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LNX-0702G-SFP Series

7-Port Industrial Gigabit Unmanaged Ethernet Switches

5*10/100/1000Tx + 2*100/1000 SFP Slots



User Manual

Version 1.0

www.antaira.com

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Industrial Ethernet Switches

Industrial Grade Gigabit Unmanaged Ethernet Switches

User Manual
Version 1.0 (August 2014)

This manual supports the following models:

- LNX-0702G-SFP
- LNX-0702G-SFP-T

This document is the current official release manual. Please check our website (www.antaira.com) for any updated manual or contact us by e-mail (support@antaira.com).

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1. Overview

Antaira's LNX-0702G-SFP industrial gigabit unmanaged Ethernet switch series are IP30 rated and DIN-Rail mountable. The unit is designed with five gigabit Ethernet ports and two dual rate (100/1000) SFP slots, making it ideal for applications that demand high bandwidth and long distance communication.

This product series provides high EFT and ESD protection to prevent any unregulated voltage and is suitable for harsh environments. It supports the power redundancy feature using a dual power input design with reverse polarity protection. In addition, the built-in relay warning function alerts maintainers when power failures occur.

The LNX-0702G-SFP series includes two models: one with an operating temperature range of -10 to 70°C, and the other one with an extended operating temperature range of -40 to 75°C. It is a perfectly designed product to fulfill special needs for industrial automation, outdoor applications, and harsh weather environments.

1.1 Key Features

- System Interface/Performance
  - All RJ-45 ports support auto MDI/MDI-X function
  - Embedded 5-port 10/100/1000Tx and 2-port 100/1000 SFP slots
  - Store-and-forward switching architecture
  - 8K MAC address table
  - Jumbo frame supports: 10K
  - Power line EFT protection: 2,000VDC; Ethernet ESD protection: 6,000VDC
- Power Input
  - DC 12 ~ 48V redundant power
- Operating Temperature
  - Standard operating temperature model: -10°C ~ 70°C
  - Extended operating temperature model (-T): -40°C ~ 75°C
- Case/Installation
  - IP-30 protection
  - Installation in pollution degree to environment
  - DIN-Rail and wall mount design

1.2 Package Contents

- 1 - LNX-0702G-SFP (T): 7-Port industrial gigabit unmanaged Ethernet switch with 5*10/100/1000Tx + 2*100/1000 SFP slots

- 1 - User manual
- 1 - Product CD
- 2 - Wall mounting Bracket and Screws
- 1 - DC cable –18 AWG and DC jack 5.2x2.1mm

1.3 Safety Precaution

Attention: If the DC voltage is supplied by an external circuit, please use a protection device on the power supply input. The industrial Ethernet switch's hardware specs, ports, cabling information, and wiring installation will be described within this user manual.

2. Hardware Description

2.1 Physical Dimension

Figure 2.1, below, shows the physical dimensions of Antaira's LNX-0702G-SFP series: 7-Port industrial gigabit unmanaged Ethernet switch with 5*10/100/1000Tx and 2*100/1000SFP slots.

