This quick start guide describes how to install and use the Hardened Ethernet Extender over copper wires.

Installation

ED3538T (Transmitter): This is a PoL (Power over Link) transmitter. Data and power can be delivered at the same time through one pair copper wire to turn on and communicate with ED3538R (Receiver) via RJ-11 phone jack or 2-pin Terminal Block interface.

ED3538R (Receiver): This is a PoL (Power over Link) Receiver. ED3538R (Receiver) can be powered either by ED3538T (Transmitter) through one pair copper wire or local power supply. The Ethernet port supports IEEE802.3at PoE/PSE.

Warning

- Remove the device power before installation.
- Remove the device power before any I/O and DIP switch configuration.
- Do not connect ED3538T and Receiver to the same power source. Devices may be damaged due to power loop back through the PoL linked via copper wire.

PoL (Power over Link) Mode Enable Installation

- Ensure all power sources are disconnected from ED3538T and ED3538R.
- Ensure ED3538T PoL (Power over Link) DIP switch is in **On** position (Up position).
- Set ED3538T Type DIP switch to Perf (Performance, Up position) to acquire better Line Speed (but poor noise immunity). Or sets Type DIP switch of ED3538T to Std (Standard, Down position) to acquire standard Line Speed (but better noise immunity).
- Check if ED3538R Mode is set to Rmt on DIP switch (Remote, Up position).
- Connect one end of the one pair copper wire to RJ-11 phone jack or 2-pin Terminal Block interface of the ED3538T and the other end to RJ-11 phone jack or 2-pin Terminal Block interface of the ED3538R.
- Connect power source to ED3538T.
- Data and power can be delivered from ED3538T, and at the same time through one pair copper wire to turn on and communicate with ED3538R.

Note: The equipment is designed for indoor installation and is not intended to be connected to exposed (outside plant) networks including campus environment or equivalent.

**PoL (Power over Link) Mode Disable Installation**

For longer distance (e.g. over 1.4km) extension application, ED3538R may not be able to receive power from ED3538T. A separate power source will need to be applied on ED3538R.

- Ensure all power sources are disconnected from ED3538T and ED3538R.
- Ensure ED3538T PoL (Power over Link) DIP switch is in **Off** position (Down position).
- Set ED3538T Type DIP switch to Perf (Performance, Up position) to acquire better Line Speed (but poor noise immunity). Or sets Type DIP switch of ED3538T to Std (Standard, Down position) to acquire standard Line Speed (but better noise immunity).
- Connect power source to ED3538T.
- Check if ED3538R Mode is set to Rmt on DIP switch (Remote, Up position).

- Connect power source to ED3538R.
- Connect one end of the one pair copper wire to RJ-11 phone jack or 2-pin Terminal Block interface of the ED3538T and the other end to RJ-11 phone jack or 2-pin Terminal Block interface of the ED3538R.
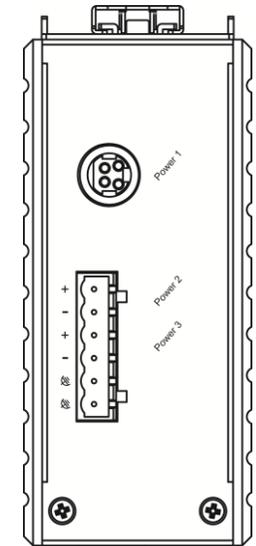- Data can be transmitted between ED3538T and ED3538R via copper wire.

Physical Description

Port Status LEDs and Power Inputs
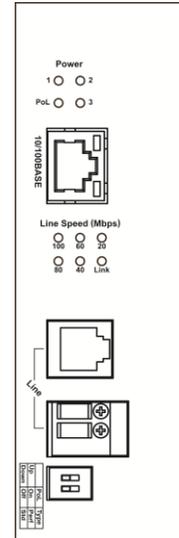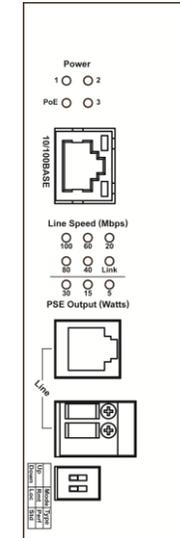
ED3538T   **ED3538R**

- DC Terminal Block Power Inputs: 2.5A @ 48VDC (Peak current 3.26A). There are two pairs of power inputs can be used to power up this Ethernet Extender. Redundant power supplies function is supported. You only need to have one power input connected to run the Ethernet Extender.
- DC JACK Power input: 2.5A @ 48VDC (Peak current 3.26A).

