



## **LNP-2602G-SFP Series**

**26-Port Industrial Gigabit PoE+ Unmanaged Ethernet Switches,  
with 24\*10/100/1000Tx (PSE: 30W/Port), and 2\* Gigabit Combo Ports  
(2\*10/100/1000Tx RJ45 and 2\*100/1000 SFP Slots)**



Version 1.0

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## **User Manual**

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## FCC Notice

This equipment has been tested and found to comply with the 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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. It may cause harmful interference to radio communications if the equipment is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Caution:** Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

## CE Mark Warning

This is a Class-A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

## Industrial Ethernet Switches

This manual supports the following models:

- LNP-2602G-SFP
- LNP-2602G-SFP-T

Please check our website ([www.antaira.com](http://www.antaira.com)) for any updated manual or contact us by e-mail ([support@antaira.com](mailto:support@antaira.com)).

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# 1. Overview

**Antaira Technologies' LNP-2602G-SFP** industrial gigabit PoE+ unmanaged Ethernet switch features twenty-four Gigabit ports with IEEE 802.3at high power PoE (30W/Port). The LNP-2602G-SFP also provides two gigabit combo ports with two 10/100/1000 twisted pair and two dual rate 100/1000Fx SFP ports for fiber or twisted pair connections to support any applications that demand high PoE power support, high bandwidth and long distance communication within any harsh and extreme ambient weather environment. This product series also provides high EFT (Electrical Fast Transient) and ESD (Electrostatic Discharge) protection to prevent any unregulated voltage, and provides two wide operating temperature models with standard version in -10 to 70°C, or extended version in -40 to 75°C.

The LNP-2602G-SFP product series is ideal for supporting applications that require high-density PoE+ port connections, such as, security surveillance, traffic monitoring systems, facility management in power/utility, water wastewater treatment plants and oil/gas/mining.

## 1.1 Key Features

- System Interface & Performance
  - All Copper ports support auto MDI/MDI-X function
  - Embedded 24\*10/100/1000Tx (PSE: 30W/Port) and 2\* Gigabit Ethernet combo ports (2\*10/100/1000Tx RJ45, and 2\*100/1000 SFP slots)
  - Store-and-forward switching architecture
  - 8K MAC Address Table
  - Supports 9.6Kbytes Jumbo Frame
  - 4Mbits memory buffer
- Power Input
  - Redundant power input design: 48~55VDC
- Operating Temperature
  - Standard operating temperature model: -10°C ~ 70°C
  - Extended operating temperature model (-T): -40°C ~ 75°C
- Case/Installation
  - IP-40 protection
  - Rackmount rugged metal case design

## 1.2 Package Contents

- 1 – Quick Installation Guide
- 1 - LNP-2602G-SFP (-T)
- 1 – Set of rack mounting brackets and screws

## 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 Dimensions

Figure 2.1, below, shows the physical dimensions of Antaira Technologies' 26-Port Industrial Gigabit PoE+ Unmanaged Ethernet Switches, with 24\*10/100/1000Tx (PSE: 30W/Port), and 2\* Gigabit Combo Ports (2\*10/100/1000Tx RJ45 and 2\*100/1000 SFP Slots).

