



eX-S1110-XT Gigabit Ethernet Extenders

10/100/1000 Industrial Temperature Copper Extender



- Extends 10/100/1000Base-T Ethernet up to 10,000 feet (3 KM) over 2-wire 24 AWG twisted pair
- Rugged-designed for harsh industrial -40 to 75C temperatures (-40 to 167F)
- Hi-Speed – up to 200+ mbps aggregate bandwidth
- Transparent operation for all Ethernet protocols including 802.1Q VLAN packets and IP video compression schemes
- One or four 10/100/1000 Ethernet ports
- Advanced features: Link Pass-Through*, Interlink Fault Feedback*, Auto-MDIX and Loopback

When you need to extend Ethernet services beyond the general IEEE 802.3 limits of 328ft / 100m in extreme temperatures, and new fiber cabling is cost prohibitive, **Ethernet Extenders** are the perfect solution. Perle Ethernet Extenders **transparently extend** up to four 10/100/1000 **Ethernet connections across copper wiring**. Use **single twisted pair** (CAT5/6/7) or **any existing copper wiring** previously used in alarm circuits, E1/T1 circuits, RS-232, RS-422, RS-485, CCTV and CATV applications.

Equipment found in **traffic management, oil and gas pipelines, weather tracking, industrial and outdoor applications** must function in temperatures that cannot be supported by a commercial based Ethernet Extender. With the ability to operate in **industrial grade temperatures of -40F to +167F (-40C to +75C)** along with a **rugged steel casing**, these simple and effective point to point Ethernet Copper Extenders are ideal to extend the distance between two industrial Ethernet devices subjected to harsh environments and severe temperatures such as security cameras, wireless access points, alarms, traffic controllers, sensors and tracking devices.

Perle's advanced features such as Link Pass-Through*, Interlink Fault Feedback*, and Loopback allow 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. **eX-S1110 Ethernet Extenders** are also available with support for [Commercial Temperature ranges](#) and [high density applications](#).

eX-S1110-XT 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
Hi-Speed Performance	Utilizes second generation VDSL2 technology (ITU-T Recommendation G.993.) . When operating under "Profile 30a", Perle Ethernet extenders can provide an aggregate data rate capability of over 200 mbps. <i>Actual distance and performance may vary depending on the type / gauge and condition of the wire used.</i>
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 ports 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, 100 or 1000 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.

Ethernet	eX-1S1110-XT	eX-4S1110-XT																																																																																																																									
Port	1 port RJ45 – 10/100/1000Base-T - Shielded	4 port RJ45 – 10/100/1000 Base-T - 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	Maximum frame size of 10,240 bytes (Jumbo Frames) - Gigabit Maximum frame size of 2048 bytes - Fast Ethernet																																																																																																																										
VDSL – Interlink																																																																																																																											
RJ45, BNC, Terminal Block	<p><i>TIP and RING are polarity insensitive</i> Choice of RJ45, BNC or terminal block models for VDSL link connector</p> <ul style="list-style-type: none"> • RJ45 – RING pin 4, TIP pin 5 (TIA 568 A/B) • BNC – Coaxial 75 ohm cable with BNC connector • Terminal Block – 2 position screw connectors for use with twisted pair telephone cabling 																																																																																																																										
Cabling	Ethernet Extenders must be connected in pairs using unconditioned wire between 19 (0.9 mm) and 26 AWG (0.44 mm). Circuits that run through signal equalization equipment are not permitted.																																																																																																																										
Rate/Reach	<p>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.</p> <table border="1"> <thead> <tr> <th colspan="4">High Speed Asymmetric (Annex A, Band Plan 998)</th> </tr> <tr> <th colspan="2">Reach (Distance)</th> <th colspan="2">Rate (Mbps)</th> </tr> <tr> <th>feet</th> <th>meters</th> <th>Downstream</th> <th>Upstream</th> </tr> </thead> <tbody> <tr><td>500</td><td>152</td><td>101</td><td>98</td></tr> <tr><td>1000</td><td>305</td><td>101</td><td>63</td></tr> <tr><td>1500</td><td>457</td><td>93</td><td>45</td></tr> <tr><td>2000</td><td>610</td><td>66</td><td>30</td></tr> <tr><td>2500</td><td>762</td><td>54</td><td>12</td></tr> <tr><td>3000</td><td>914</td><td>44</td><td>8</td></tr> <tr><td>3500</td><td>1000</td><td>36</td><td>5</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">High Speed Symmetric (Annex B, Band Plan 997)</th> </tr> <tr> <th colspan="2">Reach (Distance)</th> <th colspan="2">Rate (Mbps)</th> </tr> <tr> <th>feet</th> <th>meters</th> <th>Downstream</th> <th>Upstream</th> </tr> </thead> <tbody> <tr><td>500</td><td>152</td><td>101</td><td>101</td></tr> <tr><td>1000</td><td>305</td><td>101</td><td>81</td></tr> <tr><td>1500</td><td>457</td><td>82</td><td>50</td></tr> <tr><td>2000</td><td>610</td><td>64</td><td>26</td></tr> <tr><td>2500</td><td>762</td><td>53</td><td>10</td></tr> <tr><td>3000</td><td>914</td><td>42</td><td>7</td></tr> <tr><td>3500</td><td>1000</td><td>36</td><td>4</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Long Reach Symmetric (Annex B, Band Plan 997)</th> </tr> <tr> <th colspan="2">Reach (Distance)</th> <th colspan="2">Rate (Mbps)</th> </tr> <tr> <th>feet</th> <th>meters</th> <th>Downstream</th> <th>Upstream</th> </tr> </thead> <tbody> <tr><td>1000</td><td>305</td><td>76</td><td>16</td></tr> <tr><td>2500</td><td>762</td><td>52</td><td>10</td></tr> <tr><td>4000</td><td>1219</td><td>28</td><td>2</td></tr> <tr><td>5500</td><td>1676</td><td>15</td><td>1.5</td></tr> <tr><td>7000</td><td>2134</td><td>8</td><td>1.4</td></tr> <tr><td>8500</td><td>2591</td><td>5</td><td>1.3</td></tr> <tr><td>10000</td><td>3000</td><td>2</td><td>0.9</td></tr> </tbody> </table>			High Speed Asymmetric (Annex A, Band Plan 998)				Reach (Distance)		Rate (Mbps)		feet	meters	Downstream	Upstream	500	152	101	98	1000	305	101	63	1500	457	93	45	2000	610	66	30	2500	762	54	12	3000	914	44	8	3500	1000	36	5	High Speed Symmetric (Annex B, Band Plan 997)				Reach (Distance)		Rate (Mbps)		feet	meters	Downstream	Upstream	500	152	101	101	1000	305	101	81	1500	457	82	50	2000	610	64	26	2500	762	53	10	3000	914	42	7	3500	1000	36	4	Long Reach Symmetric (Annex B, Band Plan 997)				Reach (Distance)		Rate (Mbps)		feet	meters	Downstream	Upstream	1000	305	76	16	2500	762	52	10	4000	1219	28	2	5500	1676	15	1.5	7000	2134	8	1.4	8500	2591	5	1.3	10000	3000	2	0.9
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10000	3000	5	0.5

