

# eXP-S110 PoE Fast Ethernet Extenders

## 10/100 PoE Ethernet Copper Extenders



- Power remote PoE devices across 2-wire twisted pair or coaxial cable
- Extend 10/100Base-TX up to 10,000 feet (3 KM)
- **On-board PoE power controller** for true compatibility with IEEE 802.3af standard
- High-Speed – up to 200 mbps aggregate line rate
- Transparent operation for all Ethernet protocols including 802.1Q VLAN packets and IP video compression schemes
- **Unique PD Reset feature** enables a central site to reset the **remote PoE device without a truck roll**
- Advanced features: Link Pass-Through\*, Interlink Fault Feedback\*, Auto-MDIX and Loopback, Plug and Play - Auto configuration of VDSL

Perle **eXP-S110 PoE Fast Ethernet Extenders** transparently extend Ethernet beyond the general limits of 328ft / 100m **while providing Power over Ethernet (PoE)** to standards-based compliant devices such as IP cameras, VoIP phones and wireless access points.

This technology enables users to transparently **extend up to four 10/100 Power over Ethernet connections** across copper wiring. Use single twisted pair (CAT5/6/7), coax or any existing copper wiring previously used in alarm circuits, E1/T1 circuits, RS-232, RS-422, RS-485, CCTV and CATV applications.

At the central site, the 10/100 Ethernet Extender has full PoE support and **operates as a Powered Device (PD)** under IEEE 802.3af supporting end-span and mid-span power sources (PSE). Alternatively, the unit can be powered by the included 48v adapter. The PoE Ethernet Extender at the central site then transmits power over the copper wire to power the remote PoE Ethernet Extender and attached PD. The remote PoE Ethernet Extenders are **classified as Power Sourcing Equipment (PSE)**. While using standard UTP cables that carry Ethernet data, Perle eXP-S110 PoE Ethernet Extenders **provide up to 15.4 watts of power** to Powered Devices (PDs). For longer distance applications the remote PoE Extender (CPE) can be powered by a local 48v adapter. **Learn more about PoE.**

These simple and effective point to point Ethernet Copper Extenders are perfect for commercial buildings, residential units, hospitality environments, and connecting a remote office or private-network backbone to a corporate LAN ... anywhere you need 10/100 Ethernet communication links for PoE devices **up to 10,000ft (3KM) in distance.**

Perle's advanced features such as Link Pass-Through\* and Interlink Fault Feedback\*, Loopback and remote PD reset\*, enable Network administrators to "see everything" for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a lifetime warranty and free worldwide technical support, make Perle Ethernet Extenders the smart choice for IT professionals. **eXP-S110 PoE Fast Ethernet Extenders** are also available with support for **Extended Temperature Environments.**

# eXP-S110 PoE Fast Ethernet Extender Features

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## Extend Ethernet over twisted pair

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Extend an Ethernet link over category 5e, 6 and 7 cabling up to 10,000 feet (3 km)

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## Extend Ethernet over Coaxial cable

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Extend an Ethernet link over 75 ohm coaxial cable

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## On-board PoE Power Controller

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As a fully compliant IEEE 802.3af PSE end-span device, this Ethernet Extender's PoE power controller provides compliant power provisioning and monitoring, properly sensing through signature detection whether or not the attached ethernet devices are PoE capable or not. This provides a safe connection for both PoE and Non-PoE capable devices.

*Competitive PoE Ethernet Extender products operate as a simple passive power injector and will always apply power to RJ45 port pins which may result in damage if non-PoE compliant Ethernet devices are accidentally attached.*

***Click here for more details***

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## Advanced Power capabilities

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- ALT A/B and legacy PoE RJ45 pin selection
  - Current limiting protection
  - Remote PD reset
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## Fully compliant 802.3af PoE PSE

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- Enable/Disable PSE power
  - PD signature detection
  - Over-Current Protection
  - PD power classification detection (Class 0,1,2,3)
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## Fully Compliant 802.3af/at PoE PD

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Only PoE Ethernet Extender solution that provides a Class 0 or 4 signature to PSE for proper operation with PSE equipment such as Cisco PoE switches.

*Competitive PoE Ethernet extender solutions cannot be powered by Cisco PoE switches as they cannot provide the necessary PoE PD signature required by the switch. Without this, the switch will not supply power at all.*

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## PSE Status Indicator

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A multi-color LED provided presents the status of the PSE function for easy troubleshooting of power over Ethernet connections

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## PD Power Reset (Port 1)

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Ideal for remotely resetting equipment, this configurable function performs a momentary power reset to the attached Powered Device (PD) on Port #1.