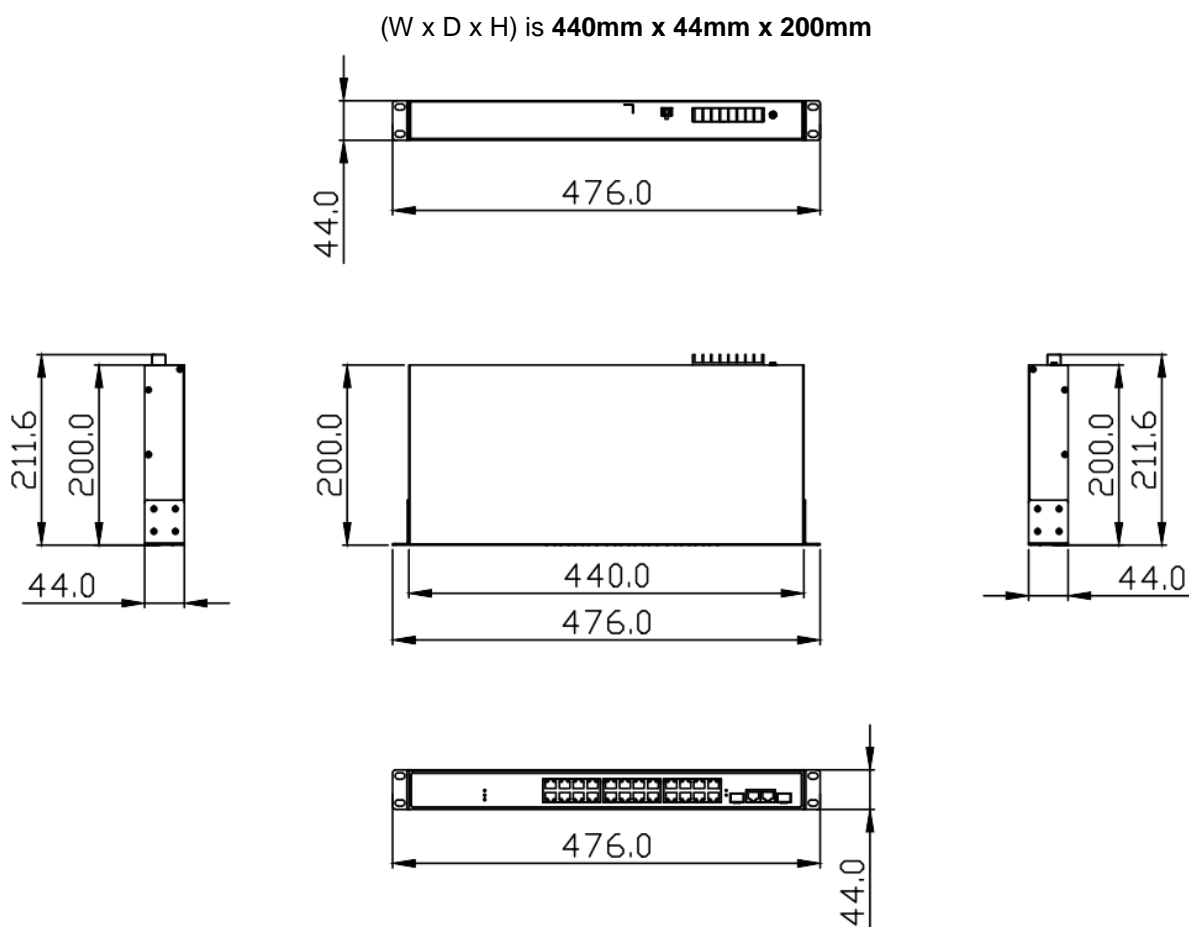
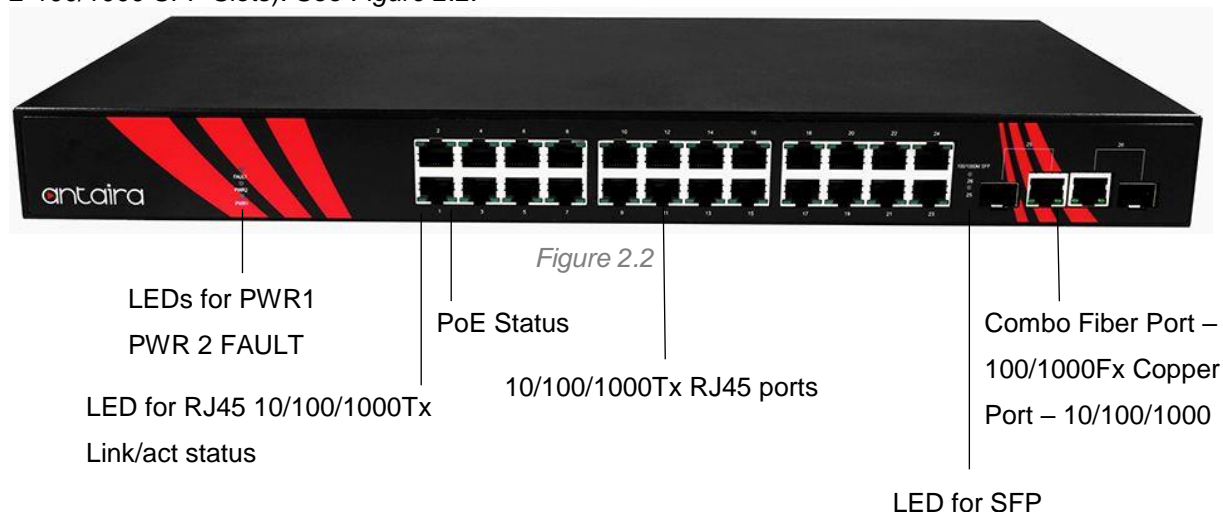