Power	eX-1S1110-XT	eX-4S1110-XT
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Input Supply Voltage	9 - 30 vDC, unregulated (12 vDC Nominal)	
Current	350ma	
Power Consumption	4.2	
Power Connectors	5.5mm x 9.5mm x 2.1mm barrel socket and 2 pin terminal Block	

Power Adapter	
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Universal AC/DC adapter	Optional Industrial Temperature 100-240v AC, regulated 12V DC adapter
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Indicators	
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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).

Switches	eX-1S1110-XT	eX-4S1110-XT
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Access	All 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)	<p><i>Enabled (Default)</i> - The Ethernet Extender uses 802.3u Auto-negotiation on the 10/100/1000Base-T interface. It is set to advertise full duplex.</p> <p><i>Disabled</i> - The Ethernet Extender sets the port according to the position of the speed and duplex switches.</p>	
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Link Mode	<p><i>Standard (Default)</i> - The 10/100/1000Base-T link remains active independent of the state of the Ethernet link on its remote peer.</p> <p><i>Link Pass-Through</i> - the 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. This enables a managed switch to report the state of the remote device to its network management system.</p>	N/A
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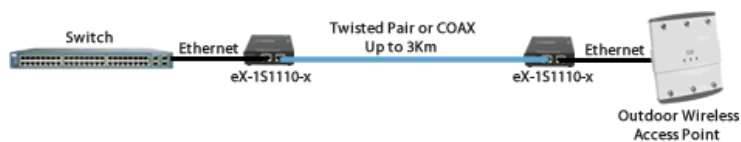
Interlink Fault Feedback	<p><i>Enabled</i> - A loss of VDSL link will drop the 10/100/1000 Ethernet port on each end until the link recovers</p> <p><i>Disabled (Default)</i> - The state of the VDSL link is not propagated to the 10/100/1000Base-T port</p>	N/A
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Loopback	<i>Enabled</i> - The VDSL interlink will perform a loopback function, retransmitting all received Ethernet frames back to its peer.	
	<i>Disabled (Default - Up)</i>	
Set Ethernet Speed (Port 1)	When Auto-Negotiation switch is disabled, fixed speed can be set 1000 (Default) 100 10	
Set Ethernet Duplex (Port 1)	When Auto-Negotiation switch is disabled, Duplex can be set Full (Default) Half	
Environmental Specifications	eX-1S1110-XT	eX-4S1110-XT
Operating Temperature	-40 C to 75 C (-40 F to 167 F)	
Storage Temperature	minimum range of -40 C to 85 C (-40 F to 185 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)	
Heat Output (BTU/HR)	14.3	
Power Consumption (Watts)	4.2	
MTBF (Hours)	Without power adaptor: With power adaptor:	
Mounting		
Din Rail Kit	Optional	
Rack Mount Kit	Optional	
Product Weight and Dimensions		
Weight		
Dimensions		
Packaging		
Shipping Weight		
Shipping Dimensions		
Regulatory Approvals		
Emissions	FCC Part 15 Class A, EN55022 Class A	
	CISPR 22 Class A	
	EN61000-3-2	
Immunity	EN55024	
Electrical Safety	UL 60950-1	
	EN60950	
	CE	
Environmental	RoHS - 2002/95/EC Directive	
	WEEE - 2002/96/EC Directive	
	Reach compliant	
Other	ECCN: 5A991A	
	HTSUS Number: 8517.62.0050	
	Perle Lifetime warranty	

*Available on 1 port models.

