



## LMX-2602G-SFP Series

**26-Port Industrial Gigabit Managed Ethernet Switch, with 24\*10/100/1000Tx RJ45 Ports and 2\*Gigabit Combo Ports (2\*10/100/1000Tx RJ45 and 2\*100/1000 SFP Slots)**



### Hardware Manual

Version 1.0

(April 2020)

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## **FCC Warning**

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**

Industrial Grade Gigabit Managed Ethernet Switches

Hardware Manual

Version 1.0 (April 2020)

This manual supports the following models:

- LMX-2602G-SFP
- LMX-2602G-SFP-T

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# 1. Introduction

All Antaira industrial managed switches come with a pre-installed “user-friendly” web console interface, which allows users to easily configure and manage the units, whether one is using a serial console and Command Line Interface (CLI) commands like Telnet, SSH, HTTP (Web GUI) or Simple Network Management Protocols (SNMP).

## 1.1 Product Overview

**Antaira Technologies’ LMX-2602G-SFP series** is a 26-port industrial gigabit managed Ethernet switch features 24\*10/100/1000Tx Ethernet ports and also provides 2\*gigabit combo ports with 2\*10/100/1000Tx RJ45 and 2\*100/1000Fx SFP slots for fiber or twisted pair connections, making it ideal for applications that demand connectivity, wide bandwidth, and long-distance communication. LMX-2602G-SFP series is a fully manageable Layer 2 Ethernet switch that is pre-loaded with a user-friendly web management console design. It supports the ring network redundancy function using the market’s open standard ITU-T G.8032 ERPS (Ethernet Ring Protection Switch) protocol that has a <50ms network recovery time. The advanced network filtering and security functions, such as IGMP, VLAN, QoS, SNMP, port lock, RMON, Modbus TCP, and 802.1X/HTTPS/SSH/SSL increase determinism and improve network management for remote SCADA systems or control networks.

The LMX-2602G-SFP series is designed with IP40 rated 1U 19” rackmount and provides high EFT and ESD protection to prevent any unregulated voltage. Supporting the two wide operating temperature models with the standard version in -10° to 65°C or extended version in -40° to 75°C also makes it the best solution for any harsh and extreme ambient weather environment applications, such as, power/utility, transportation, water wastewater treatment plant, oil/gas, and security surveillance system industries.

## 1.2 Product Software Features

- Network Redundancy
  - STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switch (ERPS) for network redundancy
- Network Management
  - Web UI based management, SNMP v1/v2/v3, Serial Console
  - Qos, traffic classification QoS, Cos, bandwidth control for Ingress and Egress, broadcast storm control, Diffserv
  - IEEE802.1q VLAN tagging, port-based VLAN support

- IGMP snooping v1/v2, IGMP filtering / throttling, IGMP query up to 1024group
- Supports IPv4/IPv6, RMON, MIB II, port mirroring, event syslog, DNS, NTP/SNTP, HTTPS, SSH
  
- Port Configuration
  - Status, statistics, mirroring, rate limiting, event syslog
- Event Handling
  - Fault Alarm Relay Output
- Software Upgrade via TFTP and HTTP
- Configuration Backup – USB Port

## **1.3 Product Hardware Features**

- System Interface and Performance
  - All RJ45 ports support Auto MDI/MDI-X Function
  - Embedded 24\*10/100/1000Tx RJ45 Ports and 2\*Gigabit Combo Ports (2\*10/100/1000Tx RJ45 and 2\*100/1000 SFP slots)
  - Store-and-forward switching architecture
  - 8K MAC address table
- Power Input
  - AC 90~264V redundant, with a 8-pin terminal block
- Operating Temperature
  - LMX-2602G-SFP: -10°C to 65°C
  - LMX-2602G-SFP-T: -40°C to 75°C
- Case/Installation
  - IP-40 protection metal housing
  - Rack Mounted

## **1.4 Package Contents**

- 1 – LMX-2602G-SFP(-T)
- 1 – Quick Installation Guide
- 1 – Rack mount kit
- 1 – RJ45 to DB9 serial console cable

## 1.5 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.

### Warning Labels

The caution label means that you should check the certain information on user manual when working with the device. (Shown in Figure 1.1)



*Figure 1.1 - Caution Label*

This warning label is on the device, and means that the surface of the device is hot. (Shown in Figure 1.2)



