

SMI-10GT Managed Media Converters



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

10GBase-T Copper, Fiber and Rate Conversion

- SMI-10GRT supports 10/100/1000/2500/10000 rate conversion
- Use 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
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package
- Support for Power Level 1,2,3 as well as high-power Level 4 XFPs



Perle **SMI-10GT Media Converters** transparently connect 10GBase-T Ethernet links over multimode or single mode fiber in **environments where network security is critical**. The SMI-10GRT additionally supports 10/100/1000/2500/10000 rate conversion. Each 10GBASE-T Media Converter comes with one RJ45 10GBase-T port and an empty slot for one SFP+ or XFP module.

SMI-10GT Managed Media Converters support all authentication, authorization and accounting (AAA) security services used in corporate networks, including TACACS+, RADIUS, LDAP, Kerberos, NIS and RSA. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide secure management sessions by supporting **SSH, SNMPv3, Telnet and HTTPS**. These types of features are used when managing your corporate firewalls, switches and routers. This is why Perle makes them available in the **SMI-10GT Managed Media Converter**. 10GBASE-T Media Converters are also available for unmanaged applications.

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 port on the **SMI-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 10GBASE-T 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 **SMI-10GT Media Converters** the smart choice for IT professionals.

For those environments requiring a medium to large-scale deployment of media converters, a centralized platform that simplifies the configuration, administration, monitoring, and troubleshooting of Perle Managed Media Converters is recommended. [PerleVIEW Device Management](#) software is a multi-user, Windows server-based application that delivers this level of Enterprise-grade solution.

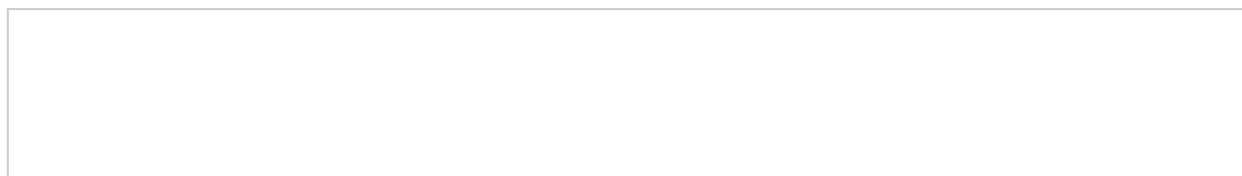
SMI-10GT Managed Media Converter Features

Rate Conversion	The SMI-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 SMI-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 802.3at. 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.
Configuration Mode selection	Select whether to use the on-board DIP switches or the management software for mode selection.
Converter Information	<ul style="list-style-type: none"> ● Media converter model and serial ● User configurable name ● User configurable fiber port name ● Hardware revision number ● Firmware version number
Module DIP switch settings	View hardware DIP switch settings.
Port Control	Enable or disable individual fiber ports on the module.
Fiber Port Status	<ul style="list-style-type: none"> ● Port Enabled (Yes/No) ● Connector ● Link Status (Up/Down) ● Fiber Fault Alert (OK, Failed) ● Fiber Loopback mode (On/Off)
Control	<ul style="list-style-type: none"> ● Reset ● Reset to factory default ● Ability to specific read/write phy registers ● Update firmware ● Fiber Loopback mode (Yes/No) ● Upload/download configuration
Manage Tune-able DWDM XFP modules	Select transceiver ITU 50GHz center wavelengths and channel numbering on tune-able XFP transceivers.

SMI-10GT Advanced Management Features

Enterprise and carrier-grade security is available through the support of strong authentication systems such as TACACS+, RADIUS and LDAP. Secure in-band access is assured via SNMPv3, SSH CLI and secure HTTPS Internet browser.