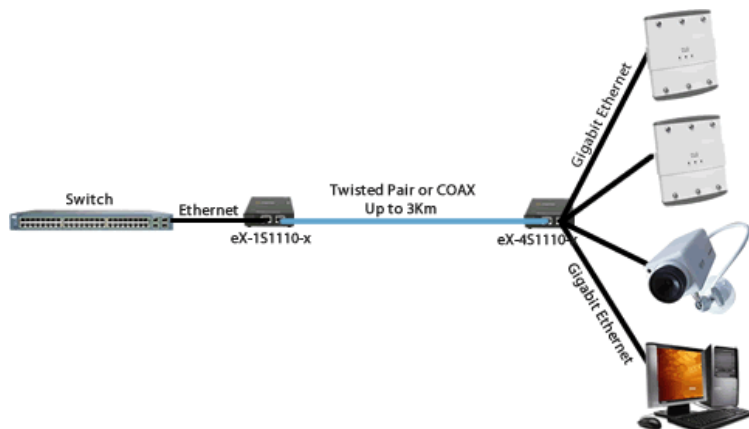
Extend 10/100/1000 Ethernet across Twisted Pair or Coaxial Wire in Harsh Temperature Areas

Extend a Gigabit Ethernet link beyond the 100 meter (328 feet) limit using Ethernet Extenders. Distances of up to 3 km (10,000 feet) can be achieved over twisted pair Cat 5,6 or 7 cable.















Extend four 10/100/1000 Ethernet ports across Twisted Pair or Coaxial Wire









Extend four Ethernet ports up to 3 km (10,000 feet) over twisted pair Cat 5,6 or 7 cable.



*Available on 1 port models.

	Description	Power Cord	Product Part Number
	eX-1S1110-RJ-XT - Gigabit Industrial Temperature Ethernet Extender - 1 port 10/100/1000Base-T (RJ-45) [100 m/328 ft.]. RJ45 Interlink (VDSL2) connector	None	 06003650
	eX-1S1110-BNC-XT - Gigabit Industrial Temperature Ethernet Extender - 1 port 10/100/1000Base-T (RJ-45) [100 m/328 ft.]. BNC (Coax) Interlink (VDSL2) connector	None	 06003660
	eX-1S1110-TB-XT - Gigabit Industrial Temperature Ethernet Extender - 1 port 10/100/1000Base-T (RJ-45) [100 m/328 ft.]. 2-pin Terminal Block Interlink (VDSL2) connector	None	 06003670
	eX-4S1110-RJ-XT - Gigabit Industrial Temperature Ethernet Extender - 4 port 10/100/1000Base-T (RJ-45) [100 m/328 ft.]. RJ45 Interlink (VDSL2) connector	None	 06003770
	eX-4S1110-BNC-XT - Gigabit Industrial Temperature Ethernet Extender - 4 port 10/100/1000Base-T (RJ-45) [100 m/328 ft.]. BNC (Coax) Interlink (VDSL2) connector	None	 06003780
	eX-4S1110-TB-XT - Gigabit Industrial Temperature Ethernet Extender - 4 port 10/100/1000Base-T (RJ-45) [100 m/328 ft.]. 2-pin Terminal Block Interlink (VDSL2) connector	None	 06003790

Accessories:

Accessories			
	4 DIN Rail Mount Bkt	DIN Rail Mounting Kit for 4 & 8 port IOLAN SDS/STS wall mount 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
	Ext. Temp Power Adapter AUS	Extended Temperature AUS power adapter for 12 volt Extended Temperature Terminal Servers, Media Converters and Ethernet Extenders	 04030676
	Ext. Temp Power Adapter EU	Extended Temperature EU power adapter for 12 volt Extended Temperature Terminal Servers, Media Converters and Ethernet Extenders	 04030672
	Ext. Temp Power Adapter SA	Extended Temperature SA power adapter for 12 volt Extended Temperature Terminal Servers, Media Converters and Ethernet Extenders	 04030675
	Ext. Temp Power Adapter UK	Extended Temperature UK power adapter for 12 volt Extended Temperature Terminal Servers, Media Converters and Ethernet Extenders	 04030671
	Ext. Temp Power Adapter USA	Extended Temperature USA power adapter for 12 volt Extended Temperature Terminal Servers, Media Converters and Ethernet Extenders	 04030674
	MCSM	Standalone media converter wall / rack mount bracket	 05059999