S-10G Media Converters

10 Gigabit Ethernet Standalone Converters

- Fiber to Fiber, copper to fiber and copper to copper conversion
- Uses a variety of 10G transceivers supplied by Perle, Cisco or other MSA compliant SFP+ and XFPs
- Advanced features –Smart Link Pass-Through, Fiber Fault Alert, Built-in Link Test Generator and Loopback
- Support for Power Level 1,2,3 as well as high-power Level 4 XFPs
- Optical signal regeneration: 3R (re-amplify, reshape, and retime)

Perle S-10G Media Converters transparently connect 10 Gigabit Ethernet links over multimode or single mode fiber. Each 10GbE Media Converter comes with two pluggable transceiver ports that support fiber to fiber, copper to fiber or copper to copper media conversion.

Fiber to Fiber and Copper to Fiber conversion is achieved by inserting XFP or SFP+ fiber transceivers that support multimode and single-mode fiber, including CWDM/DWDM wavelengths. Copper to copper is achieved by inserting SFP+ Direct Attach Cable (DAC), also known as twinax, or XFP 10Gbase-CX4 transceivers.

The empty transceiver ports on the S-10G Media Converters allow for flexible network configurations to meet any requirement using a variety of 10G transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFP+ and XFPs. You can use these products to convert:

- SFP+ to SFP+
- XFP to XFP
- XFP to SFP+
- SFP to SFP (1000Base-x to 1000Base-x)
- SFP+ to CX4

Perle 10 Gigabit Ethernet to Fiber Converters provide an economical path to extend the distance of an existing 10GbE link. Network Administrators can “see-everything” with Perle’s advanced features such as Smart Link Pass-Through, Fiber Fault Alert, a built-in Link Test capability 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-10G Media Converters the smart choice for IT professionals.

S-10G Media Converter Features

Smart Link Pass-Through	When the Smart Link Pass-Through switch is enabled (default), each port will reflect the state of its port peer. In this mode, if a link loss is detected on one port, the transmit signal on the other port is disabled “passing through” the state of the failed link. This enables managed switches and other devices to report link failures to their network NMS. When the switch is in the down position, Smart Link Pass-Through is disabled. If a link loss is detected on one port, the transmit signal remains enabled on the other port.
Fiber Fault Alert	With Fiber Fault Alert the state of the 10 Gigabit Ethernet receiver is passed to the transmitter. This provides fault notification to the partner device attached to the 10G Ethernet interface of the media converter.
3R – Optical Signal Regeneration	Optical signal regeneration: 3R (Re-amplify, Reshape, and Retime the signal) ensures that there is a quality link at 10 Gigabit speeds.
Built-in Link Test	When enabled, the built-in packet generator transmits Ethernet test frames to its 10 Gigabit Ethernet peer. The remote media converter will auto-detect the test frames and loopback the test frames. Any frames received in error, will cause the Power, LK1 and LK2 LEDs to illuminate in a specific combination to identify the error. During the test different bit test patterns will be utilized every 5 seconds ensuring a thorough link test.
Test Mode Auto-detect	No switches are required to be flipped in order to go into test mode. The remote media converter will enter test mode automatically when requested by its central site peer. This virtually eliminates unnecessary truck rolls to a remote site when diagnosing a link failure.
EDC Mode Control	Electronic Dispersion Compensation (EDC) is an algorithmic method used to compensate for optical dispersion that occurs on high speed 10 Gigabit links. EDC mode settings are automatically configured by the media converter based on the information retrieved from the SFP+ or XFP module. This will enable proper operation for extended multimode 10GBase-LRM as well as active or passive copper cabling.
Module Temperature Protection	Protects your DOM/DMI capable SFP+ or XFP module by monitoring its internal temperature and will automatically shut down the XFP or SFP if the module is operating above its maximum temperature threshold.

