fig. 2 the 24 Port Gigabit Switch

3. Installing the Switch

With the plug and play design, the Gigabit switch is easy in installation and use. Network and port status can be easily monitored and done trouble-shooting via diagnostic LEDs. Wiring auto crossover on all ports of the switch also allows the connection to server or PC to free from cabling problems.

⇒ In the switch, TP port supports MDI/MDI-X auto-crossover, so both types of cable, straight-through (Cable pin-outs for RJ-45 jack 1, 2, 3, 6 to 1, 2, 3, 6 in 10/100M TP; 1, 2, 3, 4, 5, 6, 7, 8 to 1, 2, 3, 4, 5, 6, 7, 8 in Gigabit TP) and crossed-over (Cable pin-outs for RJ-45 jack 1, 2, 3, 6 to 3, 6, 1, 2) can be used. It means you do not have to tell from them, just plug it.

⇒ Use Cat. 5 grade RJ-45 TP cable to connect to a TP port of the switch and the other end is connected to a network-aware device such as a workstation or a server.

⇒ Repeat the above steps, as needed, for each RJ-45 port to be connected to a Gigabit 10/100/1000 TP device.

⇒ For Fast Ethernet TP network connection
 — The grade of the cable must be Cat. 5 or Cat. 5e with a maximum length of 100 meters.

⇒ Gigabit Ethernet TP network connection
 — The grade of the cable must be Cat. 5 or Cat. 5e with a maximum length of 100 meters. Cat. 5e is recommended.

⇒ The TP, fiber cables and devices' bit-time delay (round trip) are as follows:

1000Base-X TP, Fiber		100Base-TX TP		100Base-FX Fiber	
Round Trip Delay: 4096		Round Trip Delay: 512			
Cat. 5 TP Wire:	11.12/m	Cat. 5 TP Wire:	1.12/m	Fiber Cable:	1.0/m
Fiber Cable:	10.10/m	TP to Fiber Converter: 56			
Bit Time unit: 1ns (1sec./1000 Mega bit)		Bit Time unit: 0.01μs (1sec./100 Mega bit)			

Sum up all elements' bit-time delay and the overall bit-time delay of wires/devices must be within Round Trip Delay (bit times) in a half-duplex network segment (collision domain). For full-duplex operation, this will not be applied. Use the SFP Fiber module to extend the distance over fiber optic and provide the long haul connection.

⇒ Insert the power cord. The embedded internal power unit using different AC power cord is available for different areas.

4. LED Description

| LED	Color	Function
Power	Green	Lit when DC power is coming up
Gigabit Switch TP Port 1 to 16/24		
Link/Act	Green	Lit when TP connection is good Blinks when any traffic is present
10/100/1000Mbps	Green/ Amber	Lit green when 1000Mbps speed is active Lit amber when 100Mbps speed is active Off when 10Mbps speed is active
1000SX/LX Gigabit Fiber Port 15, 16/ 23, 24 LED		
SFP(LINK/ACT)	Green	Lit when connection with remote device is good Blinks when any traffic is present Off when module connection is not good
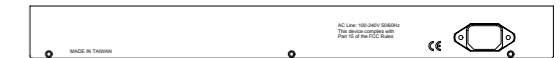
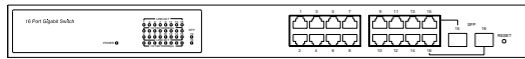Fig. 3 Rear View of the 16/24 Port Gigabit Switch

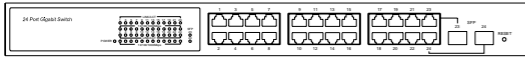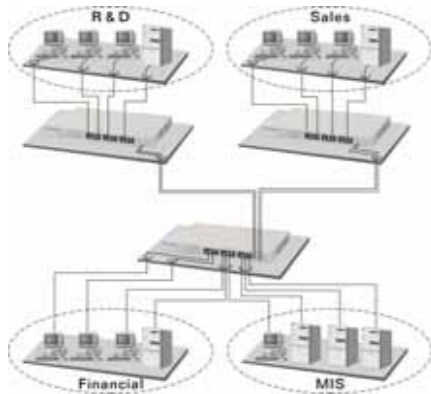Fig. 4 Front View of the 16 Port Gigabit Switch