Read our **PD Reset Tech Note** for further details on this feature

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## Power Multiplier Selection

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When used with 4-pair cable such as CAT5 on the VDSL Interlink port, an optional internal strap selection on the Ethernet Extender will provide VDSL transmission data on 1 pair and power across the 3 other pairs enabling even greater distances for power transmission to be achieved.

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## Broadest range of PoE devices supported

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Support is included for a broad range of PD (Powered Devices)

- IEEE 802.3af PoE (Alternative A and B)
  - Legacy High Capacitance PDs
  - Cisco legacy VoIP phones and Wireless Access Points
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## High-Speed Performance

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Utilizes second generation VDSL2 technology (ITU-T Recommendation G.993.). When operating under “Profile 30a”, Perle Ethernet Extenders can provide an aggregate VDSL line rate capability of up to 200 mbps.

*Actual distance and performance may vary depending on the type / gauge and condition of the wire used and if required, the amount of power you require across the VDSL Link*

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## Plug and Play operation

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Perle Ethernet Extenders will automatically configure your VDSL interlink connection. The CO/CPE peer association will be determined automatically by the Ethernet Extender. No need to set CO / CPE VDSL pairing.

*Once a connection is made, both ends will automatically adjust relevant VDSL parameters to optimize the level of bandwidth possible across the copper link.*

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## Link Pass-Through

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With Link Pass-Through the state of the 10/100Base-TX Ethernet connection is “passed through” the VDSL link to the 10/100Base-TX Ethernet connection on its remote peer. A managed switch on the remote end can then report the state (link up or link down) to its network management system so that any errors can be detected and recovered early.

*Competitive Ethernet extenders without this feature will never detect or report any error conditions*

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## Interlink Fault Feedback

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Similar to the Link Pass-Through feature, a loss of VDSL link will drop the 10/100 Ethernet port on each end until the link recovers.

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## Auto-Negotiation

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The Ethernet Extender supports auto negotiation on the 10/100Base-TX interface

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## Auto-MDIX

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Auto-MDIX (Automatic Medium-Dependent Interface crossover) detects the signaling on the 10/100 Ethernet RJ45 interface and determines the type of cable connected (straight-through or crossover) and automatically adopts a compatible pinout.

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## Fixed Speed and Duplex

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Some Ethernet equipment require a fixed speed and duplex be used or cannot auto-negotiate. By disabling Auto-Negotiation on the Ethernet Extender, a fixed speed of 10 or 100 mbps as well as Full or half Duplex can be configured through DIP switches.

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## VLAN

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Transparent to tagged VLAN (802.1Q) packets.

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## Transparent to IP Video compression protocols

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Fully transparent to such IP video compression schemes such as MPEG-4, H.264 and MJPEG.

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## Power Strain Relief strap

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A strain relief strap is provided to ensure a solid and secure power connection to the Ethernet Extender. Ideal for areas that may be exposed to vibration.

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## Loopback

When enabled, will perform a loopback on the copper VDSL Interlink.

\*Available on 1 port models.

| Specifications                                                                   |                                                  |                                                                                    |                                                                                                                                                                                                  |                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lifetime limited warranty                                                        | Reach, RoHS and WEEE Compliant                   | HTSUS Number:<br>8517.62.0020                                                      | UNSPSC Code:<br>43222608                                                                                                                                                                         | ECCN:<br>5A991                                                                                                                                                                                   |
|  |                                                  |  |                                                                                                                                                                                                  |                                                                                                                                                                                                  |
|                                                                                  | Remote (Power over Ethernet)                     |                                                                                    | Local (power over link - VDSL)                                                                                                                                                                   |                                                                                                                                                                                                  |
| Power                                                                            |                                                  |                                                                                    |                                                                                                                                                                                                  |                                                                                                                                                                                                  |
| Unit Powered by                                                                  | <b>eXP-1S110E</b><br>Local power adapter or VDSL | <b>eXP-4S110E</b><br>Local power adapter or VDSL                                   | <b>eXP-1S110L</b> <ul style="list-style-type: none"><li>Local power adapter or</li><li>PoE Power Sourcing Equipment such as a Cisco PoE+ Switch on port #1</li><li>PoE+ power injector</li></ul> | <b>eXP-4S110L</b> <ul style="list-style-type: none"><li>Local power adapter or</li><li>PoE Power Sourcing Equipment such as a Cisco PoE+ Switch on port #1</li><li>PoE+ power injector</li></ul> |
| Provides Power to:                                                               | <b>eXP-1S110E</b><br>Ethernet                    | <b>eXP-4S110E</b><br>Ethernet                                                      | <b>eXP-1S110L</b><br>Link (VDSL Interlink)                                                                                                                                                       | <b>eXP-4S110L</b><br>Link (VDSL Interlink)                                                                                                                                                       |