High Power Level 4 XFPs	High powered Level 4 XFPs are supported in XTSH and XTXH models.
Gigabit SFP support	The 10 Gigabit media converter model with dual SFP+ slots can also support Gigabit (1000Base-X) SFPs. This allows users to use Gigabit SFPs today and migrate to 10G SFP+ in the future. Both slots must be populated with Gigabit SFPs.
Jumbo Packets	Transparent to jumbo packets.
VLAN	Transparent to VLAN tagged packets.
Power Strain Relief strap	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 any vibration.
Remote Loopback	Capable of performing a loopback on each 10 Gigabit interface. In this mode, all frames received on the port in loopback mode will be transmitted back. This provides users with the capability of utilizing their own in-house test generators for testing the link.

Power	Dual SFP	Dual XFP	XFP to SFP
Input Supply Voltage	9 - 30 vDC, unregulated (12 vDC Nominal)		
Maximum Power Consumption (watts)	7.2*	XTX: 12.0* XTXH: 16.8*	XTS: 9.6* XTSH: 16.8*
Total Transceiver power supports (watts)	3.0	XTX: 7.0 XTXH: 11.0	XTS: 5.0 XTSH: 7.0
Power Connector	5.5mm x 9.5mm x 2.1mm barrel socket		
Power Adapter			
Universal AC/DC Adapter	100-240v AC, regulated AC/12v DC adapter included		
Indicators			
Power / TST	• On: Power indication and in normal operation • Blinking slowly: the unit is in loopback or test mode (either port) • Red solid: the unit has a hardware error (upon power up) • Red and blinking: the unit has a hardware error specified by combination of LK1 and LK2		
LK1, LK2	• On: Fiber link present • Blinking quickly: Fiber link present and receiving data.(including test data) • Blinking slowly: Fiber link disabled because the other fiber link went down. • Blinking 1 sec on 3 sec off – module shut down due to high temperature. • Off: No fiber link present or no module inserted		
Switches - accessible through a side opening in the chassis			
Smart Link Pass-Through	When the Smart Link Pass-Through switch is enabled (default), each port will reflect the state of its port peer. In this mode, if a link loss is detected on one port, the transmit signal on the other port is disabled “passing through” the state of the failed link. This enables managed switches and other devices to report link failures to their network NMS. When the switch is in the down position, Smart Link Pass-Through is disabled. If a link loss is detected on one port, the transmit signal remains enabled on the other port.		
Fiber Fault Alert	*Enabled (Default - Up)* With Fiber Fault Alert the state of the 10 Gigabit ethernet receiver is passed to the transmitter. This provides fault notification to the partner device attached to the 10G ethernet interface of the media converter *Disabled (Down)*		
EDC Mode	Electronic Dispersion Compensation (EDC) is an algorithmic method used to compensate for optical dispersion that occurs on high speed 10 Gigabit links. EDC mode settings are automatically configured by the media converter based on the information retrieved from the SFP+ or XFP module. This will enable proper operation for extended multimode 10GBase-LRM as well as active or passive copper cabling. In the default UP switch position the media converter will automatically set the 10G transceiver to match the EDC type declared by the SFP+ / XFP module to either to “linear” or “limiting”. In the event that there is a mismatch, setting the switch to the Down position on the media converter will flip the setting to that declared by the module.		
Loopback	Capable of performing a loopback on each 10 Gigabit interface. In this mode, all frames received on the port in loopback mode will be transmitted back. This provides users with the capability of utilizing their own in-house test generators for testing the link.		
Connectors	**Dual SFP**	**Dual XFP**	**XFP to SFP**
Pluggable 10G Fiber Transceiver slots (Hot insertion and removable)	Two 10 Gigabit SFP+ Slots • Power level 1, 2	Two 10 Gigabit XFP Slots • Power level 1,2,3 • Power Level 4 (XTSH model)	One 10 Gigabit SFP+ • Power Level 1, 2 One 10 Gigabit XFP • Power level 1,2,3 • Power Level 4 (XTSH model)
Voltages supplied to XFP slots	-	1.8V, 3.3V, 5V and -5.2V	1.8V, 3.3V, 5V and -5.2V
Supported 10	IEEE 802.3ae compliant: • 10GBase-SR • 10GBase-LRM	IEEE 802.3ae compliant: • 10GBase-SR • 10GBase-LRM	IEEE 802.3ae compliant: • 10GBase-SR • 10GBase-LRM

