# MiLAN

## MIL-S24002TGxx

*24-port 10/100/1000 TX*

*2 Combo SFP Slots*

*Unmanaged Switch*

# User Guide

Rev.B

08-DEC2005

Regulatory Approval

- FCC Class A
- UL 1950
- CSA C22.2 No. 950
- EN60950
- CE
- EN55022 Class A
- EN55024

Canadian EMI Notice
This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe A respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

European Notice
Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community Compliance with these directives imply conformity to the following European Norms:

EN55022 (CISPR 22) - Radio Frequency Interference
EN61000-X - Electromagnetic Immunity
EN60950 (IEC950) - Product Safety

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# Content

# 1. Introduction

The 24-port 10/100/1000 TX plus 2 combo SFP Slots Switch is an ideal solution for solving traffic block at the core of the network. It offers 24 x auto-negotiating 10/100/1000Base-T Gigabit Ethernet ports that can significantly improve your network backbone performance. This Switch will fit into any enterprise level network to act as an exit to the backbone switch. It also provides 2 SFP Gigabit port for gigabit network connection.
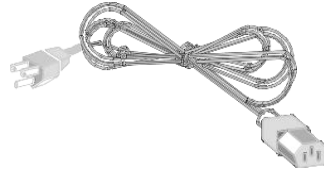
The 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch features **Auto MDI/MDIX** function for each port. [In general, MDI means connecting to another Hub or Switch while MDIX means connecting to a workstation or PC. Therefore, Auto MDI/MDIX means that you can connect to another Switch or workstation without changing non-crossover or crossover cabling. The switch also features a store-and-forward switching and can auto-learn and store source address on a 8K MAC address table.

## Features

- Compatible with IEEE 802.3 10Base-T, IEEE802.3u 100Base-TX, IEEE802.3z gigabit fiber and IEEE802.3ab 1000Base-T
- 24 ports gigabit switch with two COMBO SFP SLOTS
- Automatic MDIX for all ports
- 8K entry MAC address table
- 9K Jumbo Frame support
- 2Mbits Memory buffer
- IEEE802.3x flow control:
  ➢ Pause frame for 10/100/1000Mbps full duplex
  ➢ Backpressure for 10/100 Mbps half duplex
- 2 COMBO SFP SLOTS for SFP transceiver
- Store-and-Forward architecture support
- One DC fan for good ventilation and to increase system heat sink performance
- 19 inch Rack mount design

# Package Contents

- The 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch

- Power Cord

- Four Rubber Feet

- User Manual



**The 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch**   **Power Cord**
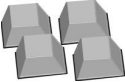
| | |
|---|---|
|  |  |
| User Guide | Rubber Feet |

Figure 1-1. Package Contents

Compare the contents of your 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch package with the standard checklist above. IF any item is missing or damaged, please contact your local dealer for service.

# 2. Hardware Description

This Section describes the hardware of the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch.

The physical dimensions of the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch is:

**440 x 224 x 44 mm (W x D x H)**

## Front Panel

The Front Panel of the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch consists of 24 x auto-negotiation 10/100/1000Mbps Ethernet RJ-45 connectors (support **Automatic MDI/MDIX** function), two Combo SFP Slots slot, and LED-indicators (100/1000, Link/Activity, Full duplex/Collision) for each Gigabit port and power LED-indicator for unit.
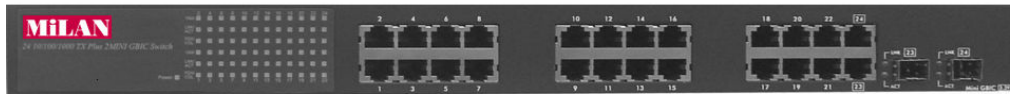


Figure 2-1. The Front Panel of the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch

■ **RJ-45 Ports (Auto MDI/MDIX):** 24 x auto-negotiation 10/100/1000 Mbps Ethernet RJ-45 connectors

[**Auto MDI/MDIX** means that you can connect to another switch or workstation without changing straight through or crossover cabling.]

