



## **LNX-C500 Series**

**5-Port Industrial Compact Unmanaged Ethernet Switches with  
5\*10/100Tx, 12~48VDC Power Input**



Version 1.0

## **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**

Industrial Grade Unmanaged Ethernet Switches

User Manual

Version 1.0 (January 2017)

This manual supports the following models:

- LNX-C500
- LNX-C500-T

This document is the current official release manual. 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' LNX-C500 series** is a compact 5-port industrial Ethernet switch. The small form factor of this metal IP30 rated industrial switch is 30% smaller allowing for a more versatile implementation. The LNX-C500 is equipped with 5\*10/100 RJ45 Ethernet ports with a backplane speed of 1gbps and is designed for industrial network expansion applications with tight spaces.

The LNX-C500 supports high EFT & ESD protection to prevent damage from unregulated power coming into the unit. This compact media converter also supports redundant power inputs with reverse polarity and overload current protection. The LNX-C500 product series supports DIN-rail as well as wall mountable orientations and provides operating temperature range models in STD: -10°C to 70°C and EOT: -40°C to 75°C. This is an industrial grade unit applicable for networking applications in factory automation, ITS, power/utility, water wastewater treatment plants, and any other application that needs a compact solution.

## 1.1 Key Features

- System Interface/Performance
  - All RJ-45 ports support the auto MDI/MDI-X function
  - Embedded 5\*10/100Tx
  - Store-and-forward switching architecture
  - 8K MAC address table
  - Power line EFT protection: 2,000VDC; Ethernet ESD protection: 6,000VDC
- Power Input
  - DC 12~48V redundant power with a 4-pin removal terminal block
- Operating Temperature
  - Standard operating temperature model: -10°C ~ 70°C
  - Extended operating temperature model (-T): -40°C ~ 75°C
- Case/Installation
  - IP-30 protection
  - DIN-Rail and wall mount design

## 1.2 Package Contents

- 1 - LNX-C500 (-T): 5-port industrial compact unmanaged Ethernet switch with 5\*10/100Tx
- 2 - Wall mounting brackets and screws
- 1 - DC cable –18 AWG & DC jack 5.5x2.1mm

## 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 Dimensions

Figure 2.1, below, shows the physical dimensions of Antaira Technologies' LNX-C500 series: 5-port compact industrial unmanaged Ethernet switch with 5\*10/100Tx RJ45 ports.

