eXP-S1110PE PoE+ Gigabit Ethernet Extenders

10/100/1000 PoE+ Ethernet Copper Extenders

- Extends 10/100/1000Base-T up to 10,000 feet (3 KM)
- Power remote PoE+ devices across 2-wire twisted pair or coaxial cable
- **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-S1110PE PoE+ Gigabit 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 10/100/1000 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.

These PoE+ Ethernet Extenders are **classified as Power Sourcing Equipment (PSE)**. While using standard UTP cables that carry Ethernet data, Perle eXP-S1110PE PoE Ethernet Extenders **provide up to 30 watts of power** to Powered Devices (PDs). **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 10/100/1000 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-S1110PE PoE+ Gigabit Ethernet Extenders** are also available with support for **PoE**.

eXP-S1110PE PoE+ Gigabit Ethernet Extender Features

Extend Ethernet over twisted pair

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

Extend Ethernet over Coaxial cable

Extend an Ethernet link over 75 ohm coaxial cable

On-board PoE Power Controller

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 attach 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 accidently attached.

Click here for more details

Advanced Power capabilities

- ALT A/B and legacy PoE/PoE+ RJ45 pin selection
- Current limiting protection
- Remote PD reset

Fully compliant 802.3af PoE and 802.3at POE+ PSE

- Enable/Disable PSE power
- PD signature detection
- Over-Current Protection
- PD power classification detection (Class 0,1,2,3)

PSE Status Indicator

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

PD Power Reset (Port 1)

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

Broadest range of PoE devices supported

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

- IEEE 802.3af, 802.3at PoE/PoE+ (Alternative A and B)
- Legacy High Capacitance PDs
- Cisco legacy VoIP phones and Wireless Access Points

High-Speed Performance

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

Plug and Play operation

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.

Link Pass-Through*

With Link Pass-Through the state of the 10/100/1000Base-T Ethernet connection is “passed through” the VDSL link to the 10/100/1000Base-T 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

Interlink Fault Feedback*

Similar to the Link Pass-Through feature, a loss of VDSL link will drop the 10/100/1000 Ethernet port on each end until the link recovers.

Auto-Negotiation

The Ethernet Extender supports auto negotiation on the 10/100/1000Base-T interface.

Auto-MDIX

Auto-MDIX (Automatic Medium-Dependent Interface crossover) detects the signaling on the 10/100/1000 Ethernet RJ45 interface and determines the type of cable connected (straight-through or crossover) and automatically adopts a compatible pinout.

Fixed Speed and Duplex

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.

VLAN

Transparent to tagged VLAN (802.1Q) packets.

Transparent to IP Video compression protocols

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

Power Strain Relief strap

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.

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:** 8517.62.0020	**UNSPSC Code:** 43222608	**ECCN:** 5A991

Power		
Unit Powered by	Local power adapter	
Provides Power to	**E**thernet	
Power adapter connector	Barrel or terminal block	
Input Voltage Range from adapter	46V to 57	
Input Voltage Range from VDSL (parasitic)	24 to 57	
Universal AC Adapter	56vDC, 75 watt adapter included	
Power Connectors	5.5mm x 9.5mm x 2.1mm barrel socket and 2 pin terminal Block	
Ethernet		
10/100/1000Base-T Port(s)	**eXP-1S1110PE** 1 port RJ45 Shielded	**eXP-4S1110PE** 4 port RJ45 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	Type 2 PSE (PoE+) IEEE 802.3at	
PoE PSE Maximum Power (Watts)	Refer to the **Power Reach Installation Planning Guide**	
PoE PSE RJ45 Cable Pinout	Alternative A (default) on all ports: Pins 3,6 Neg, Pins 1,2 Pos Alternative B: selectable on port #1: Pins 7,8 Neg, Pins 4,5 Pos Legacy Cisco Pre-Standard: selectable on port #1: Legacy Cisco Pre-Standard: selectable on port #1:	

VDSL – Interlink	
RJ45, BNC, Terminal Block	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: • RJ45 – RING pin 4, TIP pin 5 (TIA 568 A/B) • BNC – Coaxial 50 and 75 ohm cable with BNC connector • 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).

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

Power Budget	The amount of available power at the PoE PD is dependent on the scenario planned. Refer to the **Power Reach Installation Planning Guide**