■ **Combo SFP Slots ports:** It is port 23 and 24 and support 3.3V. It auto detects between Giga copper and Combo SFP Slots. Combo SFP Slots module is optional. There are 2 LED indicators for Combo SFP Slots port – LNK and ACT. When the Combo SFP Slots module is not installed, the port 23 and 24 is the 10/100/1000 copper only.

**[Note]** When the Combo SFP Slots module is installed, Combo SFP Slots have a default priority over 10/100/1000 copper port. It doesn't matter whether copper port has a valid link. When SFP is in the slot copper ports are disabled.

## Rear Panel

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The 3-pronged power plug, on/off switch, and Ventilation fan are located at the rear Panel of the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch as shown in Figure 2-2. The Switch will work with AC in the range 100-240V AC, 50-60Hz.



Figure 2-2. Rear panel of the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch

## LED Indicators

The LED Indicators gives a real-time indication of system operating statuses. There are 3 LED-indicators (1000, LNK/ACT, FDX/COL) for each Gigabit port and one Power LED for unit. The following table provides descriptions of LEDs status and their meaning.
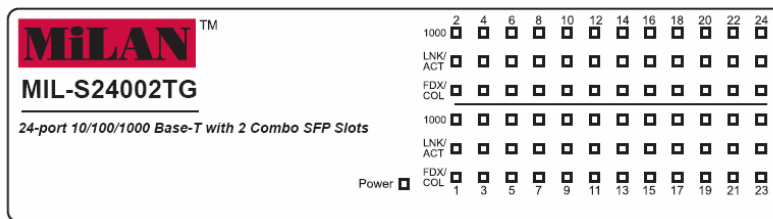


Figure 2-3.LED Indicators

| LED | Status | Description |
|---|---|---|
| Power | Green | Power On |
| | Off | Power is not connected |
| 1000 | Green | The port is operating at the speed of 1000Mbps. |
| | Off | No device attached or in 10/100Mbps mode |
| LNK/ACT | Green | The port is connecting with the device. |
| | Blinking | The port is receiving or transmitting data. |
| | Off | No device attached. |
| FDX/COL | Orange | The port is operating in Full-duplex mode. |

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| | Blinking | Packet collision occurred on this port. |
|---|---|---|
| | Off | No device attached or in half-duplex mode. |

Table 2-1. The Descriptions of LED Indicators

## Combo SFP Slots LED

2 Combo SFP Slots ports have two LED indicators – LNK and ACT. The following table provides descriptions of LEDs status and their meaning.
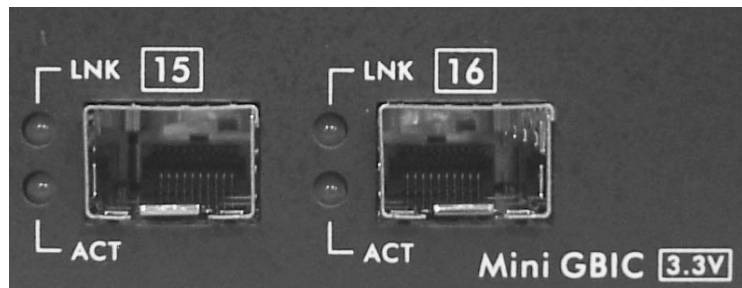


Figure 2-4. Combo SFP Slots port LED Indicators

| LED | Status | Description |
|---|---|---|
| **LNK** | Green | The port is connecting with device. |
| | Off | No device attached. |
| **ACT** | Green (Blinking) | The port is transmitting or receiving the data. |
| | Off | No data transmitting or receiving. |

Table 2-2. The Descriptions of Combo SFP Slots LED Indicators

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# 3. Installation

This section shows the installation procedures of the switch.

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

**Attaching Rubber Feet**

- Make sure mounting surface on the bottom of the Switch is grease and dust free.
- Remove adhesive backing from your Rubber Feet.
- Apply the Rubber Feet to each corner on the bottom of the Switch. These footpads can prevent the Switch from shock/vibration.