|                                           |                                                                                                                     |                                                                                  |                                               |                                               |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Power adapter connector                   | Barrel or terminal block                                                                                            |                                                                                  |                                               |                                               |
| Input Voltage Range from adapter          | <b>eXP-1S110E</b><br>46V to 57                                                                                      | <b>eXP-4S110E</b><br>46V to 57                                                   | <b>eXP-1S110L</b><br>29 to 57                 | <b>eXP-4S110L</b><br>29 to 57                 |
| Input Voltage Range from VDSL (parasitic) | <b>eXP-1S110E</b><br>24 to 57                                                                                       | <b>eXP-4S110E</b><br>24 to 57                                                    | <b>eXP-1S110L</b><br>N/A                      | <b>eXP-4S110L</b><br>N/A                      |
| Universal AC Adapter                      | 48vDC, 60 watts is included when purchased an individual basis. One 48vDC 60 watts adapter is provided in each kit. |                                                                                  |                                               |                                               |
| Power Connectors                          | 5.5mm x 9.5mm x 2.1mm barrel socket and 2 pin terminal Block                                                        |                                                                                  |                                               |                                               |
|                                           | <b>Remote (Power over Ethernet)</b>                                                                                 |                                                                                  | <b>Local (power over link - VDSL)</b>         |                                               |
| Ethernet                                  |                                                                                                                     |                                                                                  |                                               |                                               |
| 10/100Base TX Port(s)                     | <b>eXP-1S110E</b><br>1 port RJ45<br>Shielded                                                                        | <b>eXP-4S110E</b><br>4 port RJ45<br>Shielded                                     | <b>eXP-1S110L</b><br>1 port RJ45<br>Shielded  | <b>eXP-4S110L</b><br>4 port RJ45<br>Shielded  |
| Auto-MDIX                                 | Auto-MDIX enables proper operation with either straight-through or crossover cabling                                |                                                                                  |                                               |                                               |
| Distance                                  | Distance up to 100 meters (328 feet) as per IEEE 802.3                                                              |                                                                                  |                                               |                                               |
| Maximum Frame Size                        | 1522                                                                                                                |                                                                                  |                                               |                                               |
| Type of PoE device                        | <b>eXP-1S110E</b><br>PSE (PoE) IEEE 802.3af                                                                         | <b>eXP-4S110E</b><br>PSE (PoE) IEEE 802.3af                                      | <b>eXP-1S110L</b><br>PD (Class 0 or 4 device) | <b>eXP-4S110L</b><br>PD (Class 0 or 4 device) |
| PoE PSE Maximum Power (Watts)             | <b>eXP-1S110E</b><br>Refer to the <b>Power Reach Installation Planning Guide</b>                                    | <b>eXP-4S110E</b><br>Refer to the <b>Power Reach Installation Planning Guide</b> | <b>eXP-1S110L</b><br>N/A                      | <b>eXP-4S110L</b><br>N/A                      |