Figure 2.1

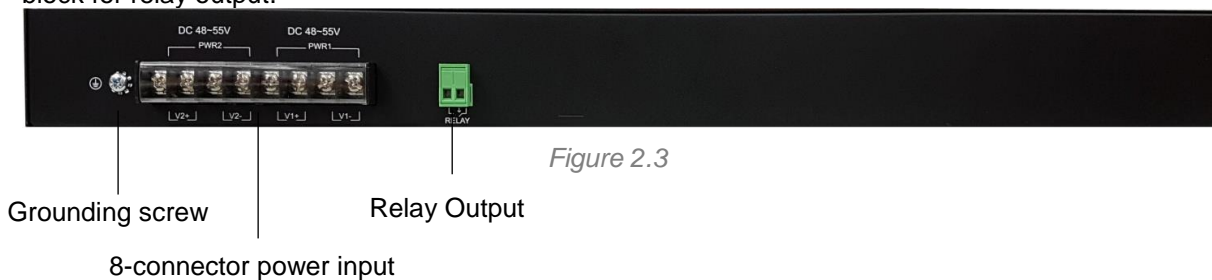
## 2.2 Front Panel

The front panel of the 26-Port Industrial Gigabit PoE+ Unmanaged Ethernet Switches with 24\*10/100/1000Tx (PSE: 30W/Port) and 2\* Gigabit Combo Ports (2\*10/100/1000Tx RJ45 and 2\*100/1000 SFP Slots). See *Figure 2.2*.



## 2.3 Rear Panel

*Figure 2.3*, below, shows the top panel of the LNP-2602G-SFP(-T) series switch that is equipped with one 8-connector redundant power inputs (48-55VDC) and one 2-pin terminal block for relay output.



## 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	
PWR1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive







PWR2 (Optional)	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
Fault	Red	On	Extension power source 1 or 2 is inactive
		Off	Extension power source 1 and 2 are both functional
SFP Port with combo port LINK/ACT (Port 25-26)	Green	On	Connected to network
		Flashing	Networking is active with 1000Mbps
		Off	Not connected to network
	Amber	On	Connected to network
		Flashing	Networking is active with 100Mbps
		Off	Not connected to network
LAN Port with combo port (Port 25-26)		On	Connected to network, 1000Mbps
		Flashing	Networking is active
		Off	Not connected to network
LAN Port with combo port (Port 25-26)		On	Connected to network, 10/100Mbps
		Flashing	Networking is active
		Off	Not connected to network
LAN Port 1-24		On	Connected to network, 10/100/1000Mbps
		Flashing	Networking is active
		Off	Not connected to network
LAN Port 1-24		On	The port is supplying power to the powered-device (30W per port)
		Off	No powered-device attached or power supplying fails

Table 2.1

## 2.5 Ethernet Ports

### ■ RJ45 Ports (Auto MDI/MDIX):

The RJ45 ports are auto-sensing for 10/100/1000Base-Tx devices 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 shown below for straight-through and crossover cabling schematics.

