10/100 PoE Media Converter
PoE / PoE+ Ethernet to Fiber Converters

- 10/100Base-TX to 100Base-X Fiber
- Supplies IEEE 802.3 PoE & PoE+ PSE power
- Compatible with legacy pre-standard PoE devices
- Fix fiber ports or empty slot for Cisco and other industry standard SFPs
- Advanced features: PD Reset, Fiber redundancy, Smart Link Pass-Through, Fiber Fault Alert, Auto-MDIX and Loopback

Perle's feature rich **Fast Ethernet rate converting PoE Media Converters** transparently connect copper to fiber while providing Power over Ethernet (PoE) to standards-based PoE and PoE+ compliant devices such as IP cameras, VoIP phones and wireless access points. **S-110 PoE Media Converters** are also available with support for Extended Temperature ranges.

Perle **PoE Media Converters** are classified as Power Sourcing Equipment (PSE). While using standard UTP cables that carry Ethernet data, Perle PoE media converters also provide power to Powered Devices (PDs). Perle has PoE media converter models that support the IEEE 802.3af PoE standard (15.4W of power) or the IEEE 802.3at PoE+ standard (30W of power). Learn more about PoE.

Perle **10/100 PoE Ethernet to Fiber Converters** provide an economical path to extend the distance of an existing network with fiber cabling. At the same time they function as PoE injectors to power devices like IP phones, video conferencing equipment, IP cameras and Wi-Fi devices over copper UTP cabling.

Network Administrators can "see-everything" with Perle's advanced features such as Auto-Negotiation, Auto-MDIX, Link Pass-Through, Fiber Fault Alert, and Loopback. This allows 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's **Fast Ethernet rate converting PoE Media Converters** the smart choice for IT professionals.

Fast Ethernet Rate Converting to Fiber PoE Media Converter Features

Power Over Ethernet (PSE)	Performs the Power Sourcing Equipment (PSE) function for IEEE 802.3af (15.4 watts PoE) and IEEE 802.3at (up to 30 watts PoE+) compliant devices. Available in PoE and PoE+ models PoE+ models support both Type 1 (PoE) and Type 2 (PoE+) PD gear
Advanced Power Management	- Enable/Disable PSE power - PD signature detection - Over-Current Protection - PD power classification detection (Class 0,1,2,3,4)
PD Power Reset	Ideal for remotely resetting equipment, this configurable function performs a momentary power reset to the attached Powered Device (PD). When enabled, the media converter will, upon loss of fiber RX, turn off PSE output power supplied to the PD device for 2 seconds then turn the power back on and leave it on until such time that another fiber RX link is lost (after it was re-established). When disabled, a loss of fiber RX has no effect on PSE power to the PD device(s).
Powered Device Support	Support is included for a broad range of PD (Powered Devices) - IEEE Standard PoE/PoE+ (Alternative A and B) - Legacy High Capacitance PDs - Legacy VoIP phones and Wireless Access Points
Power Strain Relief strap	Included with all models, a strain relief strap is provided to ensure a solid and secure power connection to the media converter. Ideal for areas that may be exposed to vibration.
Auto-Negotiation (802.3u)	The media converter supports auto negotiation on the 10/100Base-TX interface.