| PoE PSE RJ45 Cable Pinout                                                                                                                                                                                                                                                   | <table><tr><th>eXP-1S110E</th><th>eXP-4S110E</th><th>eXP-1S110L</th><th>eXP-4S110L</th></tr><tr><td><ul style="list-style-type: none"><li>Alternative A (default) on all ports Pins 3,6 Neg, Pins 1,2 Pos</li><li>Alternative B: selectable on port #1 Pins 7,8 Neg, Pins 4,5 Pos</li><li>Legacy Cisco Pre-Standard: selectable on port #1 Pins 7,8 Pos, Pins 4,5 Neg</li></ul></td><td><ul style="list-style-type: none"><li>Alternative A (default) on all ports Pins 3,6 Neg, Pins 1,2 Pos</li><li>Alternative B: selectable on port #1 Pins 7,8 Neg, Pins 4,5 Pos</li><li>Legacy Cisco Pre-Standard: selectable on port #1 Pins 7,8 Pos, Pins 4,5 Neg</li></ul></td><td>N/A</td><td>N/A</td></tr></table> | eXP-1S110E | eXP-4S110E | eXP-1S110L | eXP-4S110L | <ul style="list-style-type: none"><li>Alternative A (default) on all ports Pins 3,6 Neg, Pins 1,2 Pos</li><li>Alternative B: selectable on port #1 Pins 7,8 Neg, Pins 4,5 Pos</li><li>Legacy Cisco Pre-Standard: selectable on port #1 Pins 7,8 Pos, Pins 4,5 Neg</li></ul> | <ul style="list-style-type: none"><li>Alternative A (default) on all ports Pins 3,6 Neg, Pins 1,2 Pos</li><li>Alternative B: selectable on port #1 Pins 7,8 Neg, Pins 4,5 Pos</li><li>Legacy Cisco Pre-Standard: selectable on port #1 Pins 7,8 Pos, Pins 4,5 Neg</li></ul> | N/A | N/A |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|
| eXP-1S110E                                                                                                                                                                                                                                                                  | eXP-4S110E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | eXP-1S110L | eXP-4S110L |            |            |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                             |     |     |
| <ul style="list-style-type: none"><li>Alternative A (default) on all ports Pins 3,6 Neg, Pins 1,2 Pos</li><li>Alternative B: selectable on port #1 Pins 7,8 Neg, Pins 4,5 Pos</li><li>Legacy Cisco Pre-Standard: selectable on port #1 Pins 7,8 Pos, Pins 4,5 Neg</li></ul> | <ul style="list-style-type: none"><li>Alternative A (default) on all ports Pins 3,6 Neg, Pins 1,2 Pos</li><li>Alternative B: selectable on port #1 Pins 7,8 Neg, Pins 4,5 Pos</li><li>Legacy Cisco Pre-Standard: selectable on port #1 Pins 7,8 Pos, Pins 4,5 Neg</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                   | N/A        | N/A        |            |            |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                             |     |     |
| VDSL – Interlink                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |            |            |            |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                             |     |     |
| RJ45, BNC, Terminal Block                                                                                                                                                                                                                                                   | <p>Ethernet Extenders must be connected in pairs using unconditioned wire. Circuits that run through signal equalization equipment are not permitted. TIP and RING are polarity insensitive. Surge suppression of 400 volts between TIP and RING. Choice of RJ45, BNC or terminal block models for VDSL link connector:</p> <ul style="list-style-type: none"><li>RJ45 – RING pin 4, TIP pin 5 (TIA 568 A/B)</li><li>BNC – Coaxial 50 and 75 ohm cable with BNC connector</li><li>Terminal Block – 2 position screw connectors for use with twisted pair telephone, alarm or serial cabling between 19 (0.9 mm) and 26 AWG (0.44 mm).</li></ul>                                                               |            |            |            |            |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                             |     |     |

|                                                    |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                        |                                                                                                                                                        |                                                                                                                                                        |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Injection over the Interlink (VDSL) – 2-wire | <b>eXP-1S110E</b><br>N/A                                                                                                                                                                                                                                                                  | <b>eXP-4S110E</b><br>N/A                                                                                                                                                                                               | <b>eXP-1S110L</b><br>Injects SELV compliant voltage and VDSL data across a single pair of cooper wires (pins 4 and 5) or 2 conductor BNC coaxial cable | <b>eXP-4S110L</b><br>Injects SELV compliant voltage and VDSL data across a single pair of cooper wires (pins 4 and 5) or 2 conductor BNC coaxial cable |
| Short Circuit Protection                           | <b>eXP-1S110E</b><br>N/A                                                                                                                                                                                                                                                                  | <b>eXP-4S110E</b><br>N/A                                                                                                                                                                                               | <b>eXP-1S110L</b><br>Short Circuit protection provided                                                                                                 | <b>eXP-4S110L</b><br>Short Circuit protection provided                                                                                                 |
| Reverse Polarity Protection                        | <b>eXP-1S110E</b><br>The voltage from the VDSL link requires proper polarity in order to provide power to the remote extender. Reverse polarity protection however will ensure that there is no damage to the extender                                                                    | <b>eXP-4S110E</b><br>The voltage from the VDSL link requires proper polarity in order to provide power to the remote extender. Reverse polarity protection however will ensure that there is no damage to the extender | <b>eXP-1S110L</b><br>N/A                                                                                                                               | <b>eXP-4S110L</b><br>N/A                                                                                                                               |
| Power Multiplier Selection                         | When used with 4-pair cable such as CAT5 on the VDSL Interlink port, an optional internal strap selection on the Ethernet Extender will provide VDSL transmission data on 1 pair and power across the 3 other pairs enabling even greater distances for power transmission to be achieved |                                                                                                                                                                                                                        |                                                                                                                                                        |                                                                                                                                                        |

## VDSL2 Line Rate/Reach

Actual distance and rates experienced will depend on condition and gauge of wire used. This Rate/Reach table applies to 24 AWG (0.5 MM) twisted pair wiring on RJ45 (RJ) and terminal block (TB) models