(W x D x H) is **26mm x 75mm x 95mm**

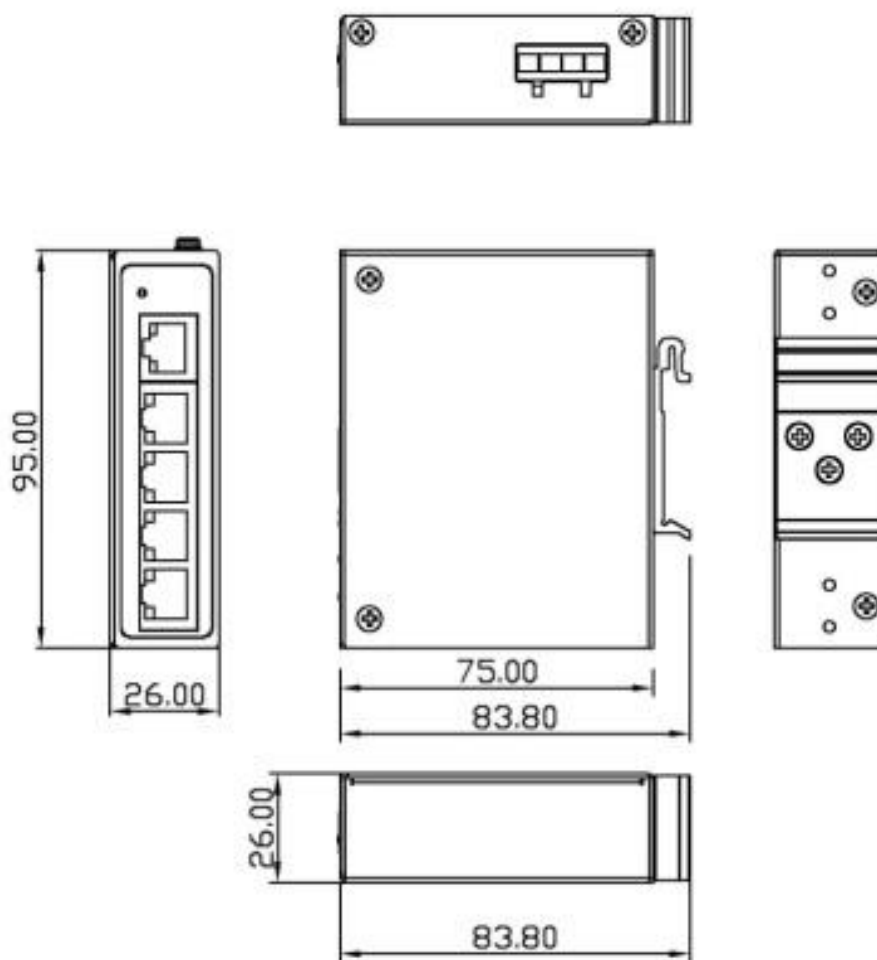
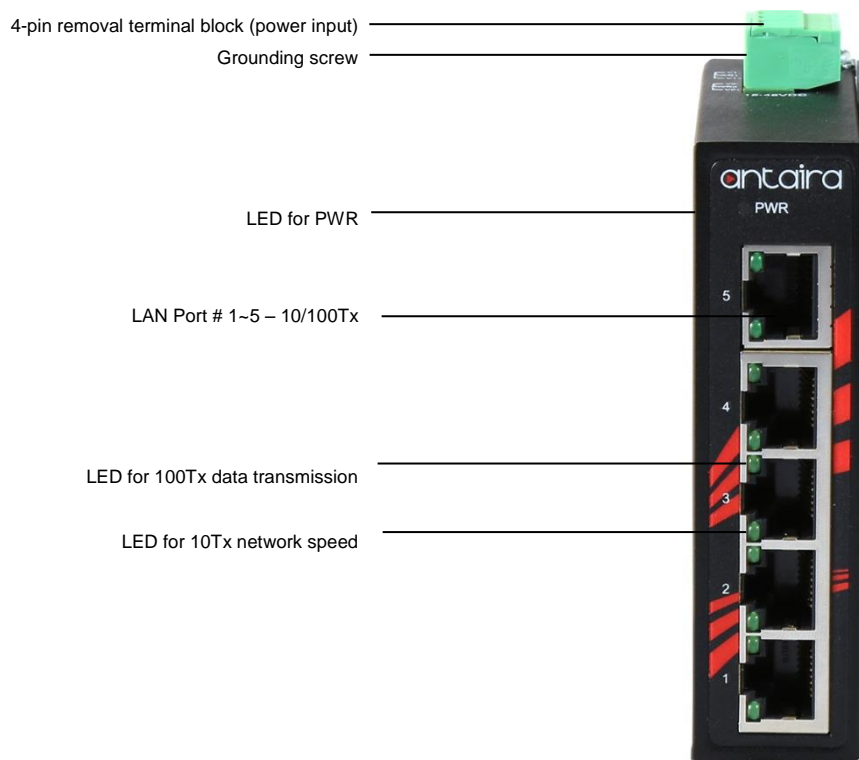


Figure 2.1

LNX-C500 Series Physical Dimensions

## 2.2 Front Panel

The front panel of the LNX-C500 series: 5-port industrial compact unmanaged Ethernet switch with 5\*10/100Tx. See *Figure 2.2*.

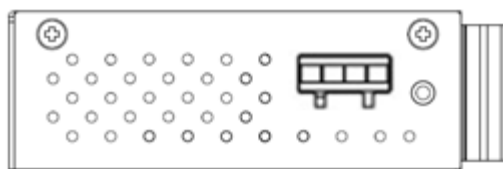


*Figure 2.2*

*Front Panel of the LNX-C500 Series*

## 2.3 Top View

*Figure 2.3*, below, shows the top panel of the LNX-C500 series switch that is equipped with one 4-pin removal terminal block connector for dual DC power inputs (12-48 VDC).