Auto-MDIX	Auto-MDIX (automatic medium-dependant interface crossover) detects the signaling on the UTP interface to determine the type of cable connected (straight-through or crossover) and automatically configures the connection when enabled. With Auto-MDIX enabled, either a straight-through or crossover type cable can be used to connect the media converter to the device on the other end of the cable.
Link Pass-Through	With Link Pass-Through the state of the UTP receiver is passed to the fiber transmitter to make the media converter appear transparent to the end devices that are connected. In addition if Far-End Fault is enabled the media converter can turn off the 10/100Base-TX transmitter when a FAR-End Fault is received. Using Link Pass-Through with Far-End Fault minimizes data loss when a fault occurs. Should a fault occur, the end devices have the indication of a failure available to them making trouble shooting easier.
Far-End Fault (FEF)	The media converter implements the 802.3 standard for Far-End Fault for the indication and detection of remote fault conditions on the 100Base-X fiber connection. With Far-End Fault enabled the media converter transmits the Far-End Fault Indication over the 100Base-X fiber connection whenever a receive failure is detected on the 100Base-X fiber connection. The media converter continuously monitors the100Base-X fiber connection for a valid signal. The action the media converter takes on receiving a Far-End Fault Indication is dependent on the Link Pass-Through switch setting.
Pause (IEEE 802.3xy)	Pause signaling is an IEEE feature that temporarily suspends data transmission between two devices in the event that one of the devices becomes overwhelmed. The media converter supports pause negotiation on the 10/100Base-TX copper connection.
Duplex	Full and half duplex operation supported.
VLAN	Transparent to VLAN tagged packets.
Remote Loopback	Capable of performing a loopback on the 100Base-X fiber interface.

Power	
DC Power Requirements	PoE models: 46 - 57 vDC PoE+ models: 52 - 57 vDC
Power Consumption	3.5 Watts
Power Over Ethernet (PSE)	PoE models: maximum to 15.4 watts supplied to port PoE+ models: up to 30 watts supplied to port
PoE Options	Alternative A (power on pins 1,2 and 3,6) Alternative B (power on pins 4,5 and 7,8) Legacy PoE (IE VoIP phones and wireless access points) - (reverse polarity on pins 4,5 and 7,8) Legacy large capacitor detect (pins 4,5 and 7,8)
Power Connector	5.5mm x 9.5mm x 2.1mm barrel socket
Power Adapter	
Universal AC/DC adapter	100-240v AC, regulated 48vDC adapter included for PoE 100-240v AC, regulated 56vDC adapter included for PoE+
Indicators	
Power (PWR)	This green LED is turned on when power is applied to the media converter. Otherwise it is off. The LED will blink slowly when either fiber port is in Loopback test mode. The LED will blink quickly if there is a hardware failure where the reason code can be identified through a various blinking cycles.
Fiber link on / Receive activity (LKF 1/2)	This green LED is operational only when power is applied. The LED will blink along with transmit/receive data on the fiber port If a loss of link on the copper port results in a Link Passthrough condition to the fiber port, this LED will blink at a rate of once every 2 seconds until the condition is cleared.
Copper link on / Receive activity (LKC 1/2)	This green LED is operational only when power is applied. The LED will blink along with transmit/receive data on the 10/100/1000 UTP port If a loss of link on the copper port results in a Link Passthrough condition to the fiber port, this LED will blink at a rate of once every 2 seconds until the condition is cleared.
10/100 Speed	This green LED is operational only when power is applied. The LED is green when the speed of the copper ethernet port is running at 100 Mbps. The LED is off when in 10 Mbps.
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	
Auto-Negotiation (802.3u)	*Enabled (Default)* - The media converter uses 802.3u Auto-negotiation on the 100Base-TX interface. It is set to advertise full duplex. *Disabled* - The media converter sets the port according to the position of the speed and duplex switches.