*Figure 1.2 - Hot Surface Warning Label*

## 2. Hardware Description

### 2.1 Physical Dimensions

Figure 2.1, below, shows the physical dimensions of Antaira's LMX-2602G-SFP series:

(W x D x H) is **440mm x 200mm x 44mm**

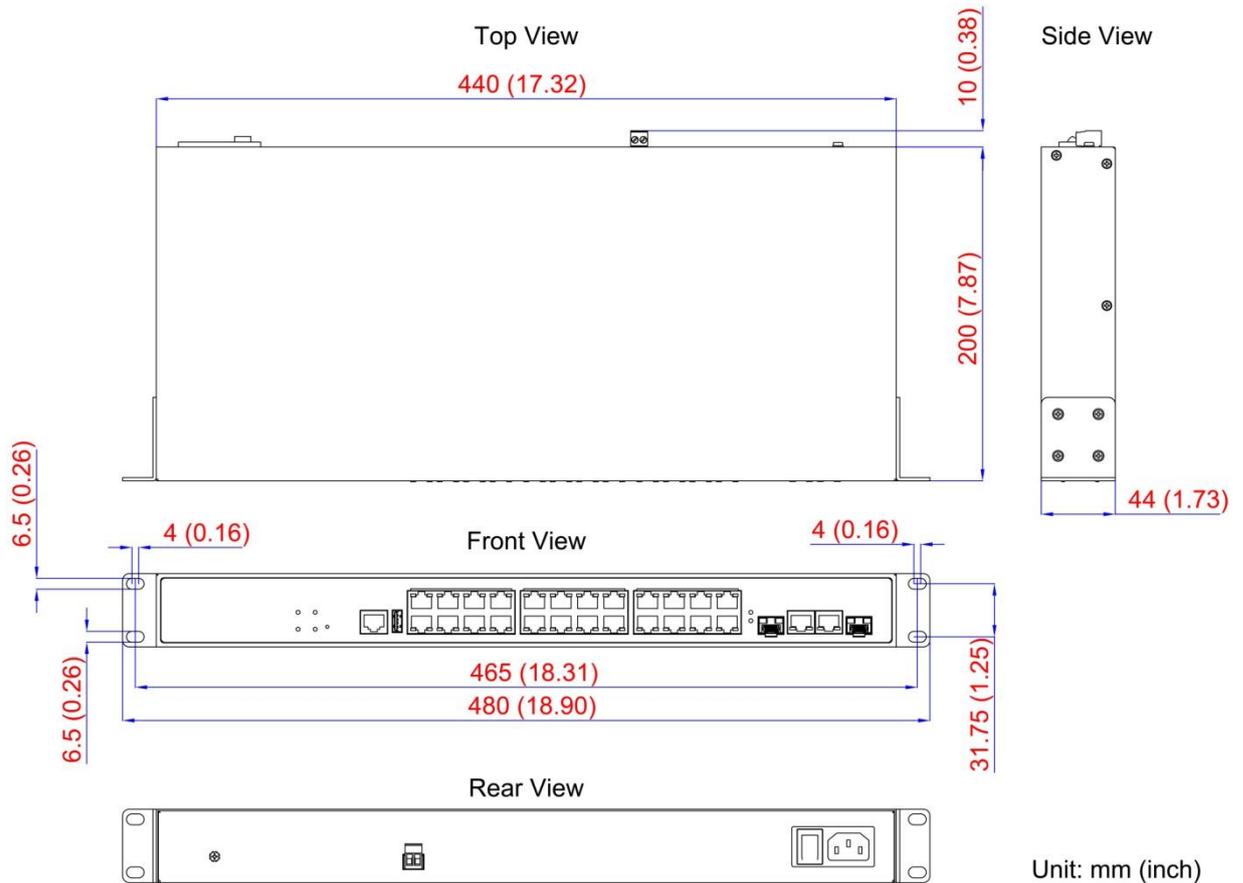
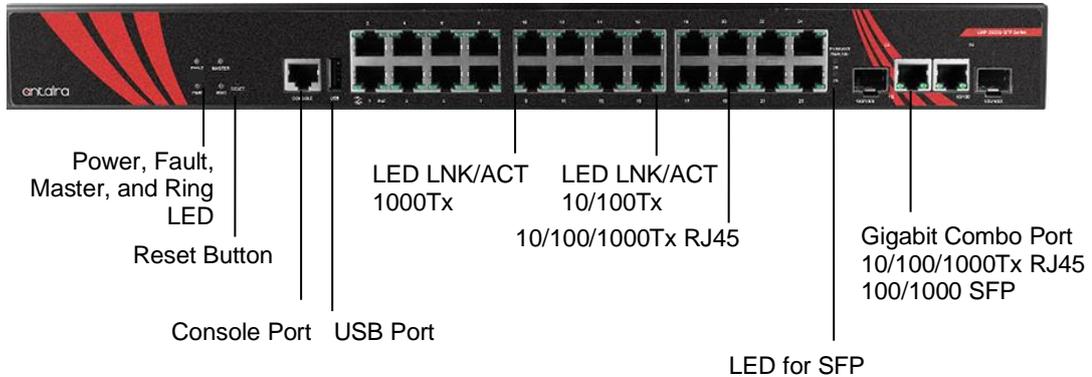