*Figure 2.3*

*Top Panel View of LNX-C500 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	
Power	Green	On	Power input is active
		Off	Power input is inactive
LAN Port 1 ~ 5 (Left LED)		On	Connected to network, 100Mbps
		Flashing	Networking is active
		Off	Not connected to network
LAN Port 1 ~ 5 (Right LED)		On	Connected to network at 10Mbps
		Flashing	Networking is active
		Off	Not connected to network

Table 2.1

LED Indicators for LNX-C500 Series

## 2.5 Ethernet Ports

### ■ RJ-45 Ports

**RJ-45 Ports (Auto MDI/MDIX):** The RJ-45 ports (LAN 1~5) are auto-sensing for 10/100Base-T, or 100Base-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 (Table 2.2)

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

Table 2.2

RJ45 Pin Assignments

**Note:** The “+” and “-” signs represent the polarity of the wires that make up each wire pair.

All ports on this industrial Ethernet switch support automatic MDI operations. Users can use straight-through cables (see figure below) for all network connections to PCs, servers, and other switches or hubs. With 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 MDI 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 cables.

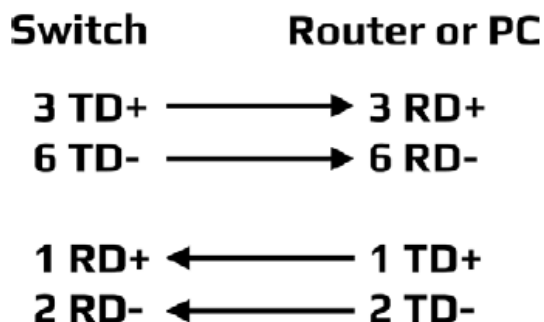


Figure 2.4

Straight-Through Cables Schematic

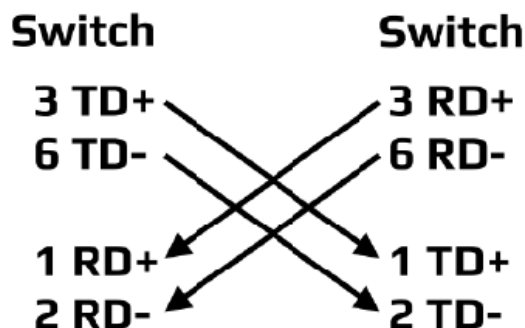


Figure 2.5

Crossover Cables Schematic

## 2.6 Cabling

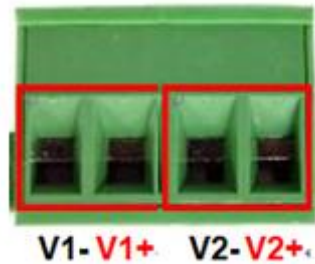
- Twisted-pair segments can be connected with an unshielded twisted pair (UTP) or shielded twisted pair (STP) cable. The cable must comply with the IEEE 802.3u 100Base TX standard (e.g. Category 5, 5e, or 6). The cable between the equipment and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.

Note: Cable size should be between 18~20 AWG and the torque should be tightened to 5lbs.

## 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 2.6*.



*Figure 2.6*

*Power Terminal Block*

2. Tighten the wire-clamp screws to prevent the wires from loosening, as shown below in *Figure 2.7*.



*Figure 2.7*

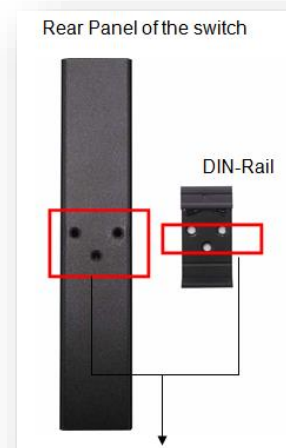
*Power Terminal Block*

## 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 refer to *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*

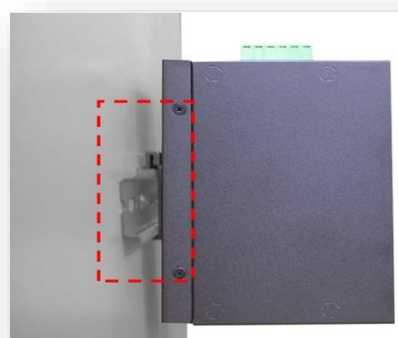


Follow the steps below to learn how to hang the industrial Ethernet switch.