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Link Pass Through	*Disabled (Default)* - The 100Base-TX and the 100Base-FX fiber interface operate independently. Far-End Fault indication on the 100Base-FX fiber interface has no effect on the 100Base-TX interface. *Enabled* - When the state of the receiver is changed on the 100Base-TX interface it is reflected on the 100Base-FX fiber transmitter. When the state of the receiver on the 100Base-FX interface is changed it is reflected on the 100Base-TX transmitter. When a Far-End Fault Indication is received on the fiber interface the 100Base-TX transmitter is turned off. When the Far-End Fault Indication is cleared the transmitter is turned back on.
Far-End Fault (FEF)	*Enabled (Default)* - The media converter transmits the Far-End Fault Indication over the 100Base-X fiber connection whenever a receive failure is detected on the 100Base-X fiber connection. The media converter continuously monitors the100Base-X fiber connection and clears the Far-End Fault Indication condition when a valid signal is received. *Disabled* - Far-End Fault Indications are not transmitted regardless of the condition of the receive signal on the 100Base-FX fiber connection.
Remote Loopback	The media converter can perform a loopback on the 100Base-X fiber interface. *Disabled (Default - Up)* *Enabled* - The 100Base-X receiver is looped to the 100Base-X transmitter. The 100Base-TX transmitter is taken off the interface.
Speed Copper (internal strap)	100 (Default) 10
Duplex Copper (internal strap)	Full (Default) Half
Auto-MDIX (Internal Strap)	If Auto-Negotiation (802.3u) is enabled, the media converter determines the current cable pinout to use on the copper interface. If Auto-Negotiation (802.3u) is disabled the Media converter will use the RX Energy method on the copper interface to set the port MDI or MDIX whichever is appropriate. Enabled (Default) - Either a straight-through or crossover type cable can be used to connect the media converter to the device on the other end of the cable. Disabled - If the partner device on the other end of the cable does not have the Auto-MDIX feature a specific cable, either a straight-through or crossover will be required to ensure that the media converter's transmitter and the partner devices transmitter are connected to the others receiver. The Media converter's 100Base-TX port is configured as MDI-X with this switch setting.
PSE Power	When enabled (UP), the media converter will perform a Power Sourcing Equipment (PSE) function as per IEEE802.3af or 802.3at standards (relevant model). Default is "enabled"
PD Power Reset	This is a technique to perform a power reset on a PD device attached. When enabled (down), the media converter will upon loss of link on any fiber port, turn off PSE output power to the PD device for 2 seconds then turn the power back on. The power remains on until any fiber link transitions from up to down again. With Passthrough enabled, a loss of link on the fiber resulting from a loss of link on the copper, a PD Power Reset will occur and the copper link will continue to reflect the state of the fiber link. When PD Power Reset disabled, loss of fiber link has no effect on PSE power to the PD device.
PoE Power Options (Internal Straps)	Set to Alternative A (default): Pins 3,6 Neg, Pins 1,2 Pos Set to Alternative B: Pins 7,8 Neg, Pins 4,5 Pos Set to Legacy Pre-Standard: Pins 7,8 Pos, Pins 4,5 Neg
Connectors	
10/100Base-TX	RJ45 connector. 2 pair CAT5, EIA/TIA 568A/B or better cable for 10/100.
Magnetic Isolation	1.5kv

Fixed Fiber	Dual multimode or single mode (Duplex) fiber - SC, ST Single strand fiber (Simplex) - SC LC - obtained by inserting an SFP (LC) in an SFP slot model
Small Form Factor Pluggable (SFP) slot	SFP slot models: Empty slot for 100Base-X SFP modules supplied by Perle, Cisco or other manufacturers of MSA compliant SFPs. Hot insertion and removable (hot swappable).

Filtering

Filtering	1024 MAC Addresses

Frame Specifications

Buffer	1000 Kbits frame buffer memory
Size	Maximum frame size of 2048 bytes

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)
Heat Output (BTU/HR)	12

MTBF (Hours)	Model Type	No Power Adaptor	PoE	PoE+
	SFP Slot Fixed Fiber	437,237 385,526	229,220 214,161	81,386 79,404

Mounting

Din Rail Kit	Optional
Rack Mount Kit	Optional

Product Weight and Dimensions

Weight	0.3 Kg, 0.7 lbs (No power adapter)
Dimensions	120 x 80 x 26 mm, 4.7 x 3.1 x 1.0 inches

Packaging

Shipping Weight	PoE models : 1 kg, 2.2 lbs PoE+ models : 1.3Kg, 2.9 lbs
Shipping Dimensions	300 x 200 x 70mm, 11.8 x 7.9 x 2.8 inches

