EtherWAN

EL900 Series

Hardened Media Converter

User's Guide

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Products Supported by this Manual:

EL900

Preface

Audience

This guide is designed for the person who installs, configures, deploys, and maintains the Ethernet network. This document assumes the reader has moderate hardware, computer, and Internet skills.

Document Revision Level

This section provides a history of the revision changes to this document.

Revision	Document Version	Date	Description
A	Version 1	03/01/2023	

Safety and Warnings

This guide uses the following symbols to draw your attention to certain information.

Symbol	Meaning	Description
	Note	Notes emphasize or supplement important points of the main text.
	Tip	Tips provide helpful information, guidelines, or suggestions for performing tasks more effectively.
	Warning	Warnings indicate that failure to take a specified action could result in damage to the device, or could result in serious bodily injury.
	Electric Shock Hazard	This symbol warns users of electric shock hazard. Failure to take appropriate precautions such as not opening or touching hazardous areas of the equipment could result in injury or death.

Contents

EL900 Hardened Media Converter

10/100BASE-TX to 100BASE-FX

This hardened media converter provides an affordable solution for rugged and outdoor environment, transportation road-side cabinet, industrial floor shop, multitenant dwellings or Fiber To The Home (FTTH) applications. Capable of operating at temperature extremes of -40°C to +75°C, this is the media converter of choice for harsh environments constrained by space.

Plug-and-Play Solution:

The hardened media converter is a plug-and-play media converter in compact size. It doesn't require any complicated software to set up.

PWR1 PWR2 FAULT
10/100TX
FDX/COL LNK/ACT
LFP 100
FDX/COL LNK/ACT
100BASE-FX
0 1
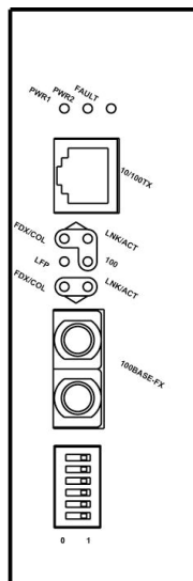
Unpacking

Open the carton and unpack the items. Your package should include an EL900 media converter, an AC to DC power adaptor and cable (optional) and a Quick Install Guide. If items are missing or damaged, notify your EtherWAN representative.

Select Installation Location

Installation is DIN rail-mount, or wall mount (in an enclosure or industrial panel). Ensure that the power source is within 6 feet (1.8 meters), and check that there is adequate airflow.

Place the media converter on the DIN rail from above using the slot. Push the front of the media converter toward the mounting surface until it audibly snaps into place.

Startup: Connect the supply voltage to start up the media converter via the terminal block.

Dismantling: Pull out the lower edge and then remove the media converter from the DIN rail.
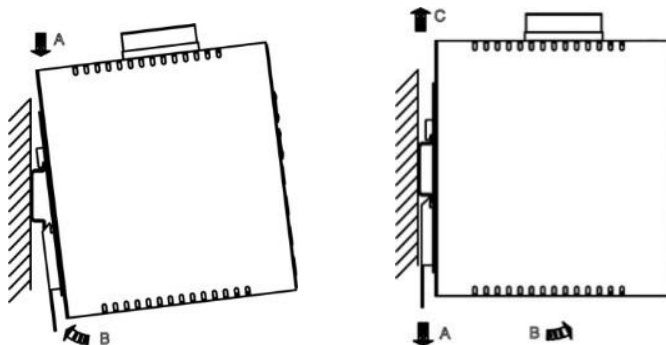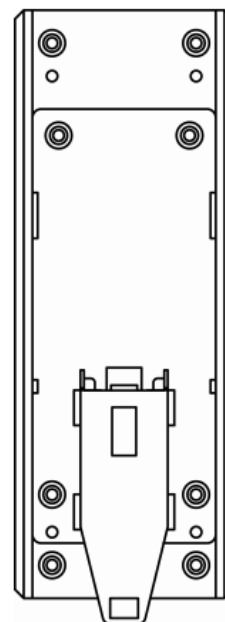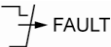
Connect Power

The media converter is equipped with an six-contact DC terminal block. The terminal block provides dual DC power inputs, and a relay output contact. Redundant power supply is support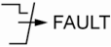ed, but only one power input is required for operation. Note that the media converter does not have a power switch; it is turned on/off by connecting/disconnecting power. Input voltage is **10 to 48VDC.**

DC Terminal Block Assignments	
PWR1	Power Input 1 (10~48VDC)
GND	Power Ground
PWR2	Power Input 2 (10~48VDC)
GND	Power Ground
⏚	Earth Ground
⌐⊏ FAULT	1. Relay opens if PWR1 or PWR2 fails 2. Relay opens if the port link fails (When Link Down Detection is enabled)
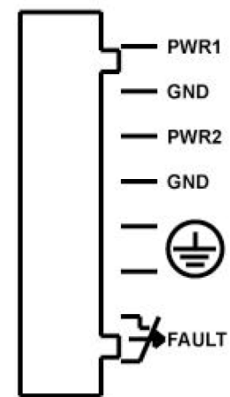
The media converter can also be powered via the **12VDC** DC jack or an optional **24VAC**, 0.185A AC Terminal Block.