(W x D x H) is **30mm x 99mm x 142mm**

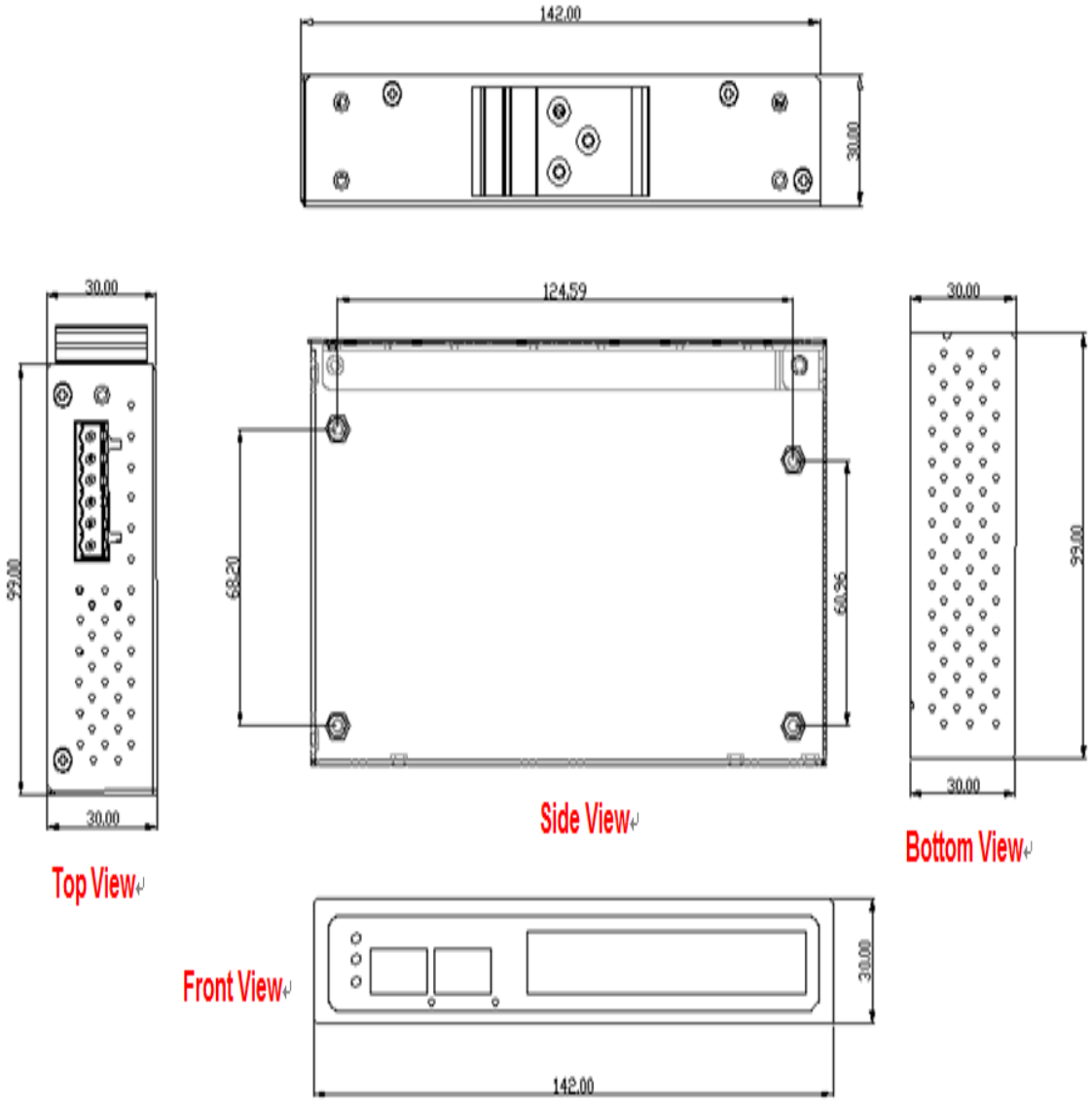


Figure 2.1

Physical Dimensions of the LNX-0702G-SFP Series

2.2 Front Panel

The front panel of the LNX-0702G-SFP series industrial Ethernet switch is shown below in *Figure 2.2.*



Figure 2.2
Front Panel of the LNX-0702G-SFP Series

2.3 Top View

Figure 2.3, below, shows the top panel of the LNX-0702G-SFP series switch that is equipped with one 6-pin removal terminal block connector for dual DC power inputs (12~48VDC).

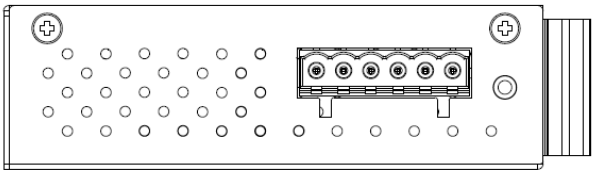


Figure 2.3
Top Panel View of the LNX-0702G-SFP Series

2.4 LED Indicators

There are LED light indicators located on the front panel of the industrial Ethernet switch that display the power status and network status. Each LED indicator has a different color and has its own specific meaning, see below in *Table 2.1*.

LED	Color	Description	
P1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
P2	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
Fault	Red	On	Power input 1 or 2 is inactive
		Off	Power input 1 and 2 are both functional, or no power, inputs/ports link is active/port alarm is disabled
LNK/ACT (SFP Port)	Green	On	Connected to network
		Flashing	Networking is active
		Off	Not connected to network
LAN Port 1 ~ 5 (Left LED)	Green 	On	Connected to network, 1000Mbps
		Flashing	Networking is active
		Off	Not connected to network
LAN Port 1 ~ 5 (Right LED)	Green 	On	Connected to network, 100Mbps/10Mbps
		Flashing	Networking is active
		Off	Not connected to network

Table 2.1

LED Indicators for the LNX-0702G-SFP Series

2.5 Ethernet Ports

■ **RJ-45 Ports**

RJ-45 Ports (Auto MDI/MDIX): The RJ-45 ports are auto-sensing for 10Base-T, 100Base-TX or 1000Base-T device connections. Auto MDI/MDIX means that the switch can connect to another switch or workstation without changing the straight-through or crossover cabling. See the figures on the next page for the straight-through and crossover cabling schematics.

■ **RJ-45 Pin Assignments** (*Table 2.2*)

Pin Number	Assignment
1	Rx+
2	Rx-
3	Tx+
6	Tx-

Table 2.2

RJ45 Pin Assignments

Note *"+" and "-" signs represent the polarity of the wires that make up each wire pair.*

All ports on this industrial Ethernet switch support automatic MDI/MDI-X operation. Users can use straight-through cables (see figure below) for all networking connections to PCs, servers, other switches or hubs. With a straight-through cable, pins 1, 2, 3, and 6, at one end of the cable, are connected straight through to pins 1, 2, 3 and 6 at the other end of the cable. The table below *(Table 2.3)* shows the 10BASE-T, 100BASE-TX, 1000BASE-TX MDI and MDI-X port pin outs.