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	Reach, RoHS and WEEE Compliant
Other	ECCN: 5A991A
	HTSUS Number: 8517.62.0050
	Perle Lifetime warranty

Fast Ethernet to IP Cameras

Connect 10/100 IP Cameras to Fast Ethernet Backbone

Extend the reach to IP cameras using fiber media converters. Security cameras are typically installed in remote locations throughout a facility. For cameras that are in the ceiling or other inaccessible areas like rooftops, light poles, along fences, pipelines and transit routes, the cost of bringing electrical power to each camera is eliminated by powering the equipment through the UTP cable using a PoE media converter. For cameras with Pan-Tilt-Zoom (PTZ) that may require higher power, PoE+ models that can supply up to 30 watts of power are also available. PoE+ may also be required for cameras used in cold environments that feature de-icers and blowers.

Fiber is run from an existing data closet to an area with access to power. A PoE Media Converter can be powered by either 48vDC or standard 100 to 240 AC power. The media converter is attached to the power supply and the fiber cable. Copper (UTP or STP cable) Ethernet can be extended another 100 meters to the IP camera. The PoE Media Converter is converting the data from fiber to copper, adding power and transmitting it to the security camera.
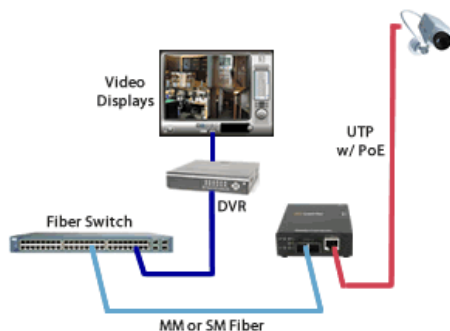

Fast Ethernet Fiber to Wireless Access Points

Connect 10/100 Wireless Access Points to Fast Ethernet Backbone

Extend the reach to wireless access points (AP) using fiber media converters. When a company deploys a wireless network in their office or large warehouse, APs need to be set up throughout the facility to ensure complete coverage for reliability. The network manager will likely need to extend further than the 100 meters allowed by copper cable to reach many of the APs.

For APs that are in the ceiling or other inaccessible areas, PoE media converters can also provide standard PoE power including pre-standard power for those access points that were deployed prior to ratification IEEE 802.3af . For wireless access points as those containing dual radios requiring more than 15.4 watts of power, PoE+ models delivering up to 30 watts are also available.

Fiber is run from an existing data closet to an area with access to power. A PoE Media Converter can be powered by either 48vDC or standard 100 to 240 AC power. The media converter is attached to the power supply and the fiber cable. Copper (UTP or STP cable) Ethernet can be extended another 100 meters to the Wireless Access Point. The PoE Media Converter is converting the data from fiber to copper, adding power and transmitting it to the AP.
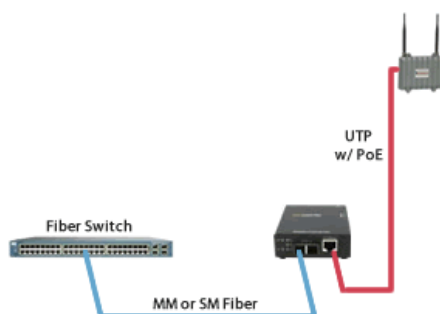

Fast Ethernet Fiber to the Desktop / VoIP (Voice over IP) Phones

Connect 10/100 workstations and VoIP Phones to a Fast Ethernet Backbone

Extend the reach to your workstation and VoIP phones using fiber media converters. PoE media converters can also provide standard PoE power including pre-standard power for those VoIP phones that were deployed prior to ratification of the IEEE 802.3af standard.

For VoIP phones such as those containing dual radios requiring more than 15.4 watts of power, PoE+ models delivering up to 30 watts are also available.

