

S-10GT Media Converters

 perle.com/products/10gbase-t-standalone-media-converters.shtml

10GBase-T Copper, Fiber and Rate Converters

- Copper to fiber and copper to copper conversion
- S-10GRT supports 10/100/1000/2500/10000 rate 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
- High density applications with Perle MCR1900 Media Converter Chassis
- Support for Power Level 1,2,3 as well as high-power Level 4 XFPs



Perle S-10GT Media Converters transparently connect 10GBase-T Ethernet links over multimode or single mode fiber. Each 10GbE Media Converter comes with one RJ45 10GBase-T port and an empty slot for one SFP+ or XFP module. The S-10GRT additionally supports 10/100/1000/2500/10000 rate conversion.

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-10GT 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:

- 10GBase-T (RJ45) to SFP+
- 10GBase-T (RJ45) to XFP
- 1000Base-T (RJ45) to 1000Base-X (SFP)
- 10GBase-T (RJ45) to Direct Attach DAC copper twinax (SFP+)
- 10GBase-T (RJ45) to 10GBase-CX4 (XFP)
- 10/100/1000/2500/10000 Ethernet

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-10GT Media Converters** the smart choice for IT professionals. 10G Media Converters are also available for managed networks with AAA Security.

S-10GT Media Converter Features

Rate Conversion	The S-10GRT Media Converter can automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different.
Cut-Through Forwarding	The S-10GRT Media Converter can be configured for Cut-Through Forwarding. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible. Forwarding of a packet will begin as soon as the destination address is processed.
SFP Speed Sensing	Automatically detects whether a SFP has been inserted and adjusts the speed accordingly.
Smart Link Pass-Through	<p>When Smart Link Pass-Through 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.</p> <p>When Smart Link Pass-Through is disabled, if a link loss is detected on one port the transmit signal remains enabled on the other port.</p>
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.
Green Ethernet	<p>Utilizes Green Ethernet energy saving technology based on industry standards such as:</p> <ul style="list-style-type: none"> • Short Reach Mode (less than 30 meters) as per IEEE 802.3an. This enables 10GBase-T operation with less power consumption. • Energy Efficient Ethernet (EEE) as per 802.3az. This provides power savings during idle network activity.
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.
Gigabit SFP support	The 10 Gigabit media converter model with the SFP slot can also support Gigabit (1000Base-X) SFPs. This allows users to use Gigabit SFPs today and migrate to 10G SFP+ in the future.
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 the 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	S-10GRT-SFP	S-10GT-XFPH
Input Supply Voltage	9 - 30 vDC, unregulated (12 vDC Nominal)	
Maximum Power Consumption (watts)	15.5*	15*
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	<ul style="list-style-type: none"> ● 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 (SFP/XFP)	<ul style="list-style-type: none"> ● On: 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 	
LK2	<ul style="list-style-type: none"> ● On: 10GBase-T link present ● Blinking quickly: Link present and receiving data ● Blinking slowly: Link disabled because Link 1 went down ● Off: 10GBase-T link is not active 	
Switches - accessible through a side opening in the chassis		
Link Mode	<p>When the Link Mode switch is enabled (default), each port will reflect the state of its port peer using Smart Link Pass-Through. 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.</p> <p>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.</p>	
Fiber Fault Alert	<p><i>Enabled (Default - Up)</i> 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</p> <p><i>Disabled (Down)</i></p>	

Test Mode	Through the use of three dip switches the unit, and its peer, can be placed into a link test mode which will verify the integrity of the link through the use of its built-in link test generator. The unit can also be placed into a simple line loopback.	
EEE Green Ethernet	When enabled (default), the media converter will operate as an IEEE 802.3az Energy Efficient Ethernet (EEE) compliant device.	
Loopback	Capable of performing a loopback on the 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	S-10GRT-SFP	S-10GT-XFPH
10GBase-T (RJ45)	IEEE 802.3an 100 meters on CAT6A or better	IEEE 802.3an 100 meters on CAT6A or better
Pluggable 10G Fiber Transceiver slot (Hot insertion and removable)	10 Gigabit SFP+ Slot <ul style="list-style-type: none"> Power level 1, 2 	10 Gigabit XFP Slot <ul style="list-style-type: none"> Power level 1,2,3,4
Voltages supplied to XFP slots	-	1.8V, 3.3V, 5V and -5.2V
Supported 10 Gigabit Fiber pluggable transceivers	IEEE 802.3ae compliant: <ul style="list-style-type: none"> 10GBase-SR 10GBase-LRM 10GBase-LR 10GBase-ER 10GBase-ZR CWDM/DWDM	IEEE 802.3ae compliant: <ul style="list-style-type: none"> 10GBase-SR 10GBase-LRM 10GBase-LR 10GBase-ER 10GBase-ZR CWDM/DWDM
Supported 2.5 Gigabit Copper pluggable transceivers	SFP+ Direct Attach Cable (DAC). Note: Passive and Active cable types supported	N/A
Supported 10 Gigabit Copper pluggable transceivers	SFP+ Direct Attach Cable (DAC). Also known as: <ul style="list-style-type: none"> Twinax 10GBase-CU 10GSFP+Cu 10GBase-CX1 10GBase-CR1 Note: Passive and Active cable types supported	IEEE 802.3ak compliant: <ul style="list-style-type: none"> XFP 10GBase-CX4 copper
Supported Gigabit Fiber SFPs	1000Base-SX 1000Base-LX/LH 1000Base-EX 1000Base-ZX 1000Base-BX CWDM/DWDM Note: the RJ45 interface will auto-negotiate to 1000Base-T (Gigabit)	N/A

Environmental Specifications	S-10GRT-SFP	S-10GT-XFPH
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)	53	51
MTBF (Hours)**	Without power adaptor: 142,577 With power adaptor: 96,646	Without power adaptor: 284,367 With power adaptor: 190,260
Chassis	Metal with an IP20 ingress protection rating	
Mounting		
Din Rail Kit	Optional	
Wall / Rack Mount Kit	Optional	
Product Weight and Dimensions	S-10GRT-SFP	S-10GT-XFPH
Product Weight	0.36 kg, 0.8 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	0.93 kg, 2.1 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 CISPR 32:2015/EN 55032:2015 (Class A) CISPR 24:2010/EN 55024:2010 EN61000-3-2	
Immunity	EN55024	
Electrical Safety	UL 60950-1 IEC 60950-1(ed 2); am1, am2 EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013	

	CE
Environmental	<u>Reach, RoHS and WEEE Compliant</u>
Other	ECCN: 5A991
	HTSUS Number: 8517.62.0050
	Perle Limited Lifetime Warranty

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

**Calculation model based on MIL-HDBK-217-FN2 @ 30 °C

10 Gigabit Copper to Fiber Media Conversion

Convert one 10G Ethernet media to another

Convert your 10GBaseT copper link 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.

The diagram illustrates two methods of 10G Ethernet media conversion:

- Top Diagram (Switch-to-Switch):** A 10G Switch is connected to a 10GT Media Converter using CAT 6A 10GBase-T. This converter is connected to another 10GT Media Converter via Multimode Fiber. The second 10GT Media Converter is then connected to another 10G Switch using CAT 6A 10GBase-T.
- Bottom Diagram (Server-to-Server):** A 10G Server is connected to a 10G Media Converter using CX4. This converter is connected to another 10GT Media Converter via Single Mode Fiber. The second 10GT Media Converter is then connected to another 10G Server using CAT 6A 10G-Base-T.