### ■ RJ45 Pin Assignments (Figure 2.2 & 2.3)

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

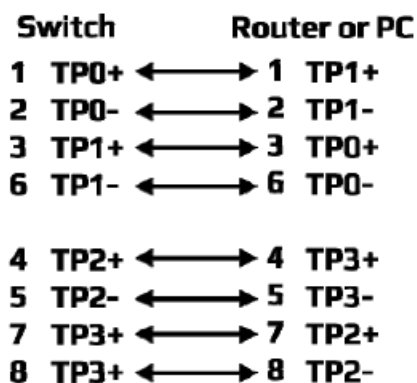


Figure 2.2  
Straight-Through Cables Schematic

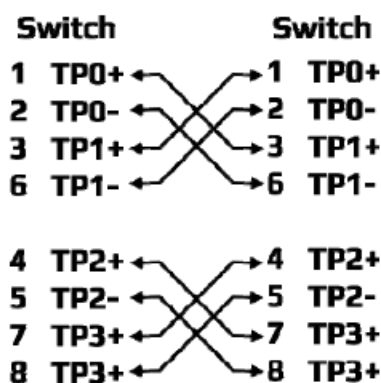


Figure 2.3  
Crossover Cables Schematic

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

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

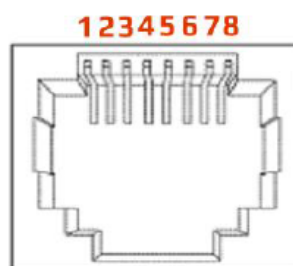


Figure 2.4 - RJ45 Ethernet Port Pin Outs

## 2.6 Cabling

- Twisted-pair segments can be connected with an unshielded twisted pair (UTP) or shielded twisted pair (STP) cable. The cable must comply with the IEEE 802.3ab 1000Base TX standard (e.g. Category 5, 5e, or 6, 6e). The cable between the equipment and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.
- Note: Cable size should be between 18~20 AWG and the torque should be tightened to 5lbs.

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 2.5*. Notice that the triangle mark is at the bottom of the SFP slot. *Figure 2.6* shows SFP transceiver module was inserted.



Figure 2.5 - Transceiver to the SFP Module



Figure 2.6 - Transceiver Inserted

Second, insert the fiber cable of the LC connector into the transceiver as shown below in *Figure 2.7*.

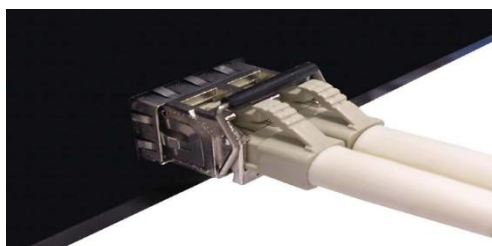


Figure 2.7 - LC Connector to the Transceiver

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 2.8*.

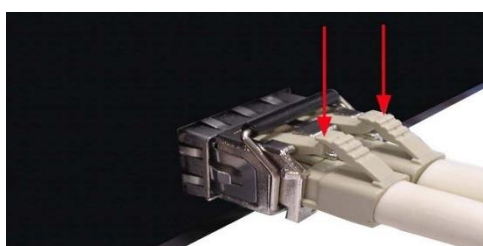
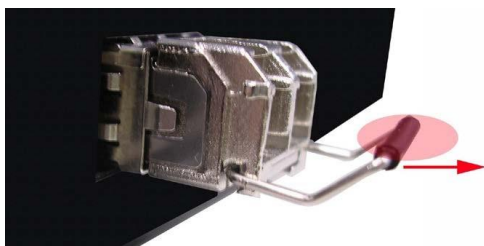


Figure 2.8 - Remove LC Connector

2. Push down the metal clasp and pull the transceiver out by the plastic part as shown below in *Figure 2.9*.



*Figure 2.9 - Pull Out from the SFP Module*

## 2.7 Wiring the Power Inputs

Please follow the below steps to insert the power wire.

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 2.10*.



*Figure 2.10 - Power Terminal Block*

2. Tighten the wire-clamp screws to prevent the wires from loosening.

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### **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**
  - To eliminate power fault alarm, jumper Pin 1 to Pin 5 and Pin 2 to Pin 6 when using only one power supply
- 

## Grounding Note

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

**NOTE:** Using a shielded cable achieves better electromagnetic compatibility.

## 2.8 Wiring the Fault Alarm Contact

The relay contact of the 2-pin terminal block connector as the picture shows below in *Figure 2.11* is used to detect user-configured events. The two wires attached to the fault contacts form an open circuit when a user-configured event is triggered (managed industrial switch only). If a user-configured event does not occur, the fault circuit remains closed.

Insert the wires into the relay alarm contact

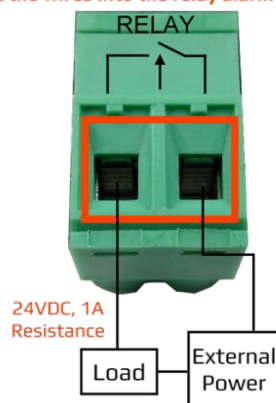


Figure 2.11

Wiring the Fault Alarm Contact

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**Note**

- The wire gauge for the terminal block should range between 12 ~ 24 AWG
-

## 3 Mounting Installation

### 3.1 Rack Mounting

The switch comes with a rack-mounted kit which can be mounted in an EIA standard size, 19-inch rack. It can be placed in a wiring closet with other equipment.

