

# C-1110-SFP Media and Rate Converter Module

 [perle.com/products/10-100-1000-sfp-media-converter-module.shtml](http://perle.com/products/10-100-1000-sfp-media-converter-module.shtml)

## 10/100/1000Base-T to 100/1000Base-X Conversion

- 10/100/1000Base-T to 1000Base-X or 100Base-X Fiber SFP Media Converters
- Connect 10/100 devices to Fast Ethernet or Gigabit backbone
- Empty slot for [Cisco](#) and other [industry standard Gigabit or Fast Ethernet Fiber SFPs](#)
- Automatically adjusts to speed of Gigabit and Fast Ethernet fiber SFP's
- Advanced features - Smart Link Pass-Through, Fiber Fault Alert, Auto-MDIX and Loopback
- High density applications with [Perle Media Converter Chassis](#)
- Manage via SNMP, Telnet/SSH, Internet browser with an [MCR-MGT Media Converter Management Module](#)



Installed in a high density [Perle Media Converter Chassis](#), Perle's line of feature rich **10/100/1000 SFP Media Converter Modules** transparently connects copper to SFP for multimode or single mode fiber. Our 10/100/1000 Ethernet to Fiber Converters provide an economical path to extend the distance of an existing network, the life of non-fiber based equipment, or the distance between two devices. The pluggable fiber optics port allows for flexible network configurations using [SFP transceivers supplied by Perle, Cisco](#) or other manufacturers of MSA compliant SFPs.

Network Administrators can "see-everything" with Perle's advanced features such as Auto-Negotiation, Auto-MDIX, 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 Perle's **10/100/1000 SFP Media Converter Modules** the smart choice for IT professionals.

## 10/100/1000 SFP Media Converter Module Features

SFP Speed Sensing	Automatically detects whether a gigabit or Fast Ethernet fiber SFP has been inserted and adjusts accordingly.
Auto-Negotiation (802.3u)	<p>The media converter supports auto negotiation. The 1000Base-X fiber interface negotiates according to 802.3 clause 37. The 10/100/1000Base-T negotiates according to 802.3 clause 28 and 40. The 1000Base-X will link up with its partner after the highest common denominator (HCD) is reached and the copper has linked up with its partner. The 1000Base-X will continue to cycle through negotiation transmitting a remote fault of offline (provided this is enabled through the switch setting) until the copper is linked up and the HCDs match.</p> <p>The media converter supports auto-negotiation of full duplex, half duplex, remote fault, full duplex pause, asymmetric pause and Auto MDI-X.</p>

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**Auto-MDIX** Auto-MDIX (automatic medium-dependant interface crossover) detects the signaling on the copper ethernet interface to determine the type of cable connected (straight-through or crossover) and automatically configures the connection when enabled. The media converter can also correct for wires swapped within a pair.

The media converter will adjust for up to 120ns of delay skew between the 1000Base-T pairs.

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**Smart Link Pass-Through** When the Link Mode switch is placed into Smart Link Pass-Through mode, the copper ethernet port will reflect the state of the 1000Base-X media converter port. This feature can be used whether fiber auto-negotiation is enabled or disabled.

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**Fiber Fault Alert** With Fiber Fault Alert the state of the 1000Base-X receiver is passed to the 1000Base-X transmitter. This provides fault notification to the partner device attached to the 1000Base-X interface of the media converter. If the 1000Base-X transmitter is off as a result of this fault it will be turned on periodically to allow the condition to clear should the partner device on the 1000Base-X be using a similar technique. This eliminates the possibility of lockouts that occur with some media converters. Applies only when fiber auto-negotiation is disabled.

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**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 10/100/1000Base-T connection and 1000Base-X fiber connection.

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**Duplex** Full and half duplex operation supported.

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**Jumbo Packets** Transparent to jumbo packets up to 10KB.

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**VLAN** Transparent to VLAN tagged packets.

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**Remote Loopback** Capable of performing a loopback on the 1000Base-X fiber interface.

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## Indicators

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**Power / TST** This green LED is turned on when power is applied to the media converter. Otherwise it is off. The LED will blink when in Loopback test mode.

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**Fiber link on / Receive activity (LKF)** This green LED is operational only when power is applied. The LED is on when the 1000Base-X link is on and flashes with a 50% duty cycle when data is received.

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**Copper link on / Receive activity (LKC)** This green LED is operational only when power is applied. The LED is on when the 10/100/1000Base-T link is on and flashes with a 50% duty cycle when data is received.

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<b>Fiber Duplex (FDF)</b>	This green LED is operational only when power is applied. The LED is on when the 10/100/1000Base-X link is operational in full duplex mode. The LED is off when in half duplex.
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<b>Copper Duplex (FDC)</b>	This green LED is operational only when power is applied. The LED is on when the 10/100/1000Base-T link is operational in full duplex mode. The LED is off when in half duplex.
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<b>10/100/1000 Speed</b>	This multi-color LED is operational only when power is applied. The LED is green when the speed of the copper ethernet port is running at 1000 Mbps. The LED is orange when the speed of the copper Ethernet port is running at 100 Mbps. The LED is off when in 10 Mbps.
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### Switches: On-Board

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<b>Auto-Negotiation (802.3u)</b>	<p><i>Enabled (Default)</i> - The media converter uses 802.3u Auto-negotiation on the 10/100/1000Base-T interface. It is set to advertise full duplex, half duplex, pause and remote fault capabilities.</p> <p><i>Disabled</i> - The media converter sets the port according to the position of the speed and duplex switches.</p>
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<b>Link Mode</b>	<p>Link Mode provides a transparency to the state of the copper link allowing for simplified trouble shooting from the devices connected to the media converter.</p> <p><i>Normal (Default – Up)</i> With Fiber Auto Negotiation enabled when the copper link goes down the 1000Base-X link is brought down. The 1000Base-X link will advertise Remote Fault (Link Fault).</p> <p>With Fiber Auto Negotiation disabled the state of the copper link has no effect on the 1000Base-X link.</p> <p><i>Smart Link Pass Through (Down)</i> With Fiber Auto Negotiation enabled the behavior is as follows. When the copper link goes down the 1000Base-X link is brought down. The 1000Base-X link will advertise Remote Fault (Link Fault). When Remote Fault (Link Fault) is received on the 1000Base-X interface the copper transmitter will be turned off. When the copper receiver is off the 1000Base-X transmitter will be turned off. When the 1000Base-X receiver goes off the copper transmitter will be turned off.</p> <p>With Fiber Auto-Negotiation disabled the behavior is as follows. When the copper receiver is off the 1000Base-X transmitter will be turned off. When the 1000Base-X receiver goes off the copper transmitter will be turned off.</p>
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<b>Fiber Fault Alert</b>	<p>The Fiber Fault Alert switch has meaning when Auto-Negotiation is disabled</p> <p><i>Enabled (Default - Up)</i></p> <p>When the 1000Base-X receiver is off the 1000Base-X transmitter is turned off. Periodically the 1000Base-X receiver will be turned on for a short period to allow the condition to clear if the 1000Base-X link partner is using a similar feature.</p> <p><i>Disabled (Down)</i></p>
<b>Remote Loopback</b>	<p>The media converter can perform a loopback on the 1000Base-X fiber interface.</p> <p><i>Disabled (Default - Up)</i></p> <p><i>Enabled</i> - The 1000Base-X receiver is looped to the 1000Base-X transmitter. The copper transmitter is taken off the interface.</p>
<b>Auto-MDIX (Strap)</b>	<p>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.</p> <p><i>Enabled (Default)</i> - 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.</p> <p><i>Disabled</i> - 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.</p>
<b>Speed Copper</b>	100 (Default) 10
<b>Duplex Copper</b>	Full (Default) Half
<b>Duplex Fiber</b>	Full (Default) Half
<b>Connectors</b>	
<b>10/100/1000Base-T</b>	RJ45 connector 2 pair CAT5, EIA/TIA 568A/B or better cable for 10/100. 4 pair CAT5 UTP cable for Gigabit.
<b>Magnetic Isolation</b>	1.5kv

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<b>Small Form Factor Pluggable (SFP) slot</b>	Empty slot for 1000Base-X or 100Base-X <u>SFP modules supplied by Perle, Cisco or other manufacturers of MSA compliant SFPs.</u> Hot insertion and removable (hot swappable)
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### Filtering

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<b>Filtering</b>	1024 MAC Addresses
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### Frame Specifications

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<b>Buffer</b>	1000 Kbits frame buffer memory
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<b>Size</b>	Maximum frame size of 10,240 bytes -- Gigabit Maximum frame size of 2048 bytes -- Fast Ethernet
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### Environmental Specifications

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<b>Operating Temperature</b>	0 C to 50 C (32 F to 122 F)
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<b>Storage Temperature</b>	minimum range of -25 C to 70 C (-13 F to 158 F)
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<b>Operating Humidity</b>	5% to 90% non-condensing
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<b>Storage Humidity</b>	5% to 95% non-condensing
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<b>Operating Altitude</b>	Up to 3,048 meters (10,000 feet)
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<b>Heat Output (BTU/HR)</b>	7.2
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<b>Maximum Power Consumption (Watts)</b>	2.1
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<b>MTBF (Hours)</b>	689,000 Calculation model based on MIL-HDBK-217-FN2 @ 30 °C
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### Mechanical - Hot Swapping Card

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<b>Edge Connector</b>	32 pin DIN 41612 / IEC 60603-2 Type B/2 Male. First make, last break for ground and power
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<b>Card insertion and removal</b>	Captive thumb screws enable fast insertion and removal. Can be further tighten with a screwdriver.
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### Product Weight

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<b>Weight</b>	0.1 kg, 0.22 lbs
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### Packaging

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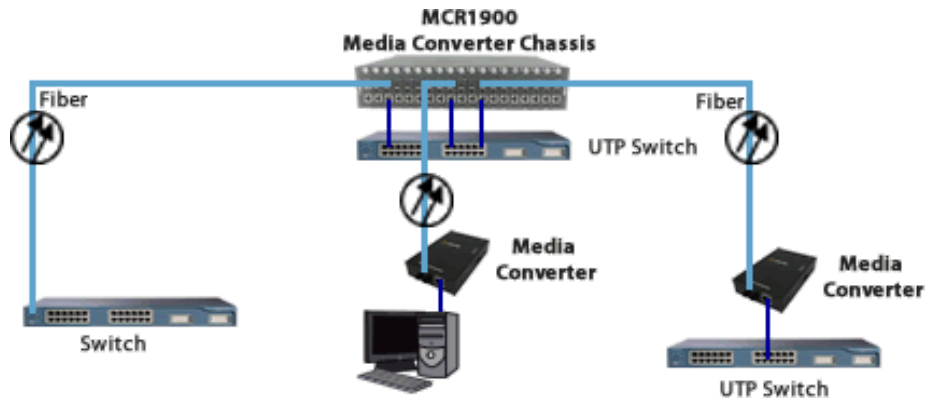
<b>Shipping Weight</b>	0.22 kg, .49 lbs
<b>Shipping Dimensions</b>	203 x 38 x 152 mm, 8 x 1.5 x 6 inches
<b>Regulatory Approvals</b>	
	FCC Part 15 Class A, EN55022 Class A
	CISPR 22 Class A CISPR 32:2015/EN 55032:2015 (Class A) CISPR 24:2010/EN 55024:2010
<b>Emissions</b>	EN61000-3-2
<b>Immunity</b>	EN55024
	UL/EN/IEC 62368-1 CAN/CSA C22.2 No. 62368-1
	UL 60950-1 IEC 60950-1(ed 2); am1, am2 EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
<b>Electrical Safety</b>	CE
<b>Environmental</b>	<u>Reach, RoHS and WEEE Compliant</u>
	ECCN: 5A991
	HTSUS Number: 8517.62.0020
<b>Other</b>	Perle Limited Lifetime Warranty

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**High Density Fiber Distribution from UTP Switch Equipment at Corporate Headquarters**

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In this enterprise campus application, up to 19 Perle C-1110 10/100/1000 Media Converters are installed in the MCR1900 Media Converter Chassis. A remote fiber enabled Ethernet switch is connected directly to the central MCR1900 Chassis. A standalone S-1110 Media Converter converts the fiber to Ethernet in a fiber-to-desktop application. Another S-1110 Fiber Media Converter is connected to a remote office Ethernet switch. In all cases, multimode or single-mode fiber can be used. Fiber links can be extended up to 120km using single-mode fiber.



## Bridge 10/100 Devices to gigabit Backbone

### Connect 10/100 devices to Gigabit Backbone

Devices on a 10/100 ethernet switch can be connected to a Gigabit backbone through the use of rate converting 10/100/1000 Media Converters.