Pin MDI-X	Signal Name	MDI Signal Name
1	Receive Data Plus (RD+)	Transmit Data Plus (TD+)
2	Receive Data Minus (RD-)	Transmit Data Minus (TD-)
3	Transmit Data Plus (TD+)	Receive Data Plus (RD+)
6	Transmit Data Minus (TD-)	Receive Data Minus (RD-)

Table 2.3

Ethernet Signal Pin Outs

The following figures show the cabling schematics for straight-through and crossover.

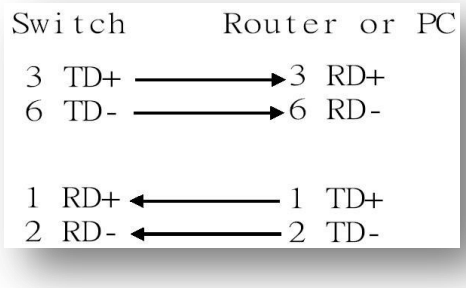


Figure 2.4: Straight-Through Cable Schematic

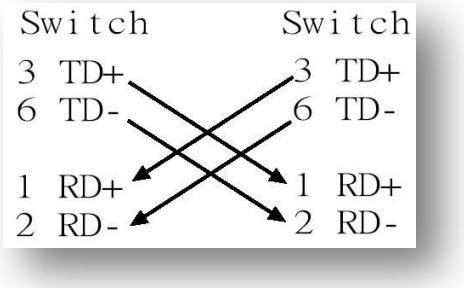


Figure 2.5: Crossover Cable Schematic

The following figures show the 10, 100, and 1000 Ethernet RJ-45 pin outs.