### High Speed Asymmetric

| Reach (Distance) |        | VDSL Rate (Mbps) |          |
|------------------|--------|------------------|----------|
| feet             | meters | Downstream       | Upstream |
| 500              | 152    | 101              | 92       |
| 1000             | 305    | 101              | 63       |
| 1500             | 457    | 90               | 38       |
| 2000             | 610    | 62               | 24       |
| 2500             | 762    | 55               | 10       |
| 3000             | 914    | 42               | 5        |
| 3500             | 1000   | 35               | 3        |

### High Speed Symmetric

| Reach (Distance) |        | VDSL Rate (Mbps) |          |
|------------------|--------|------------------|----------|
| feet             | meters | Downstream       | Upstream |
| 500              | 152    | 101              | 101      |
| 1000             | 305    | 85               | 101      |
| 1500             | 457    | 62               | 47       |
| 2000             | 610    | 60               | 29       |
| 2500             | 762    | 44               | 14       |
| 3000             | 914    | 30               | 7        |
| 3500             | 1000   | 29               | 4        |

### Long Reach Symmetric

| Reach (Distance) |        | VDSL Rate (Mbps) |          |
|------------------|--------|------------------|----------|
| feet             | meters | Downstream       | Upstream |
| 500              | 152    | 53               | 44       |
| 1000             | 305    | 53               | 43       |
| 2500             | 762    | 39               | 18       |
| 4000             | 1219   | 25               | 4        |
| 5500             | 1676   | 17               | 1.9      |
| 7000             | 2134   | 8                | 2.3      |
| 7500             | 2286   | 7                | 2.2      |
| 8000             | 2438   | 5                | 2.2      |

#### Long Reach Asymmetric

| Reach (Distance) |        | VDSL Rate (Mbps) |          |
|------------------|--------|------------------|----------|
| feet             | meters | Downstream       | Upstream |
| 500              | 152    | 78               | 16       |
| 1000             | 305    | 78               | 16       |
| 2500             | 762    | 55               | 10       |
| 4000             | 1219   | 31               | 0.8      |
| 5500             | 1676   | 20               | 0.6      |
| 7000             | 2134   | 11               | 0.6      |
| 7500             | 2286   | 10               | 0.6      |
| 8000             | 2438   | 8                | 0.6      |

This table applies when the power multiplier option is selected

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Budget | <p>The amount of available power at the PoE PD is dependent on the scenario planned.</p> <p>Refer to the <b>Power Reach Installation Planning Guide</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|              | <div>Remote (Power over Ethernet)</div> <div>Local (power over link - VDSL)</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Indicators   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Power / TST  | <p>This green LED is turned on when power is applied to the Ethernet Extender. Otherwise it is off. The LED will blink when in Loopback test mode.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| CO - Local   | <p>Ethernet Extender is operating in CO VDSL mode</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| CPE - remote | <p>Ethernet Extender is operating in CPE VDSL mode</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ILNK         | <p>Indicates Link Status and activity on the Interlink (VDSL) port</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ETH          | <p>Indicates link status and activity on Ethernet port(s).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| PSE Status   | <p>This LED will signify the status of the PSE function. Using multi-color and blinking the unit will show the following status for the PSE;</p> <p>GREEN — Solid: The PSE has successfully detected a compliant PD and is applying power over the UTP (for legacy pin out simply show active power when applied)</p> <p>YELLOW — Solid: The PSE is not active. This means the PSE has been configured to provide power, but the PD is :</p> <ul style="list-style-type: none"> <li>• Not connected</li> <li>• Has not detected a compliant PD and is not applying power</li> <li>• PSE has turned off power for Reset function</li> </ul> <p>OFF — PSE function switch disabled</p> <p>RED — Blinking: Error Conditions</p> <ul style="list-style-type: none"> <li>• Capacitance too High — 1 blink</li> <li>• Resistance too Low or short circuit — 2 blinks</li> <li>• Resistance too high or open circuit — 3 blinks</li> </ul> |
| Switches     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Access       | <p>Switch settings are accessible through a side opening in the chassis</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Rate/Reach   | <p>Two switches enable the user to select the right balance between speed and distance for their environment.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signal to Noise Ratio           | Selectable Signal to Noise Ratio (SNR) of 6dB or 9dB. The higher SNR number provides better impulse noise protection but lowers performance.                                                                                                                                                                                                                                                                 |
| Auto-Negotiation (802.3u)       | <ul style="list-style-type: none"> <li>• <i>Enabled (Default)</i> - The Ethernet Extender uses 802.3u Auto-negotiation on the 10/100Base-TX interface. It is set to advertise full duplex.</li> <li>• <i>Disabled</i> - The Ethernet Extender sets the port according to the position of the speed and duplex switches.</li> </ul>                                                                           |
| Force Ethernet Speed on Port 1  | When Auto-Negotiation switch is disabled, a fixed speed can be forced on port 1 to 100 (Default) or 10                                                                                                                                                                                                                                                                                                       |
| Force Ethernet Duplex on Port 1 | When Auto-Negotiation switch is disabled, Full or half Duplex can be forced on port 1 to Full (Default) or Half                                                                                                                                                                                                                                                                                              |
| Link Mode                       | <ul style="list-style-type: none"> <li>• <i>Standard (Default)</i> - The 10/100Base-TX link remains active independent of the state of the Ethernet link on its remote peer.</li> <li>• <i>Link Pass-Through</i> - state of the 10/100Base-TX Ethernet connection is "passed through" or propagated across the VDSL link to the 10/100Base-TX Ethernet link on its remote Ethernet Extender peer.</li> </ul> |
| Interlink Fault Feedback        | <ul style="list-style-type: none"> <li>• <i>Enabled</i> – A loss of VDSL link will drop the 10/100 Ethernet port on each end until the link recovers</li> <li>• <i>Disabled (Default)</i> - The state of the VDSL link is not propagated to the 10/100Base-TX port</li> </ul>                                                                                                                                |
| Loopback                        | <ul style="list-style-type: none"> <li>• <i>Enabled</i> – The VDSL interlink will perform a loopback function, retransmitting all received Ethernet frames back to its remote peer.</li> <li>• <i>Disabled (Default - Up)</i></li> </ul>                                                                                                                                                                     |
|                                 | <div>Remote (Power over Ethernet)</div> <div>Local (power over link - VDSL)</div>                                                                                                                                                                                                                                                                                                                            |