Perform the following steps to rack-mount the switch:

1. Position one plate to align with the holes on one side of the hub and secure it with the smaller plate screws. Then, attach the remaining plate to the other side of the switch.



*Figure 3.1 – Attach mounting plates with screws*

2. After attaching both mounting plates, position the switch in the rack by lining up the holes in the plates with the appropriate holes on the rack. Secure the switch to the rack with a screwdriver and the rack-mounting screws.



*Figure 3.2 – Mount the switch in an EIA standard 19-inch rack*

**Note:** For proper ventilation, allow at least 4 inches (10 cm) of clearance on the front and 3.4 inches (8 cm) on the back of the switch. This is especially important for enclosed rack installation.

## 4 Hardware Installation

### 4.1 Installation Steps

This section will explain how to install Antaira Technologies' LNP-2602G-SFP series: 26-Port Industrial Gigabit PoE+ Unmanaged Ethernet Switches with 24\*10/100/1000Tx (PSE: 30W/Port) and 2\* Gigabit Combo Ports (2\*10/100/1000Tx RJ45 and 2\*100/1000 SFP Slots).

#### Installation Steps

1. Unpack the industrial Ethernet switch from the original packing box.
2. Check if the rack-mount bracket is screwed on the industrial Ethernet switch.
  - If the rack-mount bracket is not screwed on the industrial Ethernet switch, please refer to the **Rack Mounting** section for rack-mount bracket installation.
3. 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.
4. Prepare the twisted-pair, straight-through category 5 cable for Ethernet connection.
5. Insert one side of the RJ45 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 (RJ45) 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.
6. When all connections are set and the LED lights all show normal, the installation is complete.

## 5 Network Applications

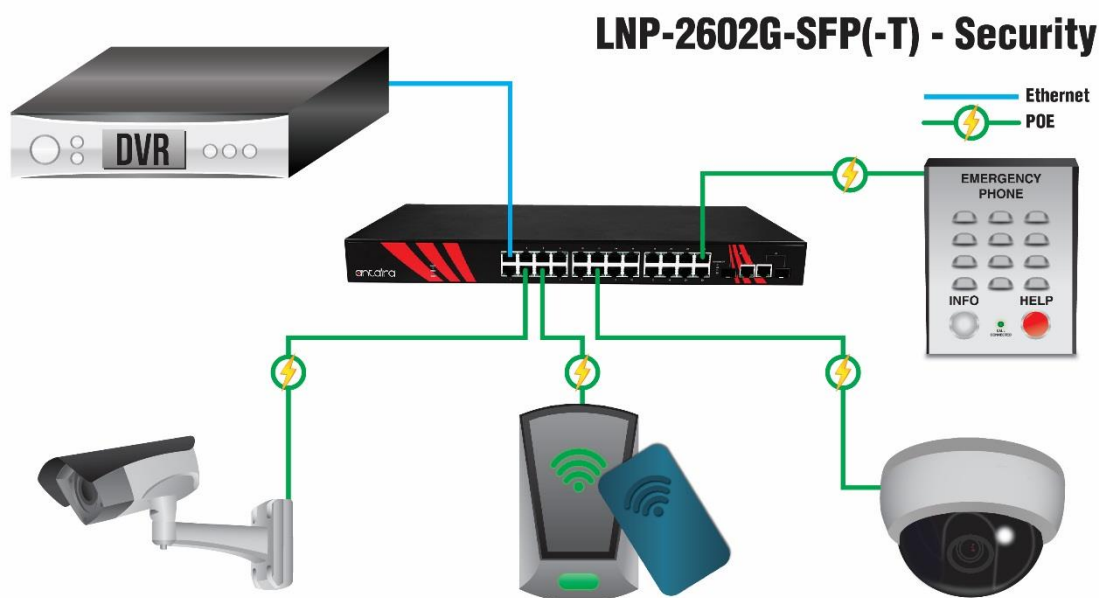


Figure 5.1

*Industrial PoE Networking Application Reference*



## 6 Trouble Shooting

- Always verify the right power cord or adapter is being used. 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 RJ45 connections: 100Ω Category 5e for 10/100/1000Mbps. 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 identify 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 Specifications

Table 7.1 has the technical specifications for Antaira Technologies' LNP-2602G-SFP series: 26-Port Industrial Gigabit PoE+ Unmanaged Ethernet Switches, with 24\*10/100/1000Tx (PSE: 30W/Port), and 2\* Gigabit Combo Ports (2\*10/100/1000Tx RJ45 and 2\*100/1000 SFP Slots).

