
# 10/100 Media Converter Module Unmanaged

- 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

Installed in a high density Perle Media Converter Chassis, Perle's line of feature rich 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. These cost and time saving features, along with a lifetime warranty and free worldwide technical support, make Perle's 10/100 Ethernet media converter modules the smart choice for IT professionals.

## Media Converter 10/100 to Fiber Features