Power supply suggestion	30 watts application
SDR-120-48 / DR-120-48 (120W 48VDC)	For one pair
SDR-240-48 (240W 48VDC)	For three pairs
SDR-480-48 (480W 48VDC)	For seven pairs

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| Power Input Assignment		
Power1	48VDC	DC Jack
Power2	+	T: 46-57VDC R: 46-57VDC	Terminal Block
	−	Power Ground	
Power3	+	T: 46-57VDC R: 46-57VDC	
	−	Power Ground	
⏚		Earth Ground	

DIP Switch	Down	Up
ED3538T		
PoL	Disable Power over Link	Enable Power over Link
Type	Std (Standard) Better noise immunity	Perf (Performance) Better line speed Poor noise immunity
ED3538R		
Mode	Loc (Local), Set ED3538R to Local Mode	Rmt (Remote), Set ED3538R to Remote Mode
Type	Std (Standard) Standard line speed Better noise immunity	Perf (Performance) Better line speed Poor noise immunity

<Note> The Reference Performance is tested on 24AWG Telephone wire (0.5mm diameter, 1-pair wire, Cable impedance: 100ohm).

10/100Base-TX and Ethernet Extender Connectors

10/100Base-TX Connection

The following lists the pinouts of 10/100Base-TX RJ-45 port.

```
Pin 8
Pin 7
RD- Pin 6
Pin 5
Pin 4
RD+ Pin 3
TD- Pin 2
TD+ Pin 1
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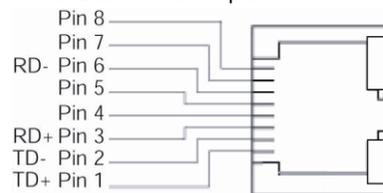
Pin	Regular Port	PoE Port
1	Output Transmit Data +	Output Transmit Data +
2	Output Transmit Data -	Output Transmit Data -
3	Input Receive Data +	Input Receive Data +
4		Positive (VCC+)
5		Positive (VCC+)
6	Input Receive Data -	Input Receive Data -
7		Negative (VCC-)
8		Negative (VCC-)

LEDs	State	Indication
Power 1/2/3	Steady	Power received
	Off	Power off
PoL	Steady	Power Ethernet extension interface function is enabled
	Off	No power is transmitted over Ethernet extension interface
PoE	Steady	Powered device (PD) is connected
	Off	Powered device (PD) is disconnected
Link	Steady	A valid Extender connection established
	Fast Flashing	Data transmission or receiving
	Slow Flashing	Extender port under negotiation mode
	Off	Extender interface connection is not established
Line Speed	Steady	Displays the link speed in Mbps
PSE Output	Steady	PoE power can be transmitted for PD
	All off	No PoE power can be transmitted for PD
(RJ-45 icon) Green	Steady	A valid Ethernet connection established
	Flashing	Data transmission or receiving
	Off	Non-Ethernet connection is established
Yellow	Steady	Link speed at 100Mbps
	Off	Link speed at 10Mbps

Ethernet Extender Connection

The RJ-11 and Terminal Block port pinouts
Pin 3: Tip, Pin 4: Ring.
Use a telephone line to connect two RJ-11 or Terminal Block ports between two Hardened Ethernet Extenders.

Pin6 Pin5 Pin4 Pin3 Pin2 Pin1

Ring Tip   **Tip Ring**
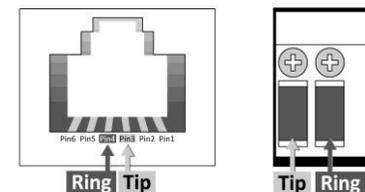
Functional Description

- Meets EN 61000-6-2 & EN 61000-6-4 EMC Generic Standard Immunity for industrial environment.
- Ethernet port: Supports IEEE802.3/802.3u/802.3x. Auto-negotiation: 10/100Mbps, full/half-duplex; Auto MDI/MDIX.
- Auto data rate negotiation for Ethernet extension interface.
- Six speeds with speed indicator LEDs on front panel of unit, up to 100Mbps @ about 300meters (984ft.), down to 1Mbps @ about 2,200meters (7,218ft.).
- Supports Power over Ethernet application up to 1,200meters (3,937ft.) for Max. 5 watts power consumed PoE powered devices.
- Power consumption:
  - **Enable** Power over Link (PoL) function: Max. 65Watts
  - **Disable** Power over Link (PoL) function: ED3538T: Max. 5W, ED3538R: Max. 35W with PoE output, Max. 5W without PoE output.
- Power Supply: Redundant T: 46-57V, R: 46-57V DC Terminal Block power inputs and 48VDC Latched DC jack interface.
- Operating temperature range -40 to 75℃ (-40 to 167℉). Tested for functional operation @ -40 to 85℃ (-40 to 185℉).
- Supports Din-Rail or Panel Mounting installation.

Power over Link (PoL) **Enabled**		
Distance	Data Rate	ED3538R PoE Output
300M	100Mbps	30.0W
400M	90Mbps	15.4W
600M	60Mbps	14.0W
800M	45Mbps	9.5W
1000M	35Mbps	7.0W
1200M	20Mbps	5.0W

Power over Link (PoL) **Disabled** Power Supply Applied on ED3538R		
Distance	Data Rate	ED3538R PoE Output
1400M	15Mbps	30.0W
1600M	10Mbps	30.0W
1800M	3Mbps	30.0W
Up to 2200M	1Mbps	30.0W

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