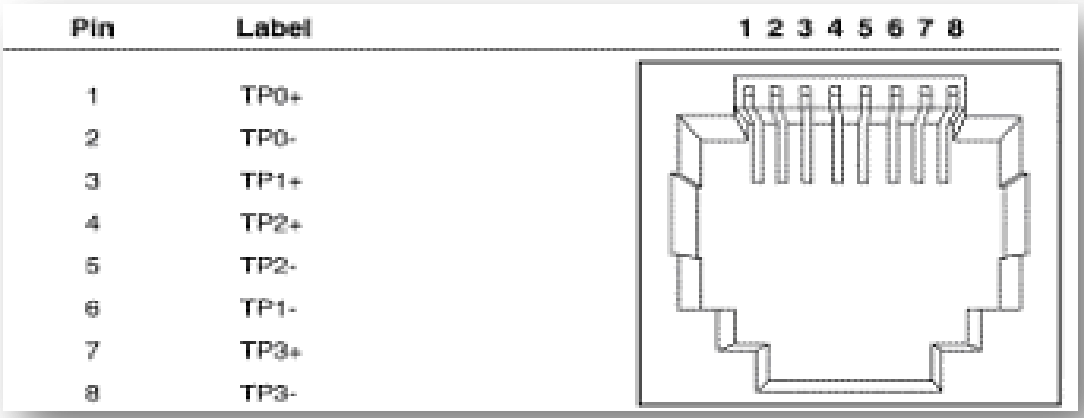


Figure 2.6

RJ45 Ethernet Port Pin Outs

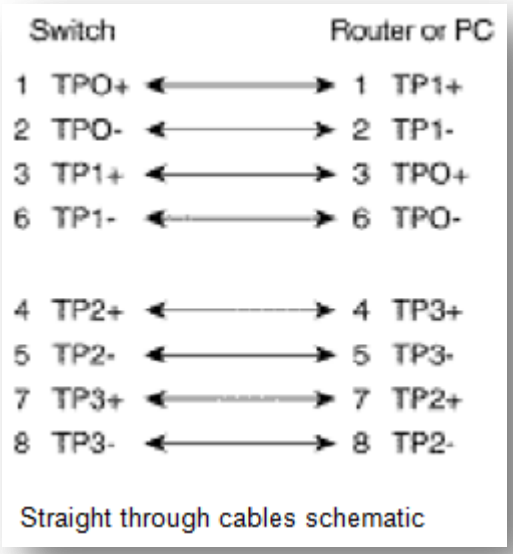


Figure 2.7

Straight-Through Cable Schematic

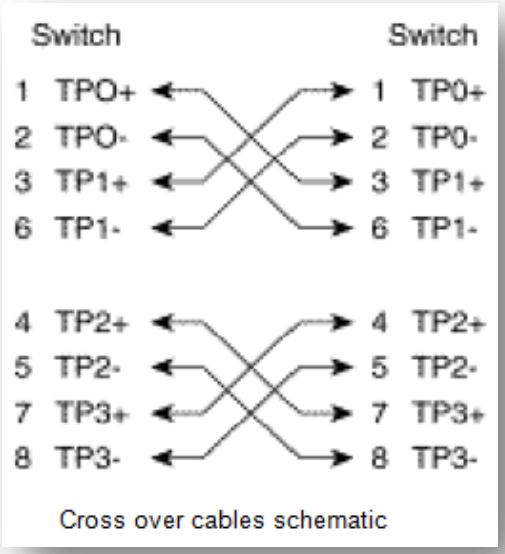


Figure 2.8

Crossover Cable Schematic

2.6 Cabling

Use the four twisted-pair, category 5e, or the above cabling for RJ-45 port connections. The cable between the switch and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.

The small form-factor pluggable (SFP) is a compact optical transceiver used in optical communications for both telecommunication and data communication applications.

To connect the transceiver and LC cable, please follow the steps below.

First, insert the SFP transceiver module into the SFP slot as shown below in *Figure 2.9*. Notice that the triangle mark is at the bottom of the SFP slot. *Figure 2.10* shows SFP transceiver module was inserted.

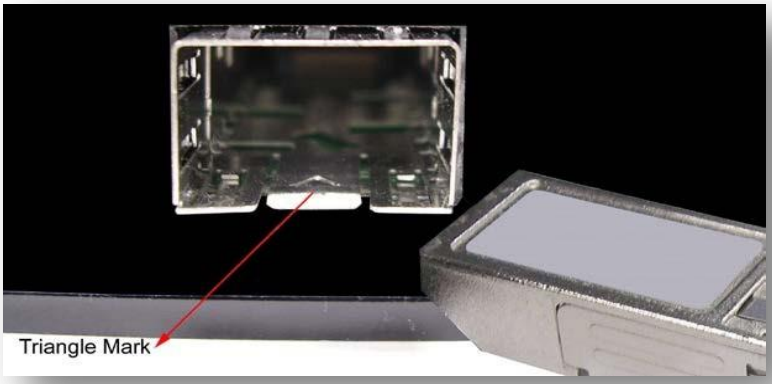


Figure 2.9

Transceiver to the SFP Module



Figure 2.10

Transceiver Inserted

Second, insert the fiber cable of the LC connector into the transceiver as shown below in *Figure 2.11.*

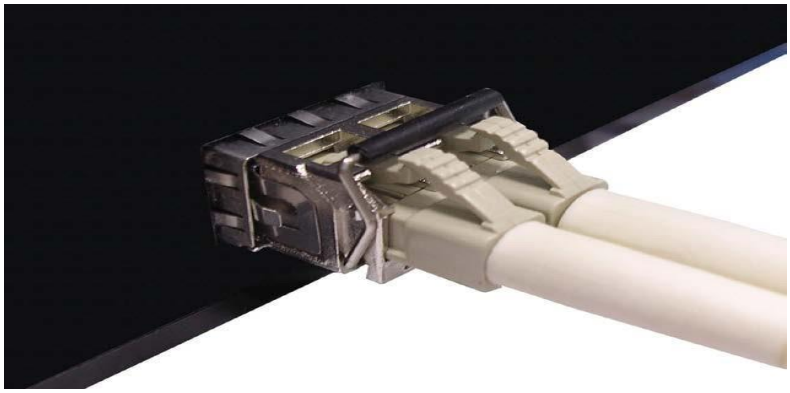


Figure 2.11

LC Connector to the Transceiver

To remove the LC connector from the transceiver, please follow the steps shown below.

1. Press the upper side of the LC connector from the transceiver and pull it out to release as shown below in *Figure 2.12*.