Figure 2.1  
LMX-2602G-SFP Series Physical Dimensions

## 2.2 Front Panel

The front panel of the LMX-2602G-SFP series industrial gigabit managed Ethernet switch is shown below in *Figure 2.2*.



*Figure2.2*

*The Front Panel of LMX-2602G-SFP Series*

## 2.3 Rear Panel

*Figure 2.3*, below, shows the top panel of the LMX-2602G-SFP series switch that is equipped with one 8-conductor redundant power inputs (90~264VAC) and one 2-pin terminal block for relay output



*Figure2.3*

*Top Panel View of LMX-2602G-SFP Series*

### **Warning!**



Airflow around the switch must be unrestricted. To prevent the switch from overheating, there must be the following minimum clearances:

- Top and bottom: 2.0 in. (50.8 mm)
- Sides: 2.0 in (50.8 mm)
- Front: 2.0 in (50.8 mm)

## 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*.

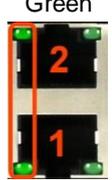
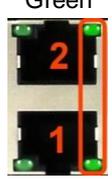
LED	Color	Description	
PWR1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
PWR2 (Optional)	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
Fault	Red	On	Extension power source 1 or 2 is inactive
		Off	Extension power source 1 and 2 are both functional
SFP Port with combo 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
1G LAN Port 1-24		On	Connected to network, 1000Mbps
		Flashing	Networking is active
		Off	Not connected to network
10/100 LAN Port 1-24		On	Connected to network, 10/100Mbps
		Flashing	Networking is active
		Off	Not connected to network

Table 2.1

Table 2.1 - LED Indicators for LMX-2602G-SFP Series

## 2.5 Reset Button

There is a 'Reset' button located on the front panel of the industrial Ethernet switch that helps users to reboot, restore default, or save running configurations by pressing the button for different seconds. Please refer to *Table 2.2* for the timing and function.

Seconds	Function	Fault LED
0s < t (press time) < 4s	Reboot the switch	LED is flashing with green color
4s < t (press time) < 8s	Restore factory default	LED is flashing with green and red color
8s < t (press time)	Backup configuration to USB (startup-config)	LED is flashing with red color

Table 2.2 – Reset Button Functions

## 2.6 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.

### ■ RJ-45 Pin Assignments

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

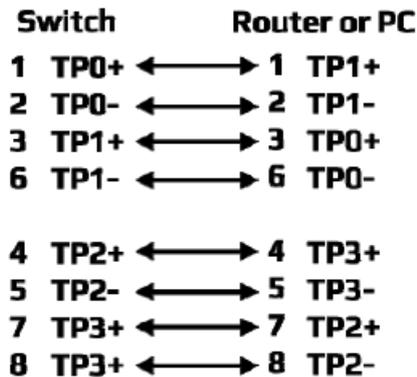


Figure 2.3  
Straight-Through Cables Schematic

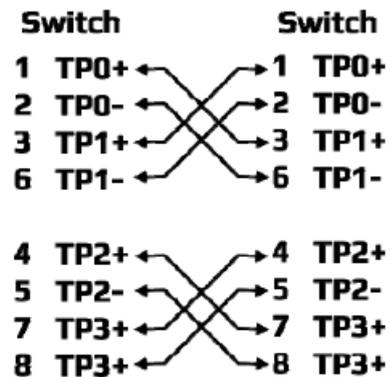
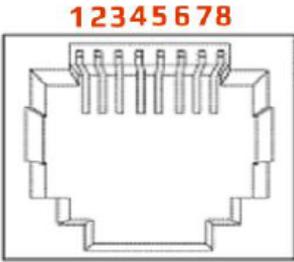


