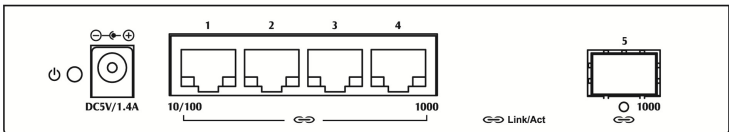
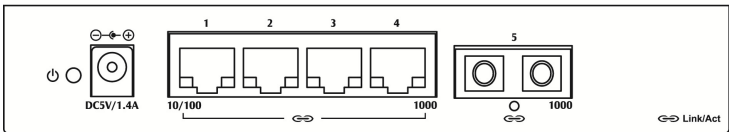
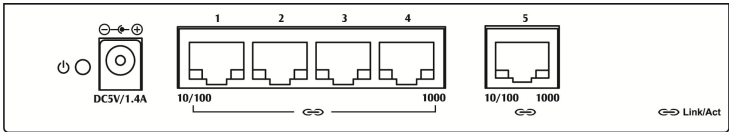


Quick Start Guide

This quick start guide describes how to install and use the Gigabit Ethernet Switch. Capable of operating at temperature 0°C to +45°C, this is the switch of choice for environments constrained by space.

Physical Description

The Port Status LEDs



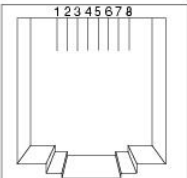
| LED | State | Indication |
|--------------------------|----------|-------------------------------------------------------------|
| Power (Green) | Steady | Power on. |
| | Off | Power off. |
| 10/100/1000Base-T | | |
| Link/Act (Green) | Steady | A valid network connection established at 10/100Mbps. |
| | Flashing | Transmitting or receiving data. Act stands for Activity. |
| | Off | No Link. |
| Link/Act (Amber) | Steady | A valid network connection established at 1000Mbps. |
| | Flashing | Transmitting or receiving data. Act stands for Activity. |
| | Off | No Link. |
| 1000Base-SX/LX/BX | | |
| Link/Act (Amber) | Steady | A valid network connection established. |
| | Flashing | Transmitting or receiving data. Act stands for Activity. |
| | Off | No link. |

The 1000Base-T and 1000Base-SX/LX/BX Connectors

1. The 1000Base-T Connections

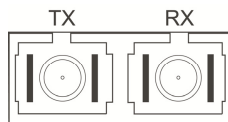
The following lists the pinouts of 1000Base-T port.

| Pin | Label |
|-----|-------|
| 1 | TP0+ |
| 2 | TP0- |
| 3 | TP1+ |
| 4 | TP2+ |
| 5 | TP2- |
| 6 | TP1- |
| 7 | TP3+ |
| 8 | TP3- |



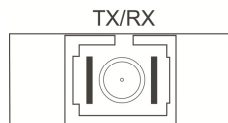
2. The 1000Base-SX/LX Connections

The fiber port pinouts: The Tx (transmit) port of device I is connected to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II.



3. The WDM 1000Base-BX Connections

The fiber port pinouts: Only one single optical fiber is required to transmit and receive data.



4. The SFP Connections

The SFP socket for 1000Base fiber optic expansion. Supports duplex LC connector on SFP with 1000Base-SX/LX/BX.



For SFP expansion

Functional Description

- Supports IEEE802.3/802.3u/802.3ab/802.3z. Auto-negotiation: 10/100/1000Mbps, Full/Half-duplex. Auto MDI/MDIX.
- 1000Base-SX/LX: Multi mode and Single mode SC and ST type.
- 1000Base-BX: WDM Multi mode and Single mode SC type.
- SFP socket for Gigabit fiber optic expansion. Supports duplex LC connector on SFP with 1000Base-SX/LX/BX.

- Supports IEEE802.3x Flow Control for Full-duplex & Back Pressure for Half-duplex.
- None-blocking architecture and full wire-speed forwarding rate.
- Supports 2048 MAC addresses.
- Supports IEEE802.1p Quality of Service (QoS).
- IEEE802.3az EEE (Energy Efficient Ethernet) supported on copper ports.
- Supports jumbo frame up to 9216 Bytes.
- 5VDC DC Jack power input, external AC to DC power adapter.
- Operating voltage and Max. current consumption: 1.4A @ 5VDC. Power consumption: 7W Max.
- Operating temperature ranges from 0°C to 45°C (32°F to 113°F).