Indicators	
Power / TST	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.
CO - Local	Ethernet Extender is operating in CO VDSL mode
CPE - remote	Ethernet Extender is operating in CPE VDSL mode
ILNK	Indicates Link Status and activity on the Interlink (VDSL) port
ETH	Indicates link status and activity on Ethernet port(s).
PSE Status	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; 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) YELLOW — Solid: The PSE is not active. This means the PSE has been configured to provide power, but the PD is : • Not connected • Has not detected a compliant PD and is not applying power • PSE has turned off power for Reset function OFF — PSE function switch disabled RED — Blinking: Error Conditions • Capacitance too High — 1 blink • Resistance too Low or short circuit — 2 blinks • Resistance too high or open circuit — 3 blinks
Switches	
Access	Switch settings are accessible through a side opening in the chassis
Rate/Reach	Two switches enable the user to select the right balance between speed and distance for their environment.
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) control on Port 1	• *Enabled (Default)* - The Ethernet Extender uses 802.3u Auto-negotiation on the 10/100/1000Base-T interface. It is set to advertise full duplex. • *Disabled* - The Ethernet Extender sets the port according to the position of the speed and duplex switches.
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*	• Standard (Default) – The 10/100/1000Base-T link remains active independent of the state of the Ethernet link on its remote peer. • *Link Pass-Through* - state of the 10/100/1000Base-T Ethernet connection is “passed through” or propagated across the VDSL link to the 10/100/1000Base-T Ethernet link on its remote Ethernet Extender peer
Interlink Fault Feedback*	• *Enabled* – A loss of VDSL link will drop the 10/100/1000 Ethernet port on each end until the link recovers • *Disabled (Default)* - The state of the VDSL link is not propagated to the 10/100/1000Base-T port
Loopback	• *Enabled* – The VDSL interlink will perform a loopback function, retransmitting all received Ethernet frames back to its remote peer. • *Disabled (Default - Up)*
PD Reset (Port 1)	• 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. • When PD Power Reset is disabled (default), loss of VDSL link has no effect on power supplied to the PD.
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)	
Current mA	**eXP-1S1110PE** 114 @ 56vdc	**eXP-4S1110PE** 163 @ 56vdc
Unit Power Consumption watts	**eXP-1S1110PE** 6.4	**eXP-4S1110PE** 9.1
Heat Output (BTU/HR)	**eXP-1S1110PE** 21.84	**eXP-4S1110PE** 31.05
MTBF with power adapter (Hours)**	**eXP-1S1110PE** 75,029 Hours	**eXP-4S1110PE** 72,416 Hours
MTBF without power adapter (Hours)**	**eXP-1S1110PE** 300,472 Hours	**eXP-4S1110PE** 262,530 Hours
	**MTBF Calculation model based on MIL-HDBK-217-FN2 @ 30°C*	
Mounting		
Wall/Desk	Standard	
Din Rail Kit	Optional	
Rack Mount Kit	Optional	
Product Weight and Dimensions		
Weight	**eXP-1S1110PE** 0.58 Kg, 1.3 lbs	**eXP-4S1110PE** 0.61Kg, 1.34 lbs
Dimensions	163 x 116 x 37 mm, 6.4 x 4.6 x 1.46 inches	

Packaging		
Shipping Weight	**eXP-1S1110PE** 1.27 Kg, 2.8 lbs	**eXP-4S1110PE** 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	• CISPR 32:2015/EN 55032:2015 (Class A) • IEC/EN 61000-3-2 • IEC/EN 61000-3-3	
Immunity	• CISPR 35/EN 55035 • IEC/EN 61000-4-2 • IEC/EN 61000-4-3 • IEC/EN 61000-4-4 • IEC/EN 61000-4-5 • IEC/EN 61000-4-6 • IEC/EN 61000-4-8 • IEC/EN 61000-4-11	
Electrical Safety	• UL/EN/IEC 62368-1 • CAN/CSA C22.2 No. 62368-1 • UL 60950-1 • IEC 60950-1(ed 2); am1, am2 • EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 • CSA C22.2 No. 60950-1	

Product List

eXP-1S1110PE-RJ - Gigabit Ethernet PoE+ Ethernet Extender - Provides power over Ethernet as a PSE. 1 port 10/100/1000Base-T (RJ-45). RJ45 Interlink (VDSL2) connector. 57V 75W PoE+ power adapter included.

Power Cord & Part Number(s)

USA	UK	EU	SA	AUS
06005154	06005151	06005152	06005155	06005156

eXP-1S1110PE-BNC - Gigabit Ethernet PoE+ Ethernet Extender - Provides power over Ethernet as a PSE. 1 port 10/100/1000Base-T (RJ-45). BNC Interlink (VDSL2) connector. 57V 75W PoE+ power adapter included.

Power Cord & Part Number(s)

USA	UK	EU	SA	AUS
06005164	06005161	06005162	06005165	06005166

eXP-1S1110PE-TB - Gigabit Ethernet PoE+ Ethernet Extender - Provides power over Ethernet as a PSE. 1 port 10/100/1000Base-T (RJ-45). Terminal Block Interlink (VDSL2) connector. 57V 75W PoE+ power adapter included.

Power Cord & Part Number(s)

USA	UK	EU	SA	AUS
06005174	06005171	06005172	06005175	06005176

eXP-4S1110PE-RJ - Gigabit Ethernet PoE+ Ethernet Extender - Provides power over Ethernet as a PSE. 4 port 10/100/1000Base-T (RJ-45). RJ45 Interlink (VDSL2) connector. 57V 75W PoE+ power adapter included.

Power Cord & Part Number(s)

USA	UK	EU	SA	AUS
06005274	06005271	06005272	06005275	06005276

eXP-4S1110PE-BNC - Gigabit Ethernet PoE+ Ethernet Extender - Provides power over Ethernet as a PSE. 4 port 10/100/1000Base-T (RJ-45). BNC Interlink (VDSL2) connector. 57V 75W PoE+ power adapter included.

Power Cord & Part Number(s)

USA	UK	EU	SA	AUS
06005284	06005281	06005282	06005285	06005286

eXP-4S1110PE-TB - Gigabit Ethernet PoE+ Ethernet Extender - Provides power over Ethernet as a PSE. 4 port 10/100/1000Base-T (RJ-45). Terminal Block Interlink (VDSL2) connector. 57V 75W PoE+ power adapter included.

Power Cord & Part Number(s)

USA	UK	EU	SA	AUS
06005294	06005291	06005292	06005295	06005296

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