Fig. 5 Front View of the 24 Port Gigabit Switch

5. Connecting to 10/100/1000Mbps Device

6. SFP Optional Modules

Nine optional SFP types provided for the Gigabit switch are listed below:

— 1000Mbps LC, MM, SFP Fiber transceiver (SFP.0LC.202)

— 1000Mbps LC, SM 10km, SFP Fiber transceiver (SFP.0LC.212.10)

— 1000Mbps LC, SM 30km, SFP Fiber transceiver (SFP.0LC.212.30)

— 1000Mbps LC, SM 50km, SFP Fiber transceiver (SFP.0LC.212.50)

— 1000Mbps BiDi LC, type 1, SM 20km, SFP Fiber WDM transceiver (SFP.0BL.621.201)

— 1000Mbps BiDi LC, type 2, SM 20km, SFP Fiber WDM transceiver (SFP.0BL.621.202)

— 1000Mbps LC, SM 10km, SFP Fiber transceiver with DDM (SFP.DLC.212.10)

7. Installing the SFP Fiber Transceiver to the Switch

Note: If you have no modules, please skip this section.

The optional SFP modules are hot swappable, so you can plug or unplug it before or after powering on.

— Verify that the SFP module is the right model and conforms to the chassis
— Slide the module along the slot. Also be sure that the module is properly seated against the slot socket or connector
— Install the media cable for network connection
— Repeat the above steps, as needed, for each module to be installed into slot(s)
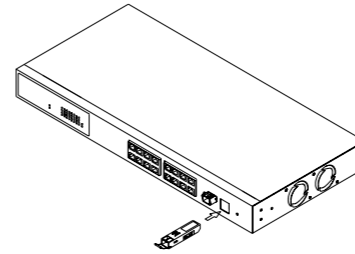— Have the power ON after the above procedures are done

Fig. 9 Installation of Optional SFP Fiber Transceiver

8. 16/24 Port Gigabit Switch Specifications

- **Standards :** IEEE802.3/802.3ab/802.3u/802.3x/802.3z
- **Transmission :** 10/100Mbps supports full or half duplex
  1000Mbps supports full duplex only
- **MAC Address and Self-learning :** up to 8K

- **Data Transfer Rate:** PPS (packets per second)

Speed	Forwarding Rate
1000Mbps	1,488,000 PPS
100Mbps	148,800 PPS
10Mbps	14,880 PPS

- **Buffer Memory :** 400KB on chip frame buffer
- **Flow Control:** IEEE802.3x compliant for full-duplex
  Backpressure flow control for half-duplex
- **Switching Method :** Store & forward
- **Network Interface :** 16/24 10/100/1000Mbps RJ-45 ports
- **UTP Cable** :

P	Cat. 5 UTP cable, up to 100m
000Base-SX	Up to 220/275/500/550m, which depends on Multi-Mode Fiber type
000Base-LX	Single-Mode Fiber, up to10/30/50Km
000Base-LX WDM (BiDi)	Single-Mode Single Fiber, up to 20Km

- **Diagnostic LEDs** :

System LED :   Power
Per Port LED:
  10/100/1000M TP Port 1 to 16/24   : LINK/ACT,
                                               10/100/1000Mbps
  1000M SFP Fiber Port   : SFP(LINK/ACT)
15,16/23,24

- **Power Requirement :** AC Line

  Voltage   : 100-240V
  Frequency   : 50-60Hz
  Consumption   : Max. 30W
- **Operation Temperature :** 0° to 50°C
- **Operation Humidity**   : 10% to 90%
- **Storage Temperature**   : 0° to 55°C
- **Humidity**   : 5% to 95%
- **Dimensions:** 44(H) × 442(W) × 209(D) mm
- **Complies with FCC Part 15 Class A, CE Mark Approval**

Note: For connecting this device to Router, Bridge, or

Switch, please refer to the corresponding device's
Technical Manual.