Preface

This switch addresses a need for a smaller switch. Capable of operating at temperature extremes of 0°C to 45°C, this is the switch of choice for environments constrained by space.

Plug-and-Play Solution:

The switch is a plug-and-play Gigabit Ethernet Switch in compact size. It doesn't have any complicated software to set up.

This manual describes how to install and use the Gigabit Ethernet Switch. This switch integrates full wire speed switching technology. This switch brings the answer to complicated networking environments.

To get the most out of this manual, you should have an understanding of Ethernet networking concepts.

In this manual, you will find:

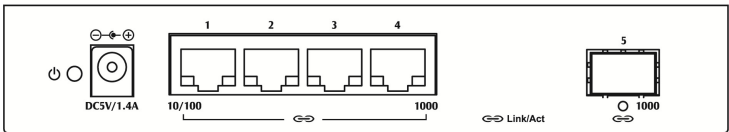
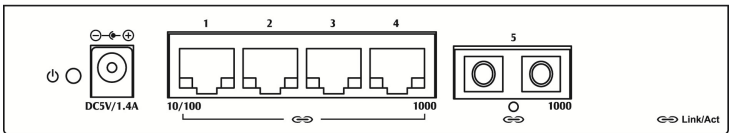
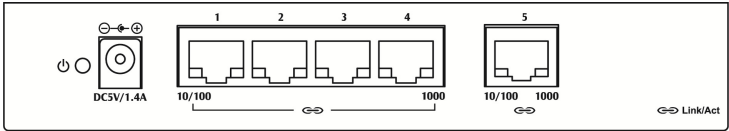
- Features on the switch
- Illustrative LED functions
- Installation instructions
- Specifications

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Product Overview

Gigabit Ethernet Switch



Package Contents

When you unpack the product package, you shall find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to your authorized reseller.

- ✓ ***This Switch***
- ✓ ***User's Manual***
- ✓ ***External power adapter***

Product Highlights

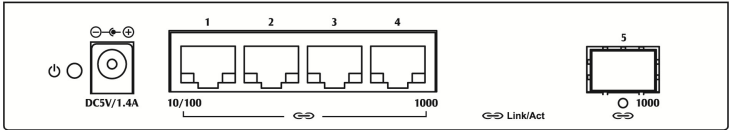
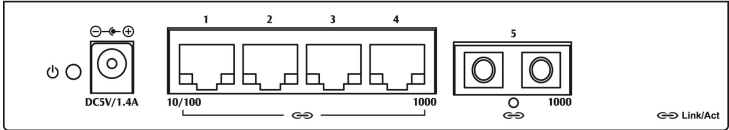
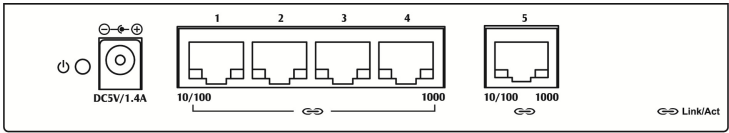
Basic Features

- Supports IEEE802.3/802.3u/802.3ab/802.3z. Auto-negotiation: 10/100/1000Mbps, Full/Half-duplex. Auto MDI/MDIX.
- 1000Base-SX/LX: Multi mode and Single mode SC and ST type. 1000Base-BX: WDM Multi mode and Single mode SC type.
- SFP socket for Gigabit fiber optic expansion. Supports duplex LC connector on SFP with 1000Base-SX/LX/BX.
- Supports IEEE802.3x Flow Control for Full-duplex & Back Pressure for Half-duplex.
- None-blocking architecture and full wire-speed forwarding rate.
- Supports 2048 MAC addresses.
- Supports IEEE802.1p Quality of Service (QoS):
 - 802.1Q VLAN Tag Based Priority, Class of Service.
 - Output Queue Schedule Mode: Weighted Round Robin (WRR) with 4 priority queues.
 - The configurations of QoS are as below:

| CoS Field Value | Bit Count | Priority |
|-----------------|-----------|----------|
| 0 or 1 | 1 | Lowest |
| 2 or 3 | 2 | Low |
| 4 or 5 | 4 | High |
| 6 or 7 | 8 | Highest |