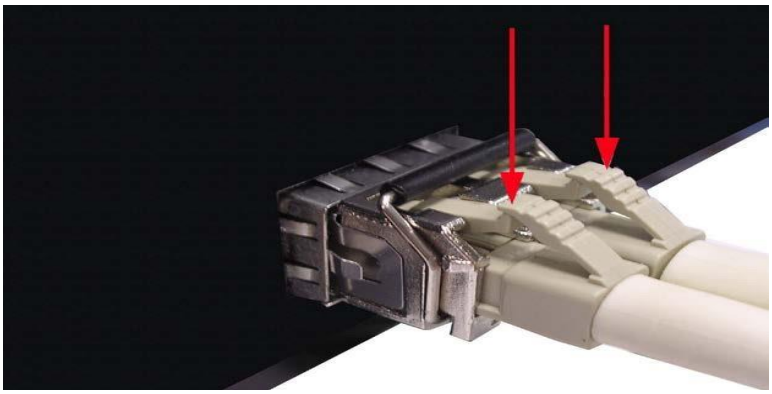


Figure 2.12
Remove LC Connector

2. Push down the metal clasp and pull the transceiver out by the plastic part as shown below in *Figure 2.13*.

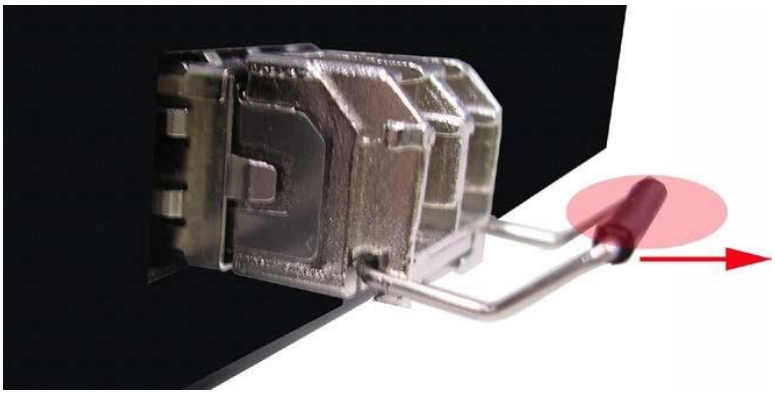


Figure 2.13
Pull Out from the SFP Module

2.7 Wiring the Power Inputs

To insert the power wire, please follow the steps below.

1. Insert the positive and negative wires into the PWR1 (V1+, V1-) and PWR2 (V2+, V2-) contacts on the terminal block connector as shown below in *Figure 2.14*.

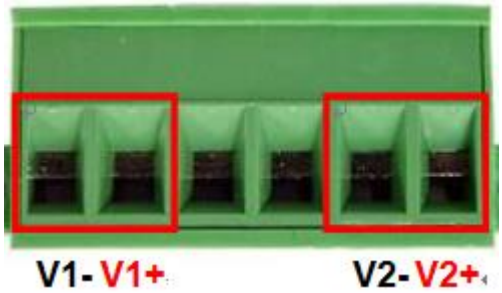


Figure 2.14
Power Terminal Block

2. Tighten the wire-clamp screws to prevent the wires from loosening, as shown below in *Figure 2.15*.



Figure 2.15
Power Terminal Block

Note	• *Only use copper conductors, **60/75°C**, tighten to **5 lbs.***
	• *The wire gauge for the terminal block should range between **18~20 AWG**.*

2.8 Wiring the Fault Alarm Contact

The fault alarm contact is in the middle of the terminal block connector as the picture shows below in *Figure 2.16*. By inserting the wires, it will detect the fault status including power failure or port link failure (managed industrial switch only) and form a normally open circuit. An application example for the fault alarm contact is shown below in *Figure 2.16*.

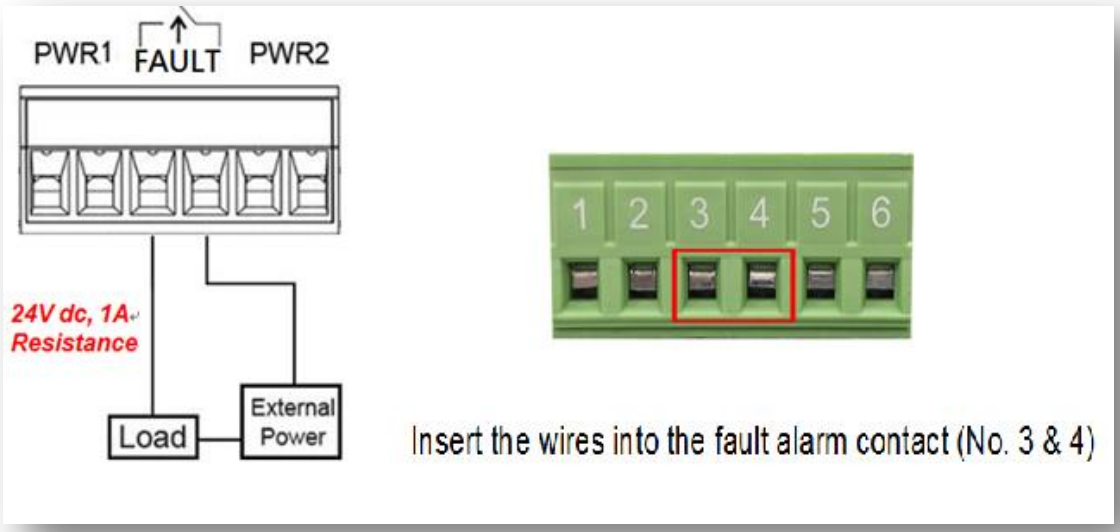


Figure 2.16

Wiring the Fault Alarm Contact

Note	• *The wire gauge for the terminal block should range between **12 ~ 24 AWG**.* • ***If only using one power source, jump from Pin 1 to Pin 5 and Pin 2 to Pin 6 to eliminate the power fault alarm.***

3. Mounting Installation

3.1 DIN-Rail Mounting

The DIN-Rail is pre-installed on the industrial Ethernet switch from the factory. If the DIN-Rail is not on the industrial Ethernet switch, please see *Figure 3.1* to learn how to install the DIN-Rail on the switch.