Gigabit Fiber pluggable transceivers	• 10GBase-LR • 10GBase-ER • 10GBase-ZR CWDM	• 10GBase-LR • 10GBase-ER • 10GBase-ZR CWDM/DWDM	• 10GBase-LR • 10GBase-ER • 10GBase-ZR CWDM/DWDM
Supported 10 Gigabit Copper pluggable transceivers	SFP+ Direct Attach Cable (DAC). Also known as: • Twinax • 10GBase-CU • 10GSFP+Cu • 10GBase-CX1 • 10GBase-CR1 Note: Passive and Active cable types supported	IEEE 802.3ak compliant: • XFP 10GBase-CX4 copper	SFP+ Direct Attach Cable (DAC). Also known as: • Twinax • 10GBase-CU • 10GSFP+Cu • 10GBase-CX1 • 10GBase-CR1 Note: Passive and Active cable types supported IEEE 802.3ak compliant: • XFP 10GBase-CX4 copper
Supported Gigabit Fiber SFPs	1000Base-SX 1000Base-LX/LH 1000Base-EX 1000Base-ZX 1000Base-BX CWDM/DWDM Note: In this mode both SFP modules must operate 1000Base-X	N/A	N/A
Environmental Specifications	Dual SFP	Dual XFP	XFP to SFP
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)	24.6	XTX: 41.0 XTXH: 57.3	XTS: 38.2 XTSH: 57.3
MTBF (Hours)	Without power adaptor: 364,715 With power adaptor: 206,946	XTX & XTXH without power adaptor: 332,711 XTX with power adaptor: 196,235 XTXH with power adaptor: 210,748	XTS & XTSH without power adaptor: 332,711 XTS with power adaptor:196,235 XTSH with power adaptor: 210,748
Mounting			
Din Rail Kit	Optional		
Wall / Rack Mount Kit	Optional		
Product Weight and Dimensions	Dual SFP	Dual XFP	XFP to SFP
Product Weight	0.36 kg, 0.80 lbs	0.38 kg, 0.84 lbs	0.38 kg, 0.84 lbs
Product Dimensions	8 x 12 x 4.2 cm (3.1 x 4.7 x 1.7 inches)		
Shipping Weight	0.64 kg, 1.41 lbs	0.66 kg, 1.46 lbs	0.66 kg, 1.46 lbs
Shipping Dimensions	26 x 17 x 7 cm (10.2 x 6.7 x 2.8 inches)		
Regulatory Approvals			

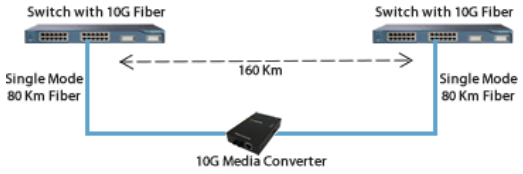
Emissions	FCC Part 15 Class A, EN55022 Class A
	CISPR 22 Class A
	EN61000-3-2
Immunity	EN55024
Electrical Safety	UL 60950-1
	EN60950
	CE
Environmental	RoHS - 2002/95/EC Directive
	WEEE - 2002/96/EC Directive
	Reach compliant
Other	ECCN: 5A991A
	HTSUS Number: 8517.62.0050
	Perle Lifetime warranty

*Maximum rating for both media converter and modules inserted. Actual rating is dependent on the power consumption of the SFP+/XPF modules inserted.

