

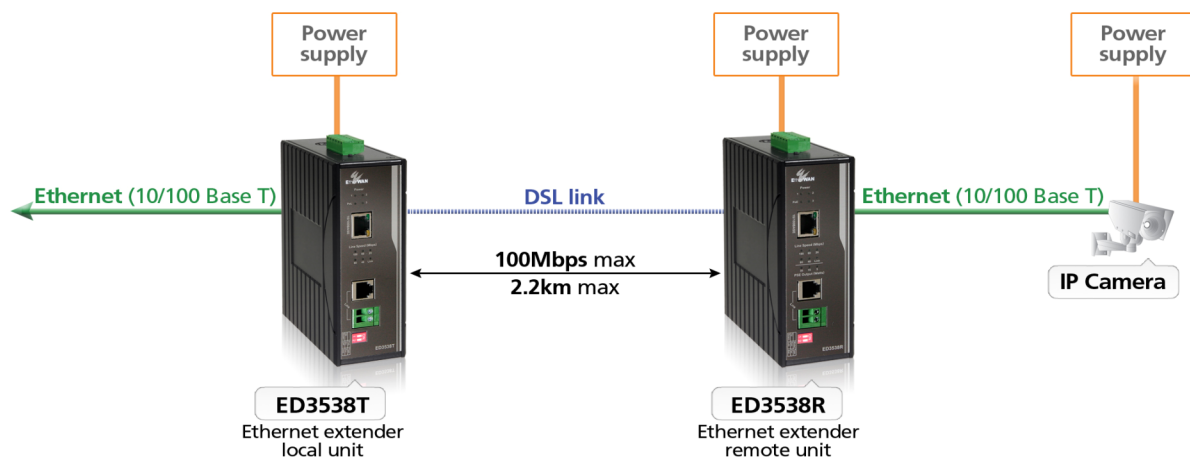
Application Note:

Using the ED3538T and ED3538R

This application note aims to enable the reader to fully understand the operation and benefits of using the Power over Link (PoL) feature supported by the ED3538T and ED3538R Ethernet Extenders.

Ethernet Extenders

Ethernet extenders allow cost effective Ethernet networks to be created over long distances. Utilising DSL technology, Ethernet extenders increase the 100m distance limitation of standard Ethernet over CATx cabling by transmitting data over pre-existing copper cables (commonly twisted copper pair), this can lead to considerable financial savings as expensive fibre cables don't need to be installed. Ethernet extenders, such as the ED3538T/R, can be used to create point to point links up to 2.2km and reach speeds of up to 100Mbps, but there is a trade-off between data rate and distance; the further the distance the lower the data rate of the communication link. See table 1 for more details.

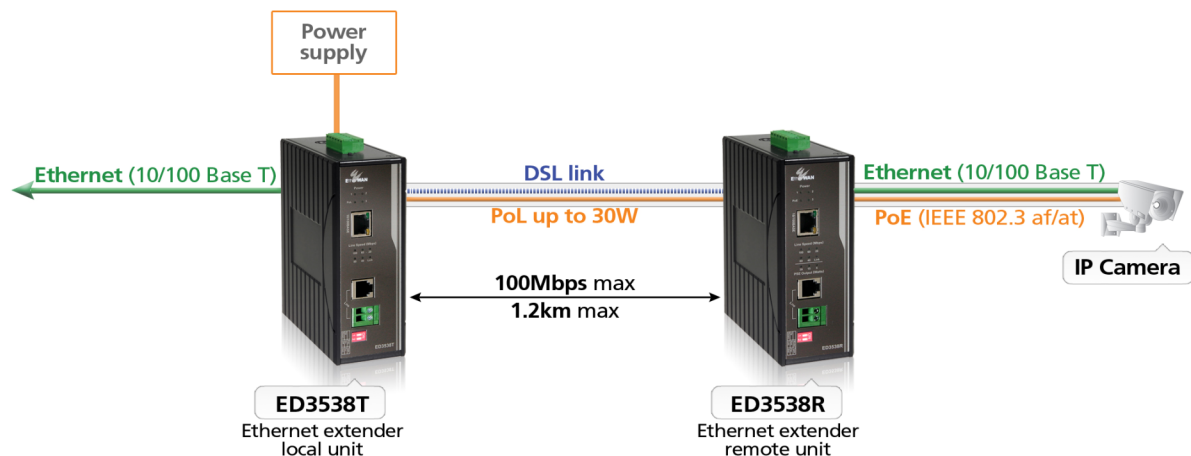


Power over Link

A common issue when using Ethernet extenders is the availability of power at the remote location. A conventional Ethernet extender system requires power availability for the remote Ethernet extender unit and the end device(s).

PoL (power over link) is an innovative technology that transports Ethernet data *and* power over an Ethernet extender link (over the copper cables), providing power to the remote Ethernet extender unit and Power over Ethernet (PoE) to the remote end device(s), this completely removes the requirement for a power source at the remote location.

The ED3538T and the ED3538R can be used to create an Ethernet extender point to point network using PoL technology, removing the need for a remote power supply.



Support for PoE end devices?

When using the ED3538T and ED3538R to provide PoE to a remote location, we must take into consideration that the achievable power level delivered to end device depends on the distance of the DSL link. PoE devices such as access points and IP cameras are compliant with one of the PoE IEEE standard available on the market today; IEEE 802.3af can deliver 15.4 Watts of power to an end device, IEEE 802.3at can deliver 30.0 Watts of power to an end device. Because of this, these two power levels are a benchmark for performance, the ED3538T/R extender system can deliver 30.0 Watts of power to an end device at approximately 300 meters DSL link distance and 15.4 Watts at 400 meters. Compared to conventional PoE over CATx cable, which is limited to 100 meters, this solution provides up to four times the distance. Beyond 400 meters the power levels will begin to drop, this is still acceptable for many PoE end devices as often they do not require the maximum power levels specified in the IEEE 802.3af/at standards. Please see table 1 for more details.

Distance, data rate and power figures

The following performance table shows the full capability of the ED3538T/R pair when using the PoL feature:

Distance (meters)	Data Rate (Mbps)	PoE Power (Watts)
300	100	30.00
400	90	15.40
600	60	14.00
800	45	9.50
100	35	7.00
1200	20	5.00
1400	15	0
1600	10	0
1800	3	0
Up to 2200	1	0

Table 1.

The reference performance values in table 1 are based on 24 AWG copper wire (0.5mm diameter, 1-pair, 100 ohm impedance).

Power over Link products

The ED3538T and the ED3538R support PoL when used in a pair, they cannot be used in conjunction with any other Ethernet extender. The ED3538T is the PoL transmitter and the ED3538R is the PoL receiver.



**ED3538T, Hardened 10/100BASE-TX
Ethernet Extender with PoL, Transceiver**



**ED3538R, Hardened 10/100BASE-TX
Ethernet Extender with PoL, Receiver**

Key Features

- PoE up to 1.2km over copper pair wire
- Ethernet extension up to 2.2km
- Rugged design hardened aluminium case
- -40°C to 75°C operating temperature range
- DIN rail & panel mountable (DIN mounting brackets included)
- 48VDC powered (PSU sold separately)
- Redundant power inputs with Terminal Block and DC Jack