C-10GRT-SFP Media Converter Modules

perle.com/products/media-converters/10gbase-t-rate-converter-module.shtml

10/100/1000/2.5G/10GBase-T to SFP Copper or Fiber Converter

- Copper to fiber and copper to copper conversion
- Uses a variety of transceivers supplied by Perle, Cisco or other MSA compliant SFP+
- Advanced features: Cut-Through Forwarding, Smart Link Pass-Through, Fiber Fault Alert, Built-in Link Test Generator and Loopback
- Support for Power Level 1 and 2.

Installed in a high density MCR1900 Media Converter Chassis, Perle **C-10GRT-SFP Media Converter Module** transparently connects 10/100/1000/2.5G/10GBase-T Ethernet links over multimode or single mode fiber. Each Media Converter comes with one RJ45 1Ethernet port and an empty slot for one SFP or SFP+ module.

The C-10GRT-SFP Media Converter supports key features for ultimate network flexibility and growth.

- 10/100/1000/2.5G/10G rate conversion can be enabled to automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. This is ideal in scenarios where disparate networks need to be connected.
- Cut-Through Forwarding can be configured for environments where throughput speed is critical. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible.

Copper to Fiber conversion is achieved by inserting an SFP 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

The empty transceiver port on the **C-10GRT-SFP Media Converter Module** allows for flexible network configurations to meet any requirement using a variety of transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFP. You can use this products to convert:

Copper to Fiber Conversion:

- 10/100/1000/2.5G/10GBase-T to 1G Fiber SFP
- 10/100/1000/2.5G/10GBase-T to 10G Fiber SFP+

Copper to Copper Conversion:

10/100/1000/2.5G/10GBase-T to 1G Copper SFP

The Perle C-10GRT-SFP Media Converter Modules provides an economical path to extend Ethernet data transmission distances or convert network speeds Network Administrators can "see-everything" with Perle's advanced features such as Smart Link Pass-Through, Fiber Fault Alert and Loopback. These cost and time saving features, along with a lifetime warranty and free worldwide technical

support, make the Perle **C-10GRT-SFP Media Converter Module** the smart choice for IT professionals. If you need a Media Converter that can operate in a managed environment with AAA security, check out the CM-10GRT-SFP.

C-10GRT-SFP Media Converter Module Features

Rate Conversion	The 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	When the same Ethernet speed for both ports is enabled, the 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.
SGMII Interface Support	The Media Converter supports 1000Mbps SGMII SFPs
Copper Auto-Negotiations	The media converter supports auto negotiation on Ethernet copper interface port
Copper Duplex	Full and half duplex operation is supported
Smart Link Pass-Through	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. 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.
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	Utilizes Green Ethernet energy saving technology based on industry standards such as: Energy Efficient Ethernet (EEE) as per 802.3az. This provides power savings during idle network activity.
Module Temperature Protection	Protects your DOM/DMI capable SFP or SFP+ module by monitoring its internal temperature and will automatically shut down the SFP or SFP+ if the module is operating above its maximum temperature threshold.

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 Frames with a maximum MTU size of 10,024 bytes
VLAN	Transparent to VLAN tagged packets.
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.

Hardware Specifications

Power	
Maximum Power Consumption	14 watts*
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 (SFP)	• 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	• 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	

Smart Link Pass-Through	*Enabled (Default - Up)* 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. 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.
Cut-through / Rate converting	*Rate Converting (Default - Up)* The Media Converter can automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. When the same Ethernet speed for both ports is enabled, the 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
Fiber Interface Loopback	*Disable (Default - Up)* In this mode, all frames received on the fiber 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.
Copper Negotiation	*Auto (Default - Up)* In this mode, the media converter will auto negotiate copper link parameters. When switch is down, the media converter will be in manual mode and will use the parameters as define by Copper Duplex and Copper Speed switches
Copper Duplex	*Full Duplex (Default - Up)* In this mode, the copper port will be set to full duplex mode. If switch is down, the copper port is set to half duplex mode
Copper Speed	*100Mbps (Default - Up)* In this mode, the copper port will be fixed at 100 Mbps. When switch down, the copper port will be fixed at 10 Mbps. Note: Copper Negotiation switch must be set to manual for Copper Speed switch to work.