Fiber is run from an existing data closet to an area with access to power. A PoE Media Converter can be powered by either 48vDC or standard 100 to 240 AC power. The media converter is attached to the power supply and the fiber cable. Copper (UTP or STP cable) Ethernet can be extended another 100 meters to the VoIP phone. The PoE Media Converter is converting the data from fiber to copper, adding power and transmitting it to the VoIP phone.
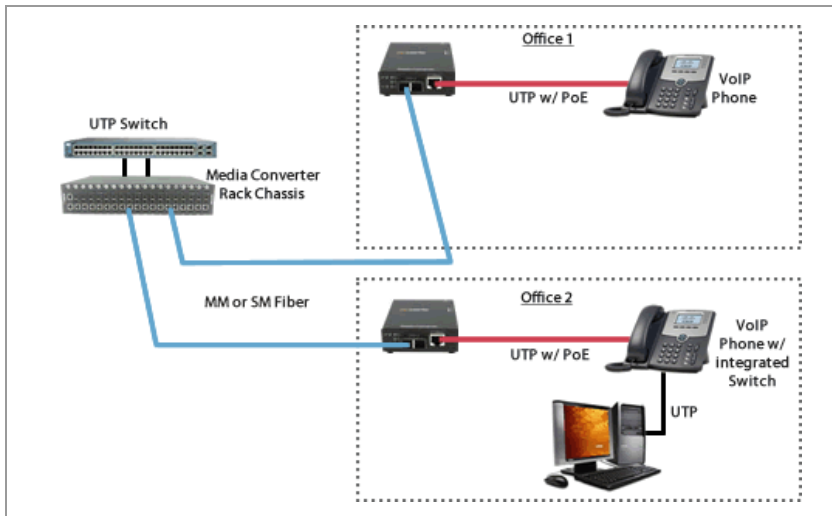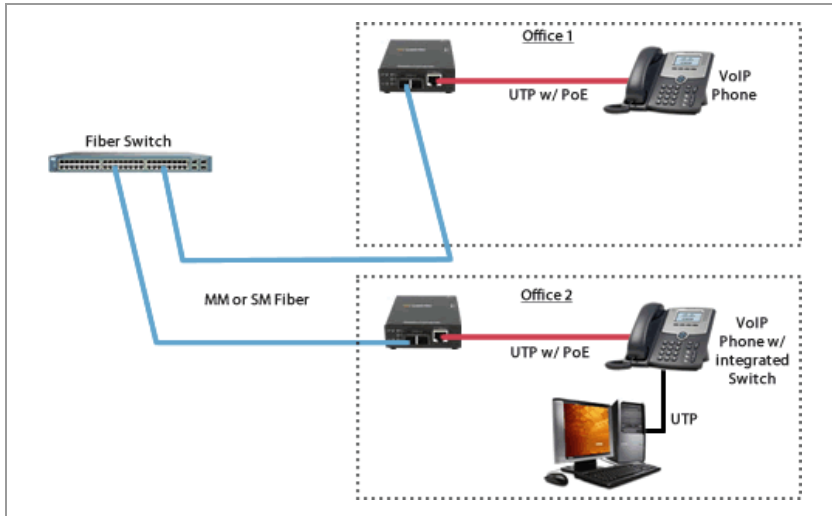
Single Mode / Single Fiber

Connect copper ports over a single fiber strand (also referred to as "Bi-Directional" BiDi)
When Single Strand fiber is used, a pair of Single Fiber Media Converters is needed for the copper to fiber conversion. Perle Single Fiber Media Converters are also referred to as "Up/Down" models. For example the S-110P-S1SC10**U** ("Up") and S-110P-S1SC10**D** ("Down"), shown below, must be used in pairs. An "**U**p" must be matched with a "**D**own" peer to deal with transmit and receive frequencies separately.