Figure 2.4  
Crossover Cables Schematic

The following figures shows 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-



## 2.7 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.

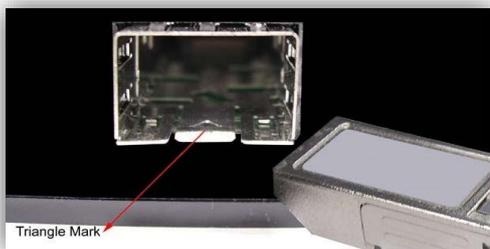
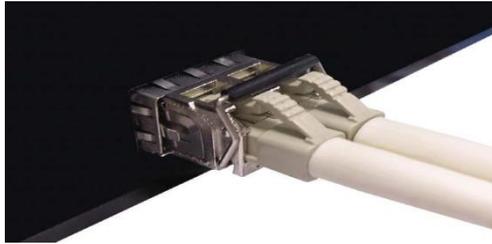


Figure 2.5 - Transceiver to the SFP Module



Figure 2.6 - Transceiver Inserted

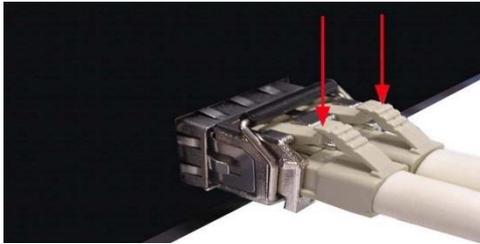
Second, insert the fiber cable of the LC connector into the transceiver as shown below in *Figure 2.7*.



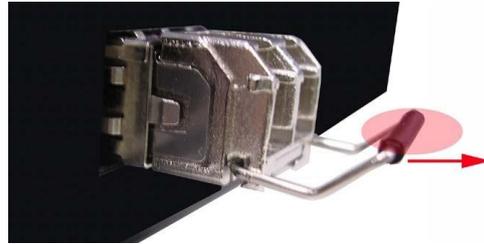
*Figure 2.7 - LC Connector to the Transceiver*

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



*Figure 2.8 - Remove LC Connector*



*Figure 2.9 - Pull Out from the SFP Module*

## 2.8 Wiring the Power Inputs

lease follow the below steps to insert the power wire.

1. Insert the AC power cable into the universal AC socket as shown below in *Figure 2.10*.



*Figure 2.10 - Power Terminal Block*

2. Switch the power switch for power on.

**Note**

- Only use copper conductors, 100° 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

## 2.9 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. The grounding screw symbol is shown below in Figure 2.11.



Figure 2.11 - Grounding screw

## 2.10 Wiring the Fault Alarm Contact

The relay contact of the 2-pin terminal block connector as the picture shows below in Figure 2.12 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

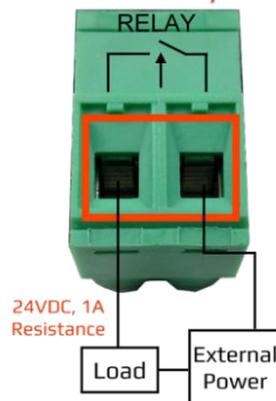


Figure 2.12  
Wiring the Fault Alarm Contact

- 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' LMX-2602G-SFP series: 26-Port Industrial Gigabit Managed Ethernet Switches with 24\*10/100/1000Tx 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.

### 4.2 Maintenance and Service

- If the device requires servicing of any kind, the user is required to disconnect and remove it from its mounting. The initial installation should be done in a way that makes this as convenient as possible.
- Voltage/Power lines should be properly insulated as well as other cables. Be careful when handling them so as to not trip over.
- Do not under any circumstance insert foreign objects of any kind into the heat dissipation holes located in the different faces of the device. This may not only harm the internal layout, but might cause harm to user as well.
- Do not under any circumstance open the device for any reason. Please contact your dealer for any repair needed or follow the instructions within the manual.
- Clean the device with dry soft cloth.