Connectors	
1 x RJ45	10/100/1G/2.5G/10GBase-T IEEE 802.3an 100 meters on CAT6A or better
1 x SFP / SFP+ Transceiver slot Power level 1 (1 watt) and level 2 (1.5 watts) as per SFP-8431 Hot insertion and removable	Supported 10 Gigabit Fiber pluggable transceivers (IEEE 802.3ae compliant): • 10GBase-SR • 10GBase-LRM • 10GBase-LR • 10GBase-ER • 10GBase-ZR • CWDM/DWDM Supported 1 Gigabit Copper SFPs • 1000Base-T • 1000Base-T SGMII Supported Gigabit Fiber SFPs • 1000Base-SX • 1000Base-LX/LH • 1000Base-EX • 1000Base-ZX • 1000Base-BX • CWDM/DWDM
Supported 10 Gigabit Fiber pluggable transceivers	IEEE 802.3ae compliant: • 10GBase-SR • 10GBase-LRM • 10GBase-LR • 10GBase-ER • 10GBase-ZR CWDM/DWDM
Chassis Slot profile	Two slots
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)	48
MTBF (Hours)	143,838 Calculation model based on MIL-HDBK-217-FN2 @ 30 °C

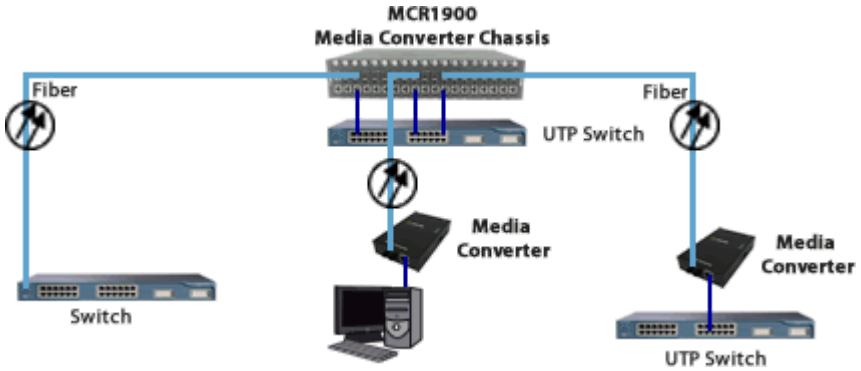
Packaging	
Shipping Weight	0.25 kg, 0.55 lbs
Shipping Dimensions	170 x 260 x 70 mm, 6.7 x 10.2 x 2.8 inches

Regulatory Approvals	
Emissions	FCC Part 15 Class A, EN55022 Class A
	CISPR 22 Class A CISPR 32:2015/EN 55032:2015 (Class A)
	EN61000-3-2
Immunity	EN55024
Electrical Safety	UL/EN/IEC 62368-1 (previously 60950-1) CAN/CSA C22.2 No. 62368-1
	CE
Environmental	Reach, RoHS and WEEE Compliant
Other	ECCN: 5A991
	HTSUS Number: 8517.62.0020
	Perle Limited Lifetime Warranty

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

High Density Fiber Distribution from UTP Switch Equipment at Corporate Headquarters

In this enterprise campus application, up to 19 Perle Media Converter Modules are installed in the MCR1900 Media Converter Chassis. A remote fiber enabled Ethernet switch is connected directly to the central MCR1900 Chassis. A standalone Media Converter converts the fiber to Ethernet in a fiber-to-desktop application. Another Fiber Media Converter is connected to a remote office Ethernet switch. In all cases, multimode or single-mode fiber can be used.



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.

Auto-sensing Rate Conversion (10/100/1000/2.5G/10GBase-T)
Using auto-sensing RJ45 Ethernet port and the empty SFP/SFP+ slot, connect and convert copper Ethernet to 1G or 10G multimode or single mode fiber. Or, convert to 1G copper.