10 Gigabit Ethernet Fiber Repeater

Extend the network distance of 10 Gigabit Fiber Links

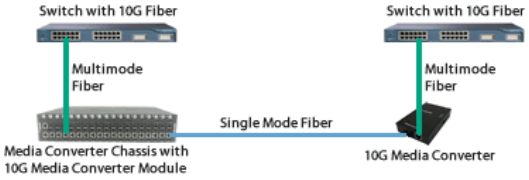
Create a 10 Gigabit Ethernet fiber link that can extend up to 160km.



10 Gigabit Ethernet Fiber Extender

Extend the network distance between two 10 Gigabit Fiber Switches

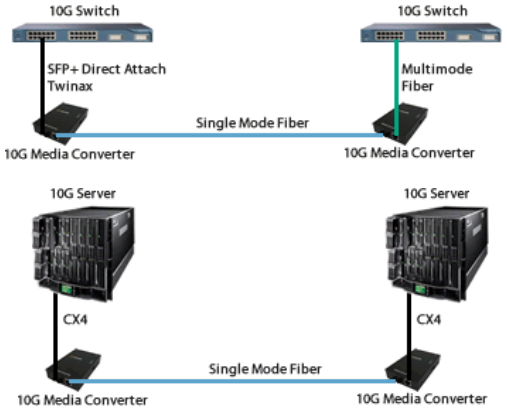
Two 10 Gigabit Mode Media Converters can extend the distance between 10 Gigabit Multimode Switches across a fiber link up to 80km in length.



10 Gigabit Copper to Fiber Media Conversion

Converter one 10G Ethernet media to another

Convert your 10G SFP+ Direct Attach (Twinax) or XFP CX4 copper to multimode or single mode fiber. Ideal for large data centers and Co-Location applications where the distance required to connect top of rack switches exceeds the 100 meter limitation of 10G copper.



Model	Port	Slot	SFP+ Power Levels	XFP Power Levels	Maximum Total Transceiver Power Supported
S-10G-STS	Port 1	SFP+	Level 1 (up to 1.0 watts)	-	3.0 watts
			Level 2 (up to 1.5 watts)	-	
	Port 2	SFP+	Level 1 (up to 1.0 watts)	-	
			Level 2 (up to 1.5 watts)	-	
S-10G-XTS	Port 1	XFP	-	Level 1 (up to 1.0 watts)	5.0 watts
			-	Level 2 (1.5 to 2.5 watts)	
			-	Level 3 (2.5 to 3.5 watts)	
	Port 2	SFP+	Level 1 (up to 1.0 watts)	-	
			Level 2 (up to 1.5 watts)	-	
S-10G-XTSH	Port 1	XFP	-	Level 1 (up to 1.0 watts)	7.0 watts
			-	Level 2 (1.5 to 2.5 watts)	
			-	Level 3 (2.5 to 3.5 watts)	
			-	Level 4 (3.5 to 5.5 watts)	
	Port 2	SFP+	Level 1 (up to 1.0 watts)	-	
			Level 2 (up to 1.5 watts)	-	
S-10G-XTX	Port 1	XFP	-	Level 1 (up to 1.0 watts)	7.0 watts
			-	Level 2 (1.5 to 2.5 watts)	
			-	Level 3 (2.5 to 3.5 watts)	
			-		
	Port 2	XFP	-	Level 1 (to 1.0 watts)	
			-	Level 2 (to 1.5 watts)	
			-	Level 1 (to 1.0 watts)	
			-	Level 2 (to 1.5 watts)	
S-10G-XTXH	Port 1	XFP	-	Level 1 (up to 1.0 watts)	11.0 watts
			-	Level 2 (1.5 to 2.5 watts)	
			-	Level 3 (2.5 to 3.5 watts)	
			-	Level 4 (3.5 to 5.5 watts)	
	Port 2	XFP	-	Level 1 (up to 1.0 watts)	
			-	Level 2 (1.5 to 2.5 watts)	
			-	Level 3 (2.5 to 3.5 watts)	
			-	Level 4 (3.5 to 5.5 watts)	