**Power On**

Connect the cord of power adapter to the power socket on the rear panel of the Switch. The other side of power cord connects to the power outlet. Check the power indicator on the front panel to see if power is properly supplied.

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# 4. Network Application

This section provides you one sample of network topology in which the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch is used. In general, the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch is designed as a high-bandwidth backbone switch.

You can use the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch to connect servers, switches, workstation, and PCs to each other by connecting these devices directly to the Switch. The Switch automatically learns node address, which are subsequently used to filter and forward all traffic based on the destination address. You can use Gigabit fiber port to connect with fiber network that extend the Ethernet network to fiber network.

For enterprise networks where large data broadcast are constantly processed, this switch is an ideal suitable for departmental switches to connect to the Core Switch. All ports can connect to departmental switches, and the departmental switches can be connected to the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch. Then all the devices in this network can communicate with each other. Connecting servers to the Core Switch allow each end station to access the server's data. This switch is an ideal solution for backbone connectivity.

# 5. Troubleshooting

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

■ **Diagnosing LED Indicator**

If Link indicator does not light up after connection, you may check whether network interface (e.g., a network adapter card on the attached device), network cable, or switch port is defective or not. Verify that the switch and attached device are power on. Be sure the cable is plugged into both the switch and corresponding device. Verified the proper cable type is used and its length does not exceed specified limits.

■ **Power**

IF the power indicator does turn on when the power cord is plugged in, you may have a problem with power outlet, or power cord. However, if the Switch powers off after running for a while 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.

■ **Transmission Mode**

Verify that each port is set to the same transmission mode used by the attached device (i.e., half or full duplex). RJ-45 port uses auto-negotiation to set the transmission mode. If the attached device operates at half duplex, the default when auto-negotiation fails, then it does not have to support auto-negotiation.

■ **Cabling**

**RJ-45 ports:** Use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 3,4 or 5 cable for 10Mbps connections or 100Ω Category 5 cable for 100Mbps connections or 4-pair Category 5 copper cabling for 1000Mbps connection. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

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# 6. Technical Specification

The following table provides the technical specification of the 24-port 10/100/1000 TX plus 2 Combo SFP Slots Switch.

| | |
|---|---|
| **Standard** | IEEE802.3 10BASE-T<br>IEEE802.3u 100BASE-TX<br>IEEE802.3z Gigabit fiber<br>IEEE802.3ab 1000Base-T |
| **Protocol** | CSMA/CD |
| **Technology** | Store-and-Forward switching architecture |
| **Transfer Rate** | 14880 Packets per Second for 10Mbps<br>148800 Packets per second for 100Mbps<br>1488000 Packets per second for 1000Mbps |
| **Connector** | RJ-45: 24 ports<br>COMBO SFP SLOTS: 2 x 3.3V SFP SLOTS |
| **MAC Address** | 8K |
| **Memory Buffer** | 2Mbits |
| **Network Cable** | 10BASE-T: 2 pairs UTP/STP CAT.3, 4, 5 cable EIA/TIA 568 100Ohm(100M)<br>100BASE-TX: 2 pairs UTP/STP CAT. 5 cable EIA/TIA 568 100Ohm(100M)<br>Gigabit Copper: 4 pairs UTP/STP CAT. 5 cable EIA/TIA 568 100Ohm(100M) |
| **LED** | System: Power<br>Per RJ-45 port: 1000Mbps, Link/Activity, Full duplex/collision<br>Combo SFP Slots slot: Link, Activity |
| **Power Supply** | Internal power supply, AC 100~240VAC, 50/60 Hz |
| **Power** | 47Watts(maximum) |

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| | |
|---|---|
| **Consumption** | |
| **Operation Temperature** | 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) |
| **Operation Humidity** | 10% to 90% (Non-condensing) |
| **Dimension** | 440mm(W) x 224mm(D) x 44mm (H) |
| **EMI & Safety** | FCC Class A, CE, UL, CE/EN60950 |

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