<b>Standards</b>	IEEE 802.3	10Base-T 10Mbit/s Ethernet
	IEEE 802.3u	100Base-Tx, 100Base-Fx, Fast Ethernet
	IEEE 802.3ab	1000Base-Tx Gigabit Ethernet
	IEEE 802.3z	1000Base-X Gigabit Fiber
	IEEE 802.3af/at	PoE & PoE+ (Power-over-Ethernet)
<b>Switch Property</b>	Protocol	CSMA/CD
	Data Process	Store and Forward
	Flow Control	IEEE 802.3x flow control, back pressure flow control
	Switch Architecture	Back-Plane: Non-Blocking Switching Fabric
	Transfer Rate	14,880pps for 10Base-T Ethernet port 148,800pps for 100Base-TX Fast Ethernet port 1,488,000pps for Gigabit Ethernet port
	Transmission Distance	Up to 100M
	Transmission Speed	Up to 1000Mbps (Gigabit)
	Memory Buffer	4Mbits
	Jumbo Frame	9.6Kbytes
	MAC Table Size	8K MAC Address
<b>Port Interface</b>	Ethernet (RJ45) Port	12*10/100/1000Tx (PSE: 30W/port), auto negotiation speed, full/half duplex mode, and auto MDI/MDI-X connection
	PoE Port Pin Out	V+, V+, V-, V-, for pin 1, 2, 3, 6 (Endspan, MDI Alternative A)
	Fiber Port	2*100/1000 SFP Slots
	Fiber Wavelength	Refer to SFP Modules
	LED Indicator	Power 1, Power 2, Fault Ethernet Ports: On-Link/Flash-data transmitting PoE : On-connected to PD devices SFP: Link/Active
	Network Cable	10Tx: 2-pair UTP/STP Cat.3,4,5 cable EIA/TIA-568 100-ohm (100m) 100Tx: 2-pair UTP/STP Cat.5 cable EIA/TIA-568 100-ohm (100m) 1000Tx: UTP/STP Cat.5/5E cable EIA/TIA-568 100-ohm (100m)
<b>Mechanical Characteristics</b>	Housing	Metal IP40 protection
	Dimension	440 x 44 x 200 mm (W x H x D)
	Weight	Unit Weight: 6.0 lbs. Shipping Weight: 8.0 lbs.
	Mounting	1U 19" Rackmount
<b>Power Requirement</b>	Input Voltage	48~55VDC Redundant Input
	PoE Power Output	30 Watts maximum per port
	Power Connection	8-contact terminal block
	Overload Current Protection	Present – Slow Blown Fuse
	Reverse Polarity Protection	Yes
	Power Consumption	24 Watts for system
	Relay Contact	24 VDC, 1A resistive

<b>Environmental Limits</b>	Operating Temperature	Standard: -10 to 70°C (14 to 158°F); EOT: -40 to 75°C (-40 to 167°F)
	Operating Humidity	5% to 95% (Non-Condensing)
	Storage Temperature	-40 to 85°C (-40 ~ 185°F)
<b>Regulatory Approvals</b>	EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
	EMS	IEC61000-4-2 (ESD), IEC61000-4-3 (RS), IEC61000-4-4 (EFT), IEC61000-4-5 (Surge), IEC61000-4-6 (CS), IEC-61000-4-8 (Magnetic Field)
	Stability Testing	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
	Green	RoHS Compliant
	Compliance	NEMA TS1 (ITS)
	Safety Certificate	CE, FCC, UL61010-1 & UL61010-2-201 (Pending)
	Warranty	5 Years

*Table 7.1*

**Antaira Customer Service and Support**

(Antaira US Headquarter) + 844-268-2472

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

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