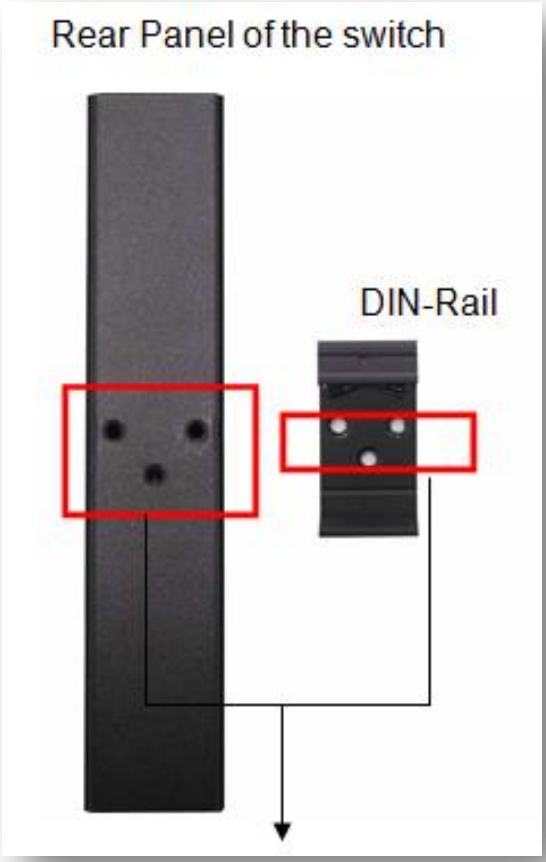


Figure 3.1

The Rear Side of the Switch and DIN-Rail Bracket

Follow the steps below to learn how to hang the industrial Ethernet switch.

1. Use the screws to install the DIN-Rail bracket on the rear side of the industrial Ethernet switch.
2. To remove the DIN-Rail bracket, do the opposite from step 1.
3. After the DIN-Rail bracket is installed on the rear side of the switch, insert the top of the DIN-Rail on to the track as shown below in *Figure 3.2*.



Figure 3.2

Insert the Switch on the DIN-Rail

4. Lightly pull down the bracket on to the rail as shown below in *Figure 3.3*.

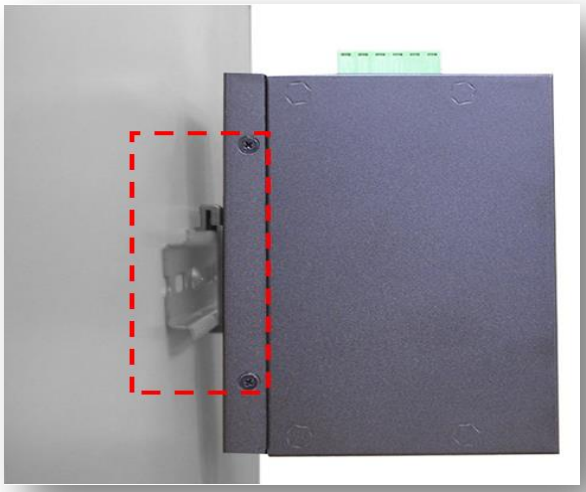


Figure 3.3

Stable the Switch on DIN-Rail

5. Check to see if the bracket is mounted tightly on the rail.
6. To remove the industrial Ethernet switch from the rail, do the opposite from the above steps.

3.2 Wall Mounting

Follow the steps below to mount the industrial Ethernet switch using the wall mounting bracket as shown below in *Figure 3.4*.

1. Remove the DIN-Rail bracket from the industrial Ethernet switch by loosening the screws.
2. Place the wall mounting brackets on the top and bottom of the industrial Ethernet switch.
3. Use the screws to screw the wall mounting bracket on the industrial Ethernet switch.
4. Use the hook holes at the corners of the wall mounting bracket to hang the industrial Ethernet switch on the wall.
5. To remove the wall mount bracket, do the opposite from the steps above.

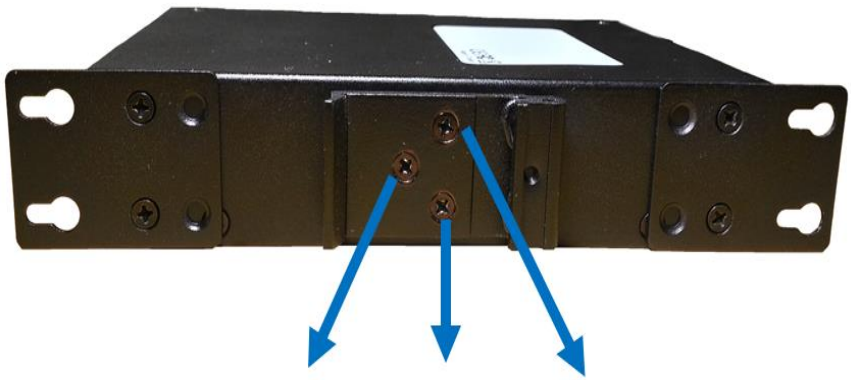


Figure 3.4

Remove DIN-Rail Bracket from the Switch

Below, in *Figure 3.5* are the dimensions of the wall mounting bracket.