|                        |                          |                          |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                               |
|------------------------|--------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PoE PD Class selection | <b>eXP-1S110E</b><br>N/A | <b>eXP-4S110E</b><br>N/A | <b>eXP-1S110L</b><br>(Internal strap)<br>for PoE PD<br>classification<br>type<br>identification for<br>attached IEEE<br>802.3at<br>compliant PoE+<br>switch on port<br>#1<br><br>Class 0 – PoE<br>PD device -<br>0.44-12.94W<br>(Default)<br><br>Class 4 – PoE+<br>PD device 12.95<br>– 25.5W | <b>eXP-4S110L</b><br>(Internal strap)<br>for PoE PD<br>classification<br>type<br>identification for<br>attached IEEE<br>802.3at<br>compliant PoE+<br>switch on port<br>#1<br><br>Class 0 – PoE<br>PD device -<br>0.44-12.94W<br>(Default)<br><br>Class 4 – PoE+<br>PD device 12.95<br>– 25.5W |
|------------------------|--------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                              |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                |                   |                   |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|
| PD Reset (Port 1)            | <b>eXP-1S110E</b>                                                                                                                                                                                                                                                                                                                                                              | <b>eXP-4S110E</b>                                                                                                                                                                                                                                                                                                                                                              | <b>eXP-1S110L</b> | <b>eXP-4S110L</b> |
|                              | When enabled (down), the Ethernet Extender will upon loss of link on the VDSL Interlink port, turn off PSE output power to the PD device for 2 seconds then turn the power back on. The power remains on until the VDSL link transitions from up to down again.<br><br>When PD Power Reset is disabled (default), loss of VDSL link has no effect on power supplied to the PD. | When enabled (down), the Ethernet Extender will upon loss of link on the VDSL Interlink port, turn off PSE output power to the PD device for 2 seconds then turn the power back on. The power remains on until the VDSL link transitions from up to down again.<br><br>When PD Power Reset is disabled (default), loss of VDSL link has no effect on power supplied to the PD. | N/A               | N/A               |
| Environmental Specifications |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                |                   |                   |
| Operating Temperature        | 0°C to 50°C (-32°F to 122°F)                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                |                   |                   |
| Storage Temperature          | minimum range of -25°C to 70°C (-13°F to 158°F)                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                |                   |                   |
| Operating Humidity           | 5% to 90% non-condensing                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                |                   |                   |
| Storage Humidity             | 5% to 95% non-condensing                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                |                   |                   |
| Operating Altitude           | Up to 3,048 meters (10,000 feet)                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                |                   |                   |