S-110P-S1SC10U   S-110P-S1SC10D
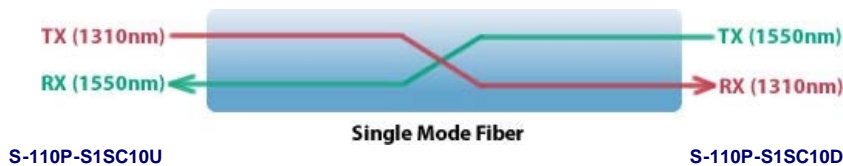
The majority of installations for single mode fiber media converters are of the "dual connector" or "dual fiber" type where one fiber connection is used for transmit, the other for receive. These are physically "crossed" to match up the Transmit/Receive links.

However, to reduce costs, or where there are limits on available fiber, WDM technology may be utilized. WDM uses separate transmit and receive frequencies to communicate on a single fiber strand. WDM technology relies on the fact that optical fibers can carry many wavelengths of light simultaneously without interaction between each wavelength. Thus, a single fiber can carry many separate wavelength signals or channels simultaneously.

So remember, if Single Strand fiber is used, you will need an "**Up**" Media Converter on one side and a "**Down**" Media Converter on the other for copper to fiber conversion.

Select a Model to obtain a Part Number - 10/100 PoE Media Converter

Model	Fiber Port Connector	Type	Transmit (dBm)		Receive (dBm)		Power Budget (dBm)	Wavelength (nm)	Fiber Type	Operating Distance
			Min	Max	Min	Max				
S-110P-SFP	1 x SFP / LC	100Base-X	-	-	-	-	-	-	MMF/SMF	-
S-110P-M2SC2	Dual SC	100Base-FX	-20.0	-12.0	-31	-14.0	11.0*	1310	MMF	2 km (1.2 mi)
S-110P-M2ST2	Dual ST	100Base-FX	-20.0	-12.0	-31	-14.0	11.0*	1310	MMF	2 km (1.2 mi)
S-110P-S2SC20	Dual SC	100Base-LX	-18.0	-7.0	-32	-3.0	14.0	1310	SMF	20 km (12.4 mi)
S-110P-S2ST20	Dual ST	100Base-LX	-18.0	-7.0	-32	-3.0	14.0	1310	SMF	20 km (12.4 mi)
S-110P-S2SC40	Dual SC	100Base-EX	-5.0	0.0	-34	-3.0	29.0	1310	SMF	40 km (25 mi)
S-110P-S2ST40	Dual ST	100Base-EX	-5.0	0.0	-34	-3.0	29.0	1310	SMF	40 km (25 mi)
S-110P-S2SC80	Dual SC	100Base-ZX	-5.0	0.0	-34	-3.0	29.0	1550	SMF	80 km (50 mi)
S-110P-S2ST80	Dual ST	100Base-ZX	-5.0	0.0	-34	-3.0	29.0	1550	SMF	80 km (50 mi)
S-110P-S2SC120	Dual SC	100Base-ZX	0.0	-5.0	-35	-3.0	35.0	1550	SMF	120 km (75 mi)
S-110P-S2ST120	Dual ST	100Base-ZX	0.0	-5.0	-35	-3.0	35.0	1550	SMF	120 km (75 mi)

Single Fiber Models (Recommended use in pairs)

Model	Fiber Port Connector	Type	Transmit (dBm)		Receive (dBm)		Power Budget (dBm)	Wavelength (nm)	Fiber Type	Operating Distance
			Min	Max	Min	Max				
S-110P-S1SC20U	Single SC	100Base-BX-U	-14.0	-8.0	-32	-3.0	18.0	1310 / 1550	SMF	20 km (12.4 mi)
S-110P-S1SC20D	Single SC	100Base-BX-D	-14.0	-8.0	-32	-3.0	18.0	1550 / 1310	SMF	20 km (12.4 mi)
S-110P-S1SC40U	Single SC	100Base-BX-U	-8.0	-3.0	-33	-3.0	25.0	1310 / 1550	SMF	40 km (25 mi)
S-110P-S1SC40D	Single SC	100Base-BX-D	-8.0	-3.0	-33	-3.0	25.0	1550 / 1310	SMF	40 km (25 mi)

The minimum fiber cable distance for all converters listed is 2 meters.