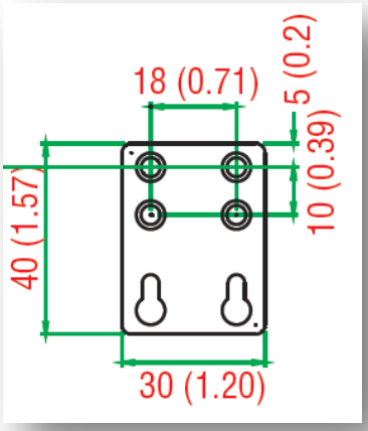


Figure 3.5

Wall Mounting Bracket Dimensions

4. Hardware Installation

4.1 Installation Steps

This section will explain how to install Antaira's LNX-0702G-SFP series: 7-port industrial gigabit unmanaged Ethernet switch with 5*10/100/1000Tx and 2*100/1000 SFP slots.

Installation Steps

1. Unpack the industrial Ethernet switch from the original packing box.
2. Check if the DIN-Rail bracket is screwed on the industrial Ethernet switch.
    - If the DIN-Rail is not screwed on the industrial Ethernet switch, please refer to the **DIN-Rail Mounting** section for DIN-Rail installation.
    - If you want to wall mount the industrial Ethernet switch, please refer to the **Wall Mounting** section for wall mounting installation.
3. To hang the industrial Ethernet switch on a DIN-Rail or wall, please refer to the **Mounting Installation** section.
4. Power on the industrial Ethernet switch and then the power LED light will turn on.
    - If you need help on how to wire power, please refer to the **Wiring the Power Inputs** section.
    - Please refer to the **LED Indicators** section for LED light indication.
5. Prepare the twisted-pair, straight-through category 5 cable for Ethernet connection.
6. Insert one side of the RJ-45 cable into switch's Ethernet port and on the other side into the networking device's Ethernet port, e.g. switch PC or server. The Ethernet port's (RJ-45) LED on the industrial Ethernet switch will turn on when the cable is connected to the networking device.
    - Please refer to the **LED Indicators** section for LED light indication.
7. When all connections are set and the LED lights all show normal, the installation is complete.

5. Network Application

This segment provides an example of an industrial Ethernet switch application (*Figure 5.1*).