|                                     | Remote (Power over Ethernet)                       |                                       | Local (power over link - VDSL)        |                                       |
|-------------------------------------|----------------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Current mA                          | <b>eXP-1S110E</b><br>108 @ 48vdc                   | <b>eXP-4S110E</b><br>121 @ 48vdc      | <b>eXP-1S110L</b><br>129 @ 48vdc      | <b>eXP-4S110L</b><br>142 @ 48vdc      |
| Unit Power Consumption watts        | <b>eXP-1S110E</b><br>5.2                           | <b>eXP-4S110E</b><br>5.8              | <b>eXP-4S110L</b><br>6.2              | <b>eXP-1S110L</b><br>6.8              |
| Heat Output (BTU/HR)                | <b>eXP-1S110E</b><br>17.74                         | <b>eXP-4S110E</b><br>19.79            | <b>eXP-1S110L</b><br>21.16            | <b>eXP-4S110L</b><br>23.20            |
| MTBF with power adapter (Hours)*    | <b>eXP-1S110E</b><br>185,061 Hours                 | <b>eXP-4S110E</b><br>169,935 Hours    | <b>eXP-1S110L</b><br>199,390 Hours    | <b>eXP-4S110L</b><br>182,735 Hours    |
| MTBF without power adapter (Hours)* | <b>eXP-1S110E</b><br>300,472 Hours                 | <b>eXP-4S110E</b><br>262,530 Hours    | <b>eXP-1S110L</b><br>340,165 Hours    | <b>eXP-4S110L</b><br>294,389 Hours    |
|                                     | Calculation model based on MIL-HDBK-217-FN2 @ 30°C |                                       |                                       |                                       |
| Mounting                            |                                                    |                                       |                                       |                                       |
| Wall/Desk                           | Standard                                           |                                       |                                       |                                       |
| Din Rail Kit                        | Optional                                           |                                       |                                       |                                       |
| Rack Mount Kit                      | Optional                                           |                                       |                                       |                                       |
|                                     | Remote (Power over Ethernet)                       |                                       | Local (power over link - VDSL)        |                                       |
| Product Weight and Dimensions       |                                                    |                                       |                                       |                                       |
| Weight                              | <b>eXP-1S110E</b><br>0.58 Kg, 1.3 lbs              | <b>eXP-4S110E</b><br>0.61Kg, 1.34 lbs | <b>eXP-1S110L</b><br>0.58 Kg, 1.3 lbs | <b>eXP-1S110L</b><br>0.61Kg, 1.34 lbs |
| Dimensions                          | 163 x 116 x 37 mm, 6.4 x 4.6 x 1.46 inches         |                                       |                                       |                                       |
|                                     | Remote (Power over Ethernet)                       |                                       | Local (power over link - VDSL)        |                                       |

|                      |                                                                                                                                                                                                                                                                     |                                       |                                       |                                       |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Packaging            |                                                                                                                                                                                                                                                                     |                                       |                                       |                                       |
| Shipping Weight      | <b>eXP-1S110E</b><br>1.27 Kg, 2.8 lbs                                                                                                                                                                                                                               | <b>eXP-4S110E</b><br>1.3 Kg, 2.86 lbs | <b>eXP-1S110L</b><br>1.27 Kg, 2.8 lbs | <b>eXP-1S110L</b><br>1.3 Kg, 2.86 lbs |
| Shipping Dimensions  | 20 x 30 x 7 cm, 7.9 x 11.8 x 2.8 inches                                                                                                                                                                                                                             |                                       |                                       |                                       |
| Regulatory Approvals |                                                                                                                                                                                                                                                                     |                                       |                                       |                                       |
| Emissions            | <ul style="list-style-type: none"><li>• CISPR 32 / EN 55032</li><li>• IEC/EN 61000-3-2</li><li>• IEC/EN 61000-3-3</li></ul>                                                                                                                                         |                                       |                                       |                                       |
| Immunity             | <ul style="list-style-type: none"><li>• CISPR 35 / EN 55035</li><li>• IEC/EN 61000-4-2</li><li>• IEC/EN 61000-4-3</li><li>• IEC/EN 61000-4-4</li><li>• IEC/EN 61000-4-5</li><li>• IEC/EN 61000-4-6</li><li>• IEC/EN 61000-4-8</li><li>• IEC/EN 61000-4-11</li></ul> |                                       |                                       |                                       |
| Electrical Safety    | <ul style="list-style-type: none"><li>• UL/EN/IEC 62368-1</li><li>• CAN/CSA C22.2 No. 62368-1</li><li>• UL 60950-1</li><li>• IEC 60950-1(ed 2); am1, am2</li><li>• EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013</li><li>• CE</li></ul>                         |                                       |                                       |                                       |