AC Block Terminal Assignments	
PWR	Power Input 3A@12VDC)
GND	Power Ground
⌐⊏ FAULT	1. Relay opens if PWR1 or PWR2 fails 2. Relay opens if the port link fails (When Link Down Detection is enabled)
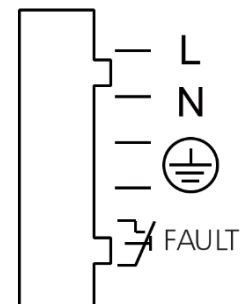
⚠️ **Note:** Use qualified power supply by SELV or double insulation of UL 60950 or UL 61010-1 or UL 61010-2-201 standards.

Insert the DC input wires into the corresponding terminals, and tighten the clamp screws to hold them in place. Make sure that the plastic terminal block connector prongs are plugged firmly into the terminal block receptacles.

Power wiring information:

Use cable type - AWG (American Wire Gauge) 18-24 and the corresponding pin type cable terminals. Use torque value 1.7 lb-in, do not use excessive force when fixing wiring.

LED Indicators

LED	State	Indication
Fault	Steady	Power redundancy or port malfunction
	Off	Power redundancy/ports functioning normally
PW1	Steady	Power1 on
	Off	Power1 off
PW2	Steady	Power2 on
	Off	Power2 off
100 (Mbps)	Steady	Connection at the speed of 100Mbps
	Off	Connection at the speed of 10Mbps
LFP	Steady	LFPT function enabled
	Off	LFPT function disabled
LNK/ACT	Steady	Connection established
	Flashing	Transmitting or receiving data
	Off	No connection established
FDX/COL	Steady	Connection in full duplex mode
	Flashing	Collision occurred
	Off	Connection in half-duplex mode
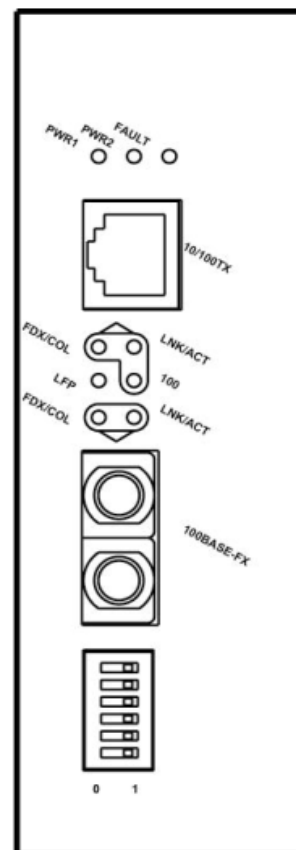
DIP Switches

Port, power and LFPT settings are made very simple by means of DIP (Dual Inline Package) switches on the bottom panel of the hardened media converter.

EL900 DIP Switches
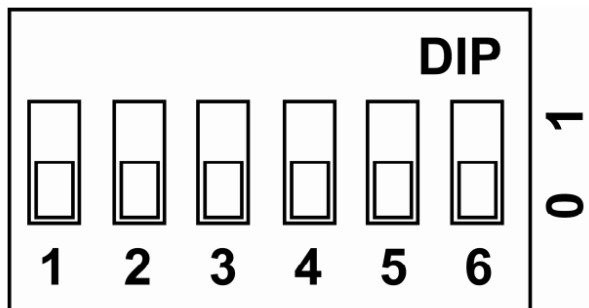
No.	0	1
1	Disable LFPT*	Enable LFPT*
2	Enable auto negotiation for TX port	Enable forced mode for TX port
3	TX port forced to 100Mbps	TX port forced to 10Mbps
4	TX port forced to full duplex mode	TX port forced to half duplex mode
5	FX port forced to full duplex mode	FX port forced to half duplex mode
6	Disable link down alarm	Enable link down alarm

* LFPT = Link Fault Pass Through

ℹ️ If Force mode is enabled, the media converter must be restarted in order for the new setting to take effect.

ℹ️ Pin 2 must be toggled to position 1 prior to speed and duplex mode manual setting.

Link Fault Pass Through (LFPT)

LFPT (Link Fault Pass Through) is a feature that will pass a link fault through the device at each segment. If either of the copper TX links fails, the media converter will pass the fail state on throughout the link, taking down the middle fiber as well as the copper link on the opposite end. This prevents the connected switches from sending packets that would end up lost. LFTP is designed for use with media converters arranged in pairs, and both devices must support LFPT.