SNMP	<ul style="list-style-type: none"> • Full read/write capabilities via central SNMP servers and <u>PerleVIEW</u> • Send SNMP traps (up to 4 servers) • SNMPv3, V2C and V1 • SNMPv3 – encryption and authentication for both management and trap support • RFC1213 MIB II • Proprietary MIB provided
Telnet / SSH CLI access	In-band command line access via Telnet or <u>SSH application</u> .
Internet Browser access	<ul style="list-style-type: none"> • Fast and intuitive graphical web interface for use with common internet browsers such Internet Explorer, Mozilla Firefox and Safari • HTTP or secure HTTPS • <u>PerleVIEW Centralized Management Package</u>
Console port CLI access	Out-of-band command line access via Cisco compatible RJ45 serial console port using common “rolled” CAT5 cable. Console port can be enabled (default) or disabled.
Concurrent management sessions	Run multiple management sessions simultaneously for multiple users.
Inactivity timeout	Protect secure management sessions by setting an inactivity timeout value.
Alert event reporting	Alert level events are stored in the local event log and sent as: <ul style="list-style-type: none"> • SNMP traps to up to 4 servers • SYSLOG messages to a SYSLOG server • Email to user defined email address
Advanced IP feature set	<ul style="list-style-type: none"> • IPV4 and IPV6 address support • DHCP • DNS • Dynamic DNS • NTP • TFTP • Telnet • SSH V2 and V1 • HTTP • HTTPS
<u>Advanced Management User Authorization and Accounting</u> with primary and secondary server support	<ul style="list-style-type: none"> • TACACS+ • RADIUS • LDAP • Active Directory via LDAP • RSA Secure ID-agent or via RADIUS authentication • Kerberos • NIS
Encryption	<ul style="list-style-type: none"> • AES (256/192/128), 3DES, DES, Blowfish, CAST128, ARCFOUR(RC4), ARCTWO(RC2) • Hashing Algorithms: MD5, SHA-1, RIPEMD160, SHA1-96, and MD5-96 • Key exchange: RSA, EDH-RSA, EDH-DSS, ADH • X.509 Certificate verification: RSA, DSA
Access Control List	An access control list can be created which can filter out only those workstations that are authorized to access the management resources. Filter on IP and/or Ethernet MAC addresses.
Network Services Filter	Enable only those network services on the management module that are allowed on your network (Telnet, SSH, HTTP, HTTPS, SNMP).

Firmware download	Update the latest level firmware for management and media converter modules via TFTP or PerleVIEW .
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Power		10GT to SFP	10GT to XFP
Input Supply Voltage	12 vDC Nominal		
Maximum Power Consumption (watts)	SMI-10GT: 13 SMI-10GRT: 16*	18*	
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 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.</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	<p>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.</p>		
EEE Green Ethernet	<p>When enabled (default), the media converter will operate as an IEEE 802.3az Energy Efficient Ethernet (EEE) compliant device.</p>		

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	10GT to SFP	10GT to XFP
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 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 2.5 Gigabit Copper pluggable transceivers	S-10GR Model: SFP+ Direct Attach Cable (DAC). Note: Passive and Active cable types supported	N/A
Supported Gigabit Fiber SFPs	1000Base-SX 1000Base-LX/LH 1000Base-BX CWDM/DWDM Note: the RJ45 interface will auto-negotiate to 1000Base-T (Gigabit)	N/A
Environmental Specifications	10GT to SFP	10GT to XFP
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)	SMI-10GT: 44 SMI-10GRT: 55	61
MTBF (Hours)**	Without power adaptor: SMI-10GT: 160,139 SMI-10GRT: 108,334 With power adaptor: SMI-10GT: 125,251 SMI-10GRT: 79,592	Without power adaptor: 124,564 With power adaptor: 102,382
Chassis	Metal with an IP20 ingress protection rating	
Mounting		
Din Rail Kit	Optional	
Wall / Rack Mount Kit	Optional	
Product Weight and Dimensions	10GT to SFP	10GT to XFP
Product Weight	0.93 kg, 2.1 lbs	0.93 kg, 2.1 lbs
Product Dimensions	8 x 12 x 4.2 cm (3.1 x 4.7 x 1.7 inches)	
Shipping Weight	1.5 kg, 3.3 lbs	1.5 kg, 3.3 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 CCATS: G134373 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. All managed media converters are managed by SNMP, Telnet or an internet browser interface. This allows the copper or fiber link to provide vital information and status updates to network various management tools.