*Based on use with 65.5/125 micron multimode fiber.

Media Converter Accessories	
4 DIN Rail Mount Bkt	DIN Rail Mounting Kit
MCSM	Standalone media converter wall mount bracket

Select a Model to obtain a Part Number - 10/100 PoE+ Media Converter

Model	Fiber Port Connector	Type	Transmit (dBm)		Receive (dBm)		Power Budget (dBm)	Wavelength (nm)	Fiber Type	Operating Distance
			Min	Max	Min	Max				
S-110PP-SFP	1 x SFP / LC	100Base-X	-	-	-	-	-	-	MMF/SMF	-
S-110PP-M2SC2	Dual SC	100Base-FX	-20.0	-12.0	-31	-14.0	11.0*	1310	MMF	2 km (1.2 mi)
S-110PP-M2ST2	Dual ST	100Base-FX	-20.0	-12.0	-31	-14.0	11.0*	1310	MMF	2 km (1.2 mi)
S-110PP-S2SC20	Dual SC	100Base-LX	-18.0	-7.0	-32	-3.0	14.0	1310	SMF	20 km (12.4 mi)
S-110PP-S2ST20	Dual ST	100Base-LX	-18.0	-7.0	-32	-3.0	14.0	1310	SMF	20 km (12.4 mi)
S-110PP-S2SC40	Dual SC	100Base-EX	-5.0	0.0	-34	-3.0	29.0	1310	SMF	40 km (25 mi)
S-110PP-S2ST40	Dual ST	100Base-EX	-5.0	0.0	-34	-3.0	29.0	1310	SMF	40 km (25 mi)
S-110PP-S2SC80	Dual SC	100Base-ZX	-5.0	0.0	-34	-3.0	29.0	1550	SMF	80 km (50 mi)
S-110PP-S2ST80	Dual ST	100Base-ZX	-5.0	0.0	-34	-3.0	29.0	1550	SMF	80 km (50 mi)
S-110PP-S2SC120	Dual SC	100Base-ZX	0.0	-5.0	-35	-3.0	35.0	1550	SMF	120 km (75 mi)
S-110PP-S2ST120	Dual ST	100Base-ZX	0.0	-5.0	-35	-3.0	35.0	1550	SMF	120 km (75 mi)

Single Fiber Models (Recommended use in pairs)

Model	Fiber Port Connector	Type	Transmit (dBm)		Receive (dBm)		Power Budget (dBm)	Wavelength (nm)	Fiber Type	Operating Distance
			Min	Max	Min	Max				
S-110PP-S1SC20U	Single SC	100Base-BX-U	-14.0	-8.0	-32	-3.0	18.0	1310 / 1550	SMF	20 km (12.4 mi)
S-110PP-S1SC20D	Single SC	100Base-BX-D	-14.0	-8.0	-32	-3.0	18.0	1550 / 1310	SMF	20 km (12.4 mi)
S-110PP-S1SC40U	Single SC	100Base-BX-U	-8.0	-3.0	-33	-3.0	25.0	1310 / 1550	SMF	40 km (25 mi)
S-110PP-S1SC40D	Single SC	100Base-BX-D	-8.0	-3.0	-33	-3.0	25.0	1550 / 1310	SMF	40 km (25 mi)

The minimum fiber cable distance for all converters listed is 2 meters.

*Based on use with 62.5/125 micron multimode fiber.

Media Converter Accessories	
4 DIN Rail Mount Bkt	DIN Rail Mounting Kit
MCSM	Standalone media converter wall mount bracket