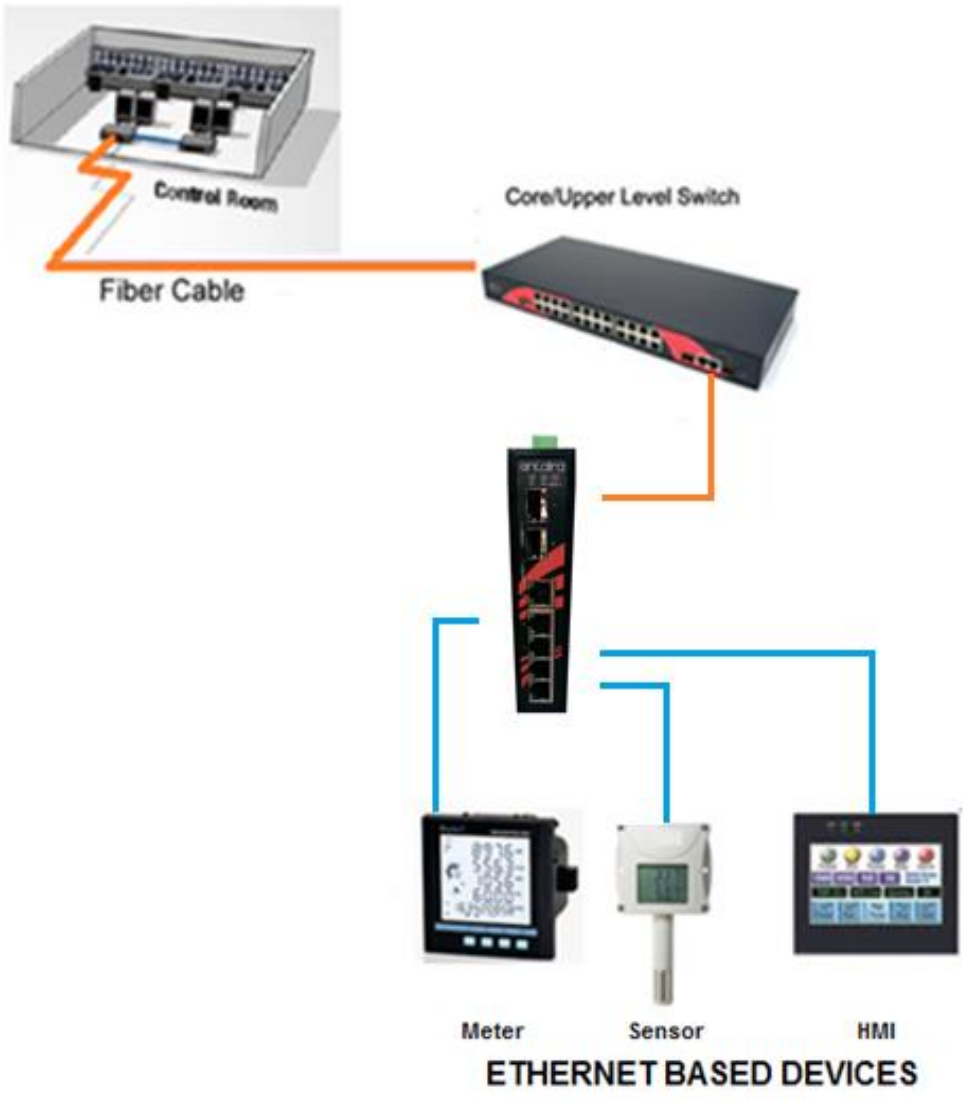


Figure 5.1
Industrial Ethernet Switch Application Reference

6. Trouble Shooting

- Verify you have the right power cord or adapter. Never use a power supply or adapter with a non-compliant DC output voltage or it will burn the equipment.

- Select the proper UTP or STP cable in order to construct the network. Use an unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 5e for 10M/100Mbps. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

- **Diagnosing LED Indicators:** To assist in identifying problems, the switch can be easily monitored with the LED indicators which help to identity if any problems exist.
    - Please refer to the LED Indicators section for LED light indication.

- If the power indicator LED does not turn on when the power cord is plugged in, the user may have a problem with the power cord. Check for loose power connections, power losses or surges at the power outlet.
    - Please contact Antaira for technical support service, if the problem still cannot be resolved.

- If the industrial switch LED indicators are normal and the connected cables are correct but the packets still cannot transmit, please check the system's Ethernet devices' configuration or status.

7. Technical Specification

Table 7.1 has the technical specifications for Antaira's LNX-0702G-SFP series: 7-port industrial gigabit unmanaged Ethernet switch with 5*10/100/1000Tx and 2*100/1000 SFP slots.

Standard	IEEE 802.3 10BaseT Ethernet IEEE 802.3u 100BaseTX fast Ethernet IEEE 802.3ab 1000BaseT IEEE 802.3z gigabit Fiber
Protocol	CSMA/CD
Transfer Rate	14,880pps for Ethernet port 148,800pps for fast Ethernet port 1,488,000pps for gigabit Ethernet port
Transmission Distance	Up to 100M (Fast Ethernet)
Transmission Speed	Up to 1000Mbps
MAC Address	8K table size
RJ45 (Ethernet) Port	5*10/100/1000Tx auto negotiation speed, full/half duplex mode, and auto MDI/MDI-X connection
SFP Slot	2*SFP slots; supports dual rate 100/1000
LED	Power Unit: P1 (Green), P2 (Green),Fault(Red) Ethernet Port: Link/Active(Green), 1000Mbps SFP: Link/Active(Green)
Network Cable	10BaseT: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) 100BaseTX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m) 1000BaseTX: UTP/STP Cat. 5/5E cable EIA/TIA-568 100-ohm (100m)
Over Current Protection	Single-blown fuse
Power Input	Redundant power DC 12~48V with connective 1*6-pin removable terminal block
Fault Output	1 relay output
Max Power Consumption	9.1 Watts
Installation	DIN-Rail mounting, wall mounting (optional)

Operating Temperature	Standard: -10°C to 70°C (14° to 158° F) EOT: -40°C to 75°C (-40° to 167° F)
Operating Humidity	5% to 95% (Non-Condensing)
Storage Temperature	-40°C to 85°C (-40°F ~ 185°F)
Case Dimension	IP-30, 30mm (W) x 99mm (D) x 142mm (H)
EMI	FCC Class A CE EN61000-4-2/3/4/5/6/8/11/12 CE EN61000-6-2 CE EN61000-6-4
Stability Testing	IEC60068-2-32 (free fall) IEC60068-2-27 (shock) IEC60068-2-6 (vibration)
Safety	UL 508 (pending)

Table 7.1

LNX-0702G-SFP Series Technical Specification

Antaira Customer Service and Support

(Antaira US Headquarter) + 844-268-2472

(Antaira Europe Office) + 48-22-862-88-81

(Antaira Asia Office) + 886-2-2218-9733

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