## 5. Technical Specifications

Table 5.1 has the technical specifications for Antaira's LMX-2602G-SFP series:

<b>Standards</b>	IEEE 802.3	10Tx Ethernet
	IEEE 802.3u	100Tx Fast Ethernet
	IEEE 802.3ab	1000Tx Gigabit Ethernet
	IEEE 802.3z	Gigabit Fiber
	IEEE 802.1d	STP (Spanning Tree Protocol)
	IEEE 802.1w	RSTP (Rapid Spanning Tree)
	IEEE 802.1s	MSTP
	ITU-T G.8032/Y.1344	ERPS (Ethernet Ring Protection Switch) Protocol
	IEEE 802.1Q	VLAN Tagging
	IEEE 802.1p	QoS/Cos Protocol for Traffic Prioritization
	IEEE 802.1x	Port based Network Control, Authentication
	IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)
	ITU-T G.8032/Y.1344	ERPS (Ethernet Ring Protection Switch) Protocol
	IEEE 802.1Q	VLAN Tagging
	IEEE 802.1x	Network Authentication
IEEE 802.1AB	Link Layer Discovery Protocol	
<b>Switch Properties</b>	Protocol	Web browser, Telnet, Serial console, TFTP, SNMPv1/v2c/v3, Port Speed/Duplex Configuration, IPv6, IEEE 802.1Q, GVRP, Port-based VLAN, X-Ring, 802.1w/D RSTP/STP, IP Access security, port security, DHCP client, Port and IP Binding, 802.1X Port Access Control
	Switch Architecture	Back-Plane (Switching Fabric): 52.0Gbps
	Processing Type	Store and Forward
	Flow Control	IEEE 802.3x for full duplex mode, back pressure for half duplex mode
	Transfer Rate	14,880pps for 10Base-T Ethernet 148,800pps for 100Base-T Fast Ethernet 1,488,000pps for Gigabit Ethernet
	Packet Buffer	4 Mbits
	Jumbo Frame	9.6K
	MAC Table Size	8K
	VLAN Group	0 ~ 4094
IGMP Group	1024 Group	
<b>Port Interface</b>	Ethernet Port	26*10/100/1000BaseT(X) with 24* Auto-Negotiation, Full/Half Duplex, Auto-MDI/MDI-X
	Gigabit Combo Port (Copper/SFP)	2*RJ45 Ports w/10/100/1000Tx Ethernet and 2*100/1000 SFP Slot
	Wavelength	Depends on SFP modules
	RS232 Serial Console	1*RS232 in RJ45 connector with console cable, 115.2Kbps, 8, N, 1

	Configuration Backup	1*USB 2.0
<b>Protection</b>	Overload Current	Present
	Power Reverse Polarity	Present (the unit will not be on, if power reverse)
	Network Cable	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable; 100Base-TX: 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)
<b>Mechanical Characteristics</b>	LED Indicator	Per Unit: Power 1 & 2 (Green), Fault (Red)
	Housing	Metal, IP40 protection
	Dimension	440 x 200 x 44 mm
	Weight	Unit Weight: 6.17 lbs. Shipping Weight: 7.94 lbs
	Mounting	Rack Mount
<b>Power Requirements</b>	Input Voltage	90-264VAC Redundant Input
	Power Connection	1 AC socket
	Power Consumption	Max 24W full loading
	Relay Contact	24VDC, 1A resistive
<b>Environmental Limits</b>	Operating Temperature	STD: -10° to 65°C EOT: -40° to 75°C
	Storage Temperature	-40°C ~ 85°C
	Ambient Relative Humidity	5 to 95%, (non-condensing)
<b>Regulatory Approvals</b>	EMI	FCC Part 15 Subpart B Class A, CE EN61000-6-4 Class A
	EMS	CE EN61000-6-2 Class A IEC61000-4-2 (ESD), IEC61000-4-3 (RS), IEC61000-4-4 (EFT), IEC61000-4-5 (Surge), IEC61000-4-6 (CS), IEC61000-4-8 (Magnetic Field)
	Stability Testing	IEC60068-2-32 (Free Fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
	Green	RoHS Compliant
	Certifications	FCC, CE
	Warranty	5 Years

Table 5.1 - LMX-2602G-SFP Series Technical Specifications

**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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