Link Fault of the FX port						
		TX Port			FX Port	
LEDs	PWR	100	LNK/ACT	FDX/COL	LNK/ACT	FDX/COL
Media Converter A	ON	ON	OFF	OFF	OFF	OFF
Media Converter	ON	ON	OFF	OFF	OFF	OFF
Link Fault of the TX port of Media Converter A						
		TX Port			FX Port	
LEDs	PWR	100	LNK/ACT	FDX/COL	LNK/ACT	FDX/COL
Media Converter A	ON	OFF	OFF	OFF	OFF	OFF
Media Converter B	ON	OFF	OFF	OFF	OFF	OFF

Relay Output Alarm

The media converter is equipped with relay output contacts on the terminal block for signaling of a power or port failure. The relay output can be connected to an alarm signaling device. Current is 0.6A @ 30VDC. Do not connect a power source to the relay output.

Features

- Meets NEMA TS1/TS2 Environmental requirements: temperature, shock, and vibration for traffic control equipment.
- Meets EN 61000-6-2 & EN 61000-6-3 EMC Generic Standard Immunity for industrial environments.
- Supports 802.3/802.3u/802.3x. Auto-negotiation: 10/100Mbps, full/half-duplex; Auto MDI/MDIX.
- 100Base-FX: Multi mode SC or ST type; Single mode SC or ST type; WDM Single mode SC type.
- One DIP switch for configuring link-fault-pass-through, fixed speed, full/half duplex, and link down alarm.
- Alarms for power and port link failure by relay output.
- Relay contact rating with current 1.5A @ 24VDC, 0.5A @ 120VAC.
- Operating voltage and Max. current consumption: 0.36A @ 12VDC, 0.18A @ 24VDC, 0.09A @ 48VDC. Power consumption: 4.32W Max.
- Power Supply: Redundant DC Terminal Block power inputs or 12VDC DC JACK with 100-240VAC external power supply.
- Field Wiring Terminal: Use Copper Conductors Only, 60/75℃, 12-24 AWG torque value 7 lb-in.
- -40℃ to 75℃ (-40℉ to 167℉) operating temperature range. Tested for functional operation @ -40℃ to 85℃ (-40℉ to 185℉). UL 1604 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 74℃ (165℉).
- Supports DIN-rail, Panel, or Rack Mounting installation.
- UL 1604 Class I, Division 2 Classified for use in hazardous locations (Applicable to versions with Terminal Block power option).
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D OR non-hazardous locations only.

⚠ WARNING – EXPLOSION HAZARD – Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.

⚠ WARNING – EXPLOSION HAZARD – Substitution of components may impair suitability for Class I, Division 2.

Specifications

Applicable standards	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX/FX
Switching method	Store and Forward
Forwarding rate	14,880/148,810pps for 10/100Mbps
Speed 10Base-T 100Base-TX/FX	10/20Mbps for half/full-duplex
	100/200Mbps for half/full-duplex
Cable 10Base-T 100Base-TX 100Base-FX	2-pair UTP/STP Cat. 3, 4, 5 up to 100m 2-pair UTP/STP Cat. 5 up to 100m MMF (50 or 62.5µm), SMF (9 or 10µm)
LED Indicators	Per Unit- (4 LEDs): PWR1, PWR2, FAULT, LFP
	Per Port- TX (3 LEDs): LNK/ACT, FDX/COL, 100 FX (2 LEDs): LNK/ACT, FDX/COL
Dimensions	50 x 110 x 135mm (W x D x H) (1.97" x 4.33" x 5.31")
Weight	0.8Kg (1.76lbs.)
Power	DC Jack: 12VDC, External AC/DC required Terminal Block: 10-48VDC
Operating Voltage & Max. Current Consumption	0.36A @ 12VDC, 0.18A @ 24VDC, 0.09A @ 48VDC
Power Consumption	4.32W Max.
Operating Temperature	-40°C ~ 75°C (-40°F ~ 167°F) Tested for functional operation @ -40 ~ 85°C (-40 ~ 85°F) UL1604 Industrial Control Equipment certified Maximum Surrounding Air Temperature @ 74℃ (165°F)
Storage Temperature	-40 ~ 85°C (-4 ~ 185°F)
Humidity	5 ~ 95%, non-condensing
Safety	Hazardous locations: Class I, Division 2 group A, B, C & D UL 60950-1, EN 60950-1, IEC 60950-1

EMI	FCC Part 15, Class A EN 61000-6-3: EN 55022, EN 61000-3-2, EN 61000-3-3
EMS	EN 61000-4-2 (ESD Standard) EN 61000-4-3 (Radiated RFI Standards) EN 61000-4-4 (Burst Standards) EN 61000-4-5 (Surge Standards) EN 61000-4-6 (Induced RFI Standards) EN 61000-4-8 (Magnetic Field Standards)
Environmental Test Compliance	IEC 60068-2-6 Fc (Vibration Resistance) IEC 60068-2-27 Ea (Shock) IEC 60068-2-32 Ed (Free Fall)
NEMA TS1/2 Environmental requirements for traffic control equipment	

Manufacturer's Information

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