- IEEE802.3az EEE (Energy Efficient Ethernet) supported on copper ports.
- Supports jumbo frame up to 9216 Bytes.
- 5VDC DC Jack power input, external AC to DC power adapter.
- Operating voltage and Max. current consumption: 1.4A @ 5VDC. Power consumption: 7W Max.
- Operating temperature ranges from 0°C to 45°C (32°F to 113°F).

Front Panel Display



① Power Status

This LED comes on when the switch is properly connected to power and turned on.

② Port Status LEDs

The LEDs display status for each respective port.

| LED | State | Indication |
|----------------------------|----------|-------------------------------------------------------------|
| Power (Green) | Steady | Power on. |
| | Off | Power off. |
| 10/100/1000Base-T | | |
| Link/Act (Green) | Steady | A valid network connection established at 10/100Mbps. |
| | Flashing | Transmitting or receiving data. Act stands for Activity. |
| | Off | No Link. |
| Link/Act (Amber) | Steady | A valid network connection established at 1000Mbps. |
| | Flashing | Transmitting or receiving data. Act stands for Activity. |
| | Off | No Link. |
| 1000Base-SX/LX/BX | | |
| Link/Act (Amber) | Steady | A valid network connection established. |
| | Flashing | Transmitting or receiving data. Act stands for Activity. |
| | Off | No link. |

Physical Ports

This switch provides:

- Five 10/100/1000Base-TX ports
- Four 10/100/1000Base-TX ports + one 1000Base-SX/LX/BX fiber port
- Four 10/100/1000Base-TX ports + one Gigabit SFP socket

CONNECTIVITY

- RJ-45 connectors
- SC or ST connector on 1000Base-SX/LX/BX fiber port
- Duplex LC connector on SFP 1000Base-SX/LX/BX fiber transceiver

Installation

This chapter gives step-by-step instructions about how to install the switch:

Selecting a Site for the Switch

As with any electric device, you should place the switch where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

- The ambient temperature should be between 0 to 45 degrees Celsius.
- The relative humidity should be less than 95 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards.
- Make sure that the switch receives adequate ventilation. Do not block the ventilation holes on the switch
- The power outlet should be within 1.8 meters of the switch.

Connecting to Power

Connect the supplied AC to DC adapter to the receptacle on the back of the switch, then plug the cord into a standard AC outlet with a voltage range from 100 to 240 VAC.

Connecting to Your Network

Cable Type & Length

It is necessary to follow the cable specifications below when connecting the switch to your network. Use appropriate cables that meet your speed and cabling requirements.

Cable Specifications

| Speed | Connector | Port Speed Half/Full Duplex | Cable | Max. Distance |
|-------------|-----------|-----------------------------------|-----------------------------------|-----------------------|
| 10Base-T | RJ-45 | 10/20 Mbps | 2-pair UTP/STP Cat. 3, 4, 5 | 100 m |
| 100Base-TX | RJ-45 | 100/200 Mbps | 2-pair UTP/STP Cat. 5 | 100 m |
| 1000Base-T | RJ-45 | 2000 Mbps | 4-pair UTP/STP Cat. 5, 5e | 100 m |
| 1000Base-SX | SC, ST | 2000 Mbps | MMF (50 or 62.5 μ m) | 220, 550 m or 2 km |
| 1000Base-LX | SC, ST | 2000 Mbps | SMF (9 or 10 μ m) | 10, 30, 40 km |
| 1000Base-BX | SC | 2000 Mbps | MMF (50 or 62.5 μ m) | 550 m |
| 1000Base-BX | SC | 2000 Mbps | SMF (9 or 10 μ m) | 15, 25, 40 km |
| SFP | | | | |
| 1000Base-SX | Duplex LC | 2000 Mbps | MMF (50 or 62.5 μ m) | 550 m or 2 km |
| 1000Base-LX | Duplex LC | 2000 Mbps | SMF (9 or 10 μ m) | 10, 40, 60 km |
| 1000Base-BX | Duplex LC | 2000 Mbps | SMF (9 or 10 μ m) | 70 km |

Cabling

Step 1: First, ensure the power of the switch and end devices are turned off.