## Product List



**eXP-1S110L-RJ - Fast Ethernet PoE Ethernet Extender - Provides power over VDSL Link.** 1 port 10/100Base-TX (RJ-45). RJ45 Interlink ( VDSL2 ) connector. 48V 65W adapter included

### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004224 | 06004221 | 06004222 | 06004225 | 06004226 |



**eXP-1S110E-RJ - Fast Ethernet PoE Ethernet Extender - Provides power over Ethernet as a PSE.** 1 port 10/100Base-TX (RJ-45). RJ45 Interlink ( VDSL2 ) connector. 48V 65W adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004584 | 06004581 | 06004582 | 06004585 | 06004586 |



**eXP-KIT11-S110-RJ Fast Ethernet PoE Ethernet Extender Kit.** Includes 1 x eXP-1S110L-RJ PoE ethernet extender, 1 x eXP-1S110E-RJ PoE ethernet extender and 1 x 48V 65W Adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004944 | 06004941 | 06004942 | 06004945 | 06004946 |



**eXP-1S110L-BNC - Fast Ethernet PoE Ethernet Extender - Provides power over VDSL Link.** 1 port 10/100Base-TX (RJ-45). BNC Interlink ( VDSL2 ) connector. 48V 65W adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004234 | 06004231 | 06004232 | 06004235 | 06004236 |



**eXP-1S110E-BNC - Fast Ethernet PoE Ethernet Extender - Provides power over Ethernet as a PSE.** 1 port 10/100Base-TX (RJ-45). BNC Interlink ( VDSL2 ) connector. 48V 65W adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004594 | 06004591 | 06004592 | 06004595 | 06004596 |



**eXP-KIT11-S110-BNC Fast Ethernet PoE Ethernet Extender Kit.** Includes 1 x eXP-1S110L-BNC PoE ethernet extender, 1 x eXP-1S110E-BNC PoE ethernet extender and 1 x 48V 65W Adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004954 | 06004951 | 06004952 | 06004955 | 06004956 |



**eXP-1S110L-TB - Fast Ethernet PoE Ethernet Extender - Provides power over VDSL Link.** 1 port 10/100Base-TX (RJ-45). Terminal Block Interlink ( VDSL2 ) connector. 48V 65W adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004244 | 06004241 | 06004242 | 06004245 | 06004246 |



**eXP-1S110E-TB - Fast Ethernet PoE Ethernet Extender - Provides power over Ethernet as a PSE.** 1 port 10/100Base-TX (RJ-45). Terminal Block Interlink ( VDSL2 ) connector. 48V 65W adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004604 | 06004601 | 06004602 | 06004605 | 06004606 |



**eXP-KIT11-S110-TB Fast Ethernet PoE Ethernet Extender Kit.** Includes 1 x eXP-1S110L-TB PoE ethernet extender, 1 x eXP-1S110E-TB PoE ethernet extender and 1 x 48V 65W Adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004964 | 06004961 | 06004962 | 06004965 | 06004966 |



**eXP-4S110E-RJ - Fast Ethernet PoE Ethernet Extender - Provides power over Ethernet as a PSE.** 4 port 10/100Base-TX (RJ-45). RJ45 Interlink ( VDSL2 ) connector. 48V 65W adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004704 | 06004701 | 06004702 | 06004705 | 06004706 |



**eXP-4S110E-BNC - Fast Ethernet PoE Ethernet Extender -Provides power over Ethernet as a PSE.** 4 port 10/100Base-TX (RJ-45). BNC Interlink ( VDSL2 ) connector. 48V 65W adapter included

#### Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004714 | 06004711 | 06004712 | 06004715 | 06004716 |



**eXP-4S110E-TB - Fast Ethernet PoE Ethernet Extender - Provides power over Ethernet as a PSE.** 4 port 10/100Base-TX (RJ-45). Terminal Block Interlink ( VDSL2 ) connector. 48V 65W adapte included

Power Cord & Part Number(s)

| USA      | UK       | EU       | SA       | AUS      |
|----------|----------|----------|----------|----------|
| 06004724 | 06004721 | 06004722 | 06004725 | 06004726 |

Related Accessories

Accessories



DIN Rail Mounting Kit for 4 & 8 port IOLAN desktop models, all Stand-Alone Media Converters and all Stand-alone Ethernet Extenders. Two of these brackets are required for the 8 port STS8-D model.

04030840



Standalone media converter wall / rack mount bracket

05059999