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



*Figure 3.2*  
*Insert the Switch on the DIN-Rail*



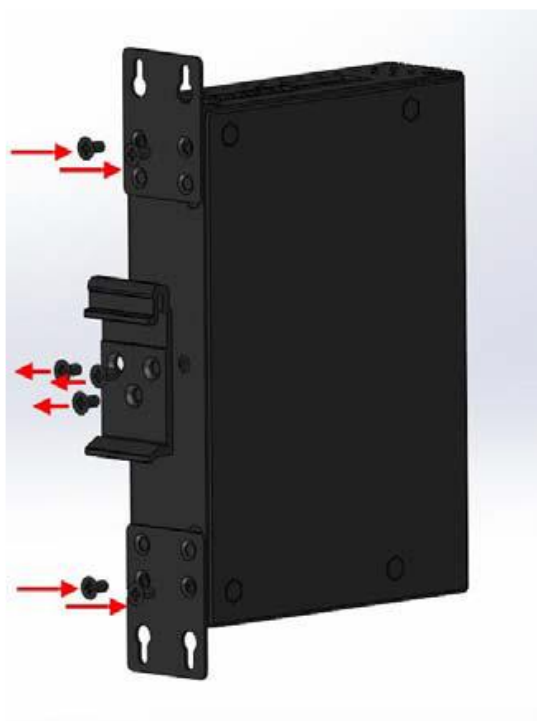
*Figure 3.3*  
*Stable the Switch on DIN-Rail*

7. Check if the bracket is mounted tightly on the rail.
8. 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*

## 4. Hardware Installation

### 4.1 Installation Steps

This section will explain how to install Antaira Technologies' LNX-C500 (T): 5-port compact industrial compact unmanaged Ethernet switch with 5\*10/100Tx ports.

#### 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 it is required 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.
  - For the 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 the 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. 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 RJ-45 connections: 100Ω Category 5e for 10/100Mbps. 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 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' LNX-C500 series: 5-port industrial unmanaged Ethernet switch with 5\*10/100Tx ports.

<b>Standards</b>	IEEE 802.3	10Base-T 10Mbit/s Ethernet
	IEEE 802.3u	100Base-Tx, 100Base-Fx, Fast Ethernet
<b>Switch Property</b>	Protocol	CSMA/CD
	Data Process	Store and Forward
	Transfer Rate	14,880 pps for 10Base-T Ethernet port 148,800 pps for 100Base-TX Fast Ethernet port
	Transmission Distance	Up to 100M (Fast Ethernet)
	Transmission Speed	Up to 100Mbps (Fast Ethernet)
	MAC Address Table	8K table size
<b>Port Interface</b>	Ethernet (RJ45) Port	5*10/100Tx auto negotiation speed, full/half duplex mode, and auto MDI/MDI-X connection
	LED Indicator	<b>Per unit:</b> Power1(Green), Power2(Green), Fault(Red) <b>Per port:</b> Link/Activity (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)
<b>Mechanical Characteristics</b>	Housing	Metal IP30 protection
	Dimension	26 x 75 x 95 mm (w x d x h)
	Weight	Unit Weight: 1.0 lbs. Shipping Weight: 1.5 lbs.
	Mounting	DIN-Rail Mounting, wall-mounting (optional)
<b>Power Requirement</b>	Input Voltage	12~48VDC Redundant Input
	Current Protection	Present – Slow Blow Fuse
	Power Connection	1 removable 4-contact terminal block
	Power Consumption	1.2 Watts
<b>Environmental Limits</b>	Operating Temperature	Standard: -10 to 70C (14 to 158F) EOT: -40 to 75C (-40 to 167F)
	Operating Humidity	5% to 95% (Non-Condensing)
	Storage Temperature	-40 to 85C (-40 ~ 185F)
<b>Regulatory Approvals</b>	EMI	FCC Class A IEC61000-4-2/3/4/5/6/8 IEC61000-6-2 IEC61000-6-4
	Stability Testing	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
	Safety	UL 61010-1, UL 61010-2-201(Pending)

Table 7.1

LNX-C500 Series Technical Specifications