<Note> Always ensure that the power is off before any installation.

Step 2: Prepare cable with corresponding connectors for each type of port in use.

<Note> To connect two regular RJ-45 ports between switches or hubs, you need a straight or cross-over cable.

Step 3: Consult the previous section for cabling requirements based on connectors and speed.

Step 4: Connect one end of the cable to the switch and the other end to a desired device.

Step 5: Once the connections between two end devices are made successfully, turn on the power and the switch is operational.

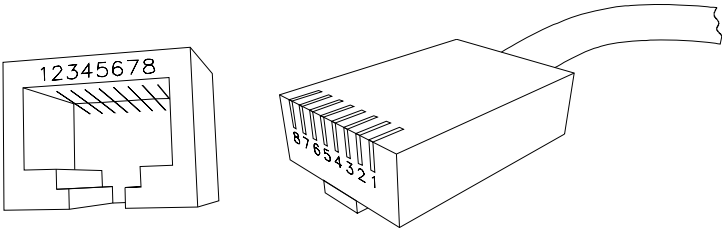
Specifications

| | |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Gigabit Ethernet Switch | 10/100/1000Base-TX auto-negotiating ports with RJ-45 connectors 1000Base-SX/LX/BX fiber ports or Gigabit SFP socket |
| Applicable Standards | IEEE802.3 10Base-T IEEE802.3u 100Base-TX IEEE802.3ab 1000Base-T IEEE802.3z 1000Base-SX/LX |
| Switching Method | Store-and-Forward |
| Forwarding Rate | |
| 10Base-T: | 10 / 20Mbps Half / Full-duplex |
| 100Base-TX: | 100 / 200Mbps Half / Full-duplex |
| 1000Base-T: | 2000Mbps Full-duplex |
| 1000Base-SX/LX/BX: | 2000Mbps Full-duplex |
| Performance | 148,80pps for 10Mbps 148,810pps for 100Mbps 1,488,100pps for 1000Mbps |
| Cable | |
| 10Base-T: | 2-pair UTP/STP Cat. 3, 4, 5 |
| 100Base-TX: | 2-pair UTP/STP Cat. 5 |
| 1000Base-T: | 4-pair UTP/STP Cat. 5, 5e Up to 100m (328ft) |
| 1000Base-SX/LX/BX: | MMF (50 or 62.5µm), SMF (9 or 10µm) |
| LED Indicators | Per unit – Power status Per port – 10/100/1000Base-TX - Link/Act (Green) or Link/Act (Amber) 1000Base-SX/LX/BX - Link/ACT (Amber) |
| Dimensions | 160mm (W) × 80.5mm (D) × 28mm (H) (6.3" (W) × 3.17" (D) × 1.1" (H)) |
| Net Weight | 420g (0.924lb.) |
| Power | 5VDC DC Jack power input, external AC to DC power adapter |
| Operating Voltage & Max. Current Consumption | 1.4A @ 5VDC |
| Power Consumption | 7W Max. |
| Operating Temperature | 0°C to 45°C (32°F to 113°F) |
| Storage Temperature | -40°C to 85°C (-40°F to 185°F) |
| Humidity | 5%-95% non-condensing |

| | |
|------------------|----------------------------------------------------|
| Safety | UL60950 |
| Emissions | FCC Part 15 Class A, CE Mark Class A, VCCI Class A |

Appendix A – Connector Pinouts

Pin arrangement of RJ-45 connectors:



RJ-45 Connector and Cable Pins

The following table lists the pinout of 10/100/1000Base-TX ports.

| Pin | Ports |
|-----|-------|
| 1 | TP0 + |
| 2 | TP0 - |
| 3 | TP1 + |
| 4 | TP2 + |
| 5 | TP2 - |
| 6 | TP1 - |
| 7 | TP3 + |
| 8 | TP3 - |