CM-110 Managed Fast Ethernet Media and Rate Converter

10/100Base-TX to 100Base-X Conversion

- 10/100Base-TX to 100Base-X Fiber Media Converters
- Extend network distances up to 120km
- Advanced features - Link Pass-Through, Far-End Fault, Auto-MDIX and Loopback
- High density applications with Perle **Media Converter Chassis**
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or **PerleVIEW Central Management Platform** with an **MCR-MGT Media Converter Management Module**

Installed in a high density **Perle Media Converter Chassis**, Perle's line of feature rich **Managed 10/100 Rate Converting to Fiber Media Converters** transparently connect 10/100 Ethernet to fiber. Our 10/100 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.

Network Administrators can "see-everything" with Perle's advanced features such as Auto-Negotiation, Auto-MDIX, Link Pass-Through, Far End Fault, and Remote Loopback. Along with a **Media Converter Management Module** in the chassis, configuration and monitoring of the copper and fiber ports can be performed. These cost and time saving features, along with a lifetime warranty and free worldwide technical support, make Perle's **Managed 10/100 Ethernet media converter modules** 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 this gear is recommended. **PerleVIEW Device Management** software is a multi-user, Windows server-based application that delivers this level of Enterprise-grade solution.

CM-110 Managed Media Converter Features

QOS (Quality of Service)

- Bandwidth Allocation via rate limiting
- IEEE 802.1P tagged frame priority control
- IEEE 802.1P priority tag remapping
- IP TOS (Type of Service) priority for IPV4 Diffserv or IPV6 traffic class frames
- Congestion Service Policy through WQF (Weighted Fair Queuing) or Strict Priority Queuing (default)

VLAN Tagging

- Default – Transparent to VLAN frames
- Enable discarding of tagged frames
- Enable discarding of untagged frames
- Untag – Removes any existing tag
- Insert Tag – Insert (if original frame is untagged) or replace (if original frame is tagged) the VLAN ID and priority with the configured default VLAN ID and priority tag.
- Insert Double tag (Q in Q) – Append an additional tag using the configured default VLAN ID and priority.

Unknown Multicast Frame filtering

When enabled, Multicast frames with an unknown destination address are not allowed to egress the port

Unknown Unicast Frame filtering

When enabled, Unicast frames with an unknown destination address are not allowed to egress the port

Unidirectional Ethernet

When enabled, provides the ability to restrict port to one-way traffic flow. Used in applications such as unidirectional video broadcasting as well as providing security for ethernet connections in accessible public areas

Configuration Mode selection

Select whether the module is to use the on-board DIP switches or enable the management module in the chassis to manage

Auto-MDIX

Can manually set Auto or MDIX on the copper port via on-board strap or via the management card.
Auto-MDIX (automatic medium-dependant interface crossover) detects the signaling on the UTP interface to determine the type of cable connected (straight-through or crossover) and automatically configures the connection when enabled. With Auto-MDIX enabled, 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.

Module Information

- Chassis slot number that the module is in
- Media converter model and serial number
- User configurable media converter module name
- User configurable fiber port name
- User configurable copper port name
- Hardware revision number
- Firmware version number

Module DIP switch settings

View hardware DIP switch settings

Selectable Max Packet Size

Set max packet size to 1522, 1518 or 2048 (default)

10BaseT Extended Distance

Normal/extended – default Normal. By configuring as “extended”, the 10baseT receiver sensitivity is increased providing the possibility of an 10BaseT connection greater than 100m.

Port Control

Enable or disable individual fiber or copper port on the module

Copper Port Status

- Port Enabled (Yes/No)
- Link Status (Up/Down)
- Auto Negotiation Settings (Disabled, Complete or In Progress)
- Resolved as crossover MDI or MDIX type

Fiber Port Status

- Port Enabled (Yes/No)
- Connector type (SC, LC, ST)
- Link Status (Up/Down)
- Far End Fault (OK, Failed)
- Fiber Loopback mode (On/Off)

Module Control

- Reset card
- Reset to factory default
- Reset Statistical counters
- Phy specific commands such write/read config, read dip switches
- Update firmware
- Fiber Loopback mode. (On/Off)
- Upload/download configuration

Backup and Restore

Provides fast and easy module replacement. Management module will always save a copy of the media converter configuration and will restore this configuration automatically to the media module when it is detected in the slot

Detailed port statistics

To assist in troubleshooting copper and fiber links, an extensive list of ingress and egress counters for both copper and fiber ports are available. These statistics can be viewed locally via the management module or from a central SNMP NMS on the network

Auto-Negotiation (802.3u)

The media converter supports auto negotiation on the 10/100Base-TX interface.

Link Pass-Through

With Link Pass-Through the state of the UTP receiver is passed to the fiber transmitter to make the media converter appear transparent to the end devices that are connected. In addition if Far-End Fault is enabled the media converter can turn off the 10/100Base-TX transmitter when a FAR-End Fault is received.

Using Link Pass-Through with Far-End Fault minimizes data loss when a fault occurs. Should a fault occur, the end devices have the indication of a failure available to them making trouble shooting easier.

Far-End Fault (FEF)

The media converter implements the 802.3 standard for Far-End Fault for the indication and detection of remote fault conditions on the 100Base-X fiber connection. With Far-End Fault enabled the media converter transmits the Far-End Fault Indication over the 100Base-X fiber connection whenever a receive failure is detected on the 100Base-X fiber connection. The media converter continuously monitors the 100Base-X fiber connection for a valid signal.

The action the media converter takes on receiving a Far-End Fault Indication is dependent on the Link Pass-Through switch setting.

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 10/100Base-TX copper connection.

Remote Loopback

The media converter is capable of performing a loopback on the fiber port.

Specifications				
Lifetime limited warranty	**Reach, RoHS and WEEE Compliant**	**HTSUS Number:** 8517.62.0020	**UNSPSC Code:** 43201553	**ECCN:** 5A991

Indicators	
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.
Fiber link on / Receive activity (LKF)	This green LED is operational only when power is applied. The LED is on when the 100Base-FX link is on and flashes with a 50% duty cycle when data is received.

Copper link on / Receive activity (LKC)	This green LED is operational only when power is applied. The LED is on when the 100Base-TX link is on and flashes with a 50% duty cycle when data is received.
Fiber Duplex (FDF)	This green LED is operational only when power is applied. The LED is on when the 100Base-FX link is operational in full duplex mode. The LED is off when in half duplex.
Copper Duplex (FDC)	This green LED is operational only when power is applied. The LED is on when the 10/100Base-TX link is operational in full duplex mode. The LED is off when in half duplex.
10/100 Speed	This green LED is operational only when power is applied. The LED is on when the speed of the copper Ethernet port is running at 100 MBPS. The LED is off when in 10 MBPS
Switches: On-Board	
Auto-Negotiation (802.3u)	• *Enabled (Default)* - The media converter uses 802.3u Auto-negotiation on the 100Base-TX interface. It is set to advertise full duplex. • *Disabled* - The media converter sets the port according to the position of the speed and duplex switches.
Link Pass Through	• *Enabled (Default)* - When the state of the receiver is changed on the 100Base-TX interface it is reflected on the 100Base-FX fiber transmitter. When the state of the receiver on the 100Base-FX interface is changed it is reflected on the 100Base-TX transmitter. • When a Far-End Fault Indication is received on the fiber interface the 100Base-TX transmitter is turned off. When the Far-End Fault Indication is cleared the transmitter is turned back on. • *Disabled* - Far-End Fault Indications are not transmitted regardless of the condition of the receive signal on the 100Base-FX fiber connection.
Far-End Fault (FEF)	• *Enabled Enabled (Default)* - The media converter transmits the Far-End Fault Indication over the 100Base-X fiber connection whenever a receive failure is detected on the 100Base-X fiber connection. The media converter continuously monitors the100Base-X fiber connection and clears the Far-End Fault Indication condition when a valid signal is received. • *Disabled* - Far-End Fault Indications are not transmitted regardless of the condition of the receive signal on the 100Base-FX fiber connection.

Remote Loopback	The media converter can perform a loopback on the 100Base-X fiber interface. Disabled (Default - Up) *Enabled* - The 100Base-X receiver is looped to the 100Base-X transmitter. The 100Base-TX transmitter is taken off the interface.
Auto-MDIX (Internal Strap)	• If Auto-Negotiation (802.3u) is enabled, the media converter uses the HP Auto-MDIX method for the 100Base-TX interface. • If Auto-Negotiation (802.3u) is disabled the Media converter will use the RX Energy method on the 100Base-TX interface to set the port MDI or MDIX whichever is appropriate. • *Enabled (Default)* - 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. • *Disabled* - 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.
Speed Copper	• 100 (Default) • 10
Duplex Copper	• Full (Default) • Half
Duplex Fiber	• Full (Default) • Half
Cables	
100Base-TX	RJ45 connector, 2 pair CAT 5, EIA/TIA 568A/B or better cable
Magnetic Isolation	1.5kv
Fiber Optic Cable	• Multimode: 62.5 / 125, 50/125, 85/125, 100/140 micron • Single Mode: 9/125 micron (ITU-T 625)
Filtering	
Filtering	1024 MAC Addresses

Frame Specifications	
Buffer	512 Kbits frame buffer memory
Size	Maximum frame size of 2048 bytes
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)	7.2
Maximum Power Consumption (Watts)	2.1
MTBF (Hours)*	598,000 Hours *Calculation model based on MIL-HDBK-217-FN2 @ 30°C*
Mechanical - Hot Swapping Card	
Edge Connecter	32 pin DIN 41612 / IEC 60603-2 Type B/2 Male. Fist make, last break for ground and power
Card insertion and removal	Captive thumb screws enable fast insertion and removal. Can be further tighten with a screwdriver.
Product Weight	
Weight	0.15 kg, 0.33 lbs
Packaging	
Shipping Weight	0.33 kg, .73 lbs
Shipping Dimensions	203 x 38 x 152 mm, 8 x 1.5 x 6 inches

Regulatory Approvals	
Emissions	• FCC Part 15 Class A • CISPR 32 / EN 55032 • EN61000-3-2
Immunity	CISPR 35 / EN 55035
Electrical Safety	• 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 • CE
Laser Safety	• EN 60825-1 • Fiber optic transmitters on this device meet Class 1 Laser safety requirements per IEC-60825 FDA/CDRH standards and comply with 21CFR1040.10 and 21CFR1040.11.

Product List

CM-110-M2ST2 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-FX 1310nm multimode (ST) [2 km/1.2 miles]. Managed or unmanaged operation

Part Number(s)
05052400

CM-110-M2SC2 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-FX 1310nm multimode (SC) [2 km/1.2 miles]. Managed or unmanaged operation

Part Number(s)
05052410

CM-110-M2LC2 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-FX 1310nm multimode (LC) [2 km/1.2 miles]. Managed or unmanaged operation

Part Number(s)
05052420

CM-110-S2ST20 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-LX 1310nm single mode (ST) [20 km/12.4 miles]. Managed or unmanaged operation

Part Number(s)
05052520

CM-110-S2SC20 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-LX 1310nm single mode (SC) [20 km/12.4 miles]. Managed or unmanaged operation

Part Number(s)
05052430

CM-110-S2LC20 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-LX 1310nm single mode (LC) [20 km/12.4 miles]. Managed or unmanaged operation

Part Number(s)
05052440

CM-110-S2ST40 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-EX 1310nm single mode (ST) [40 km/24.9 miles]. Managed or unmanaged operation

Part Number(s)
05052530

CM-110-S2SC40 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-EX 1310nm single mode (SC) [40 km/24.9 miles]. Managed or unmanaged operation

Part Number(s)
05052450

CM-110-S2LC40 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-EX 1310nm single mode (LC) [40 km/24.9 miles]. Managed or unmanaged operation

Part Number(s)
05052560

CM-110-S2ST80 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-ZX 1550nm single mode (ST) [80 km/49.7 miles]. Managed or unmanaged operation

Part Number(s)
05052540

CM-110-S2SC80 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-ZX 1550nm single mode (SC) [80 km/49.7 miles]. Managed or unmanaged operation

Part Number(s)
05052460

CM-110-S2LC80 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-ZX 1550nm single mode (LC) [80 km/49.7 miles]. Managed or unmanaged operation

Part Number(s)
05052570

CM-110-S2ST120 - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-ZX 1550nm single mode (ST) [120 km/74.6 miles]. Managed or unmanaged operation

Part Number(s)
05052550

CM-110-S2SC120 - 10/100 Fast Ethernet Media and Rate Converter Managed Module. 10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-ZX 1550nm single mode (SC) [120 km/74.6 miles]. Managed or unmanaged operation

Part Number(s)

05052510

CM-110-S2LC120 - 10/100 Fast Ethernet Media and Rate Converter Managed Module. 10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-ZX 1550nm single mode (LC) [120 km/74.6 miles]. Managed or unmanaged operation

Part Number(s)

05052580

CM-110-M1ST2U - 10/100 Fast Ethernet Media and Rate Converter. Managed Module 10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1310nm TX / 1550nm RX single strand fiber, multimode (ST) [2 km/1.2 miles]. Managed or unmanaged operation

Part Number(s)

05042850

CM-110-M1ST2D - 10/100 Fast Ethernet Media and Rate Converter. Managed Module 10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1550nm TX / 1310nm RX single strand fiber, multimode (ST) [2 km/1.2 miles]. Managed or unmanaged operation

Part Number(s)

05042840

CM-110-M1SC2U - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1310nm TX / 1550nm RX single strand fiber, multimode (SC) [2 km/1.2 miles]. Managed or unmanaged operation

Part Number(s)
05042910

CM-110-M1SC2D - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1550nm TX / 1310nm RX single strand fiber, multimode (SC) [2 km/1.2 miles]. Managed or unmanaged operation

Part Number(s)
05042900

CM-110-S1ST20U - 10/100 Fast Ethernet Media and Rate Converter. Managed Module
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1310nm TX / 1550nm RX single strand fiber, single mode (ST) [20 km/12.4 miles]. Managed or unmanaged operat

Part Number(s)
05042820

CM-110-S1ST20D - 10/100 Fast Ethernet Media and Rate Converter. Managed Module
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1550nm TX / 1310nm RX single strand fiber, single mode (ST) [20 km/12.4 miles]. Managed or unmanaged operat

Part Number(s)
05042830

CM-110-S1SC20U - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1310nm TX / 1550nm RX single strand fiber, single mode (SC) [20 km/12.4 miles]. Managed or unmanaged operat

Part Number(s)
05052470

CM-110-S1SC20D - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1550nm TX / 1310nm RX single strand fiber, single mode (SC) [20 km/12.4 miles]. Managed or unmanaged operat

Part Number(s)
05052480

CM-110-S1SC40U - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1310nm TX / 1550nm RX single strand fiber, single mode (SC) [40 km/24.9 miles]. Managed or unmanaged operat

Part Number(s)
05052490

CM-110-S1SC40D - 10/100 Fast Ethernet Media and Rate Converter Managed Module.
10/100Base-TX (RJ-45) [100 m/328 ft.] to 100Base-BX 1550nm TX / 1310nm RX single strand fiber, single mode (SC) [40 km/24.9 miles]. Managed or unmanaged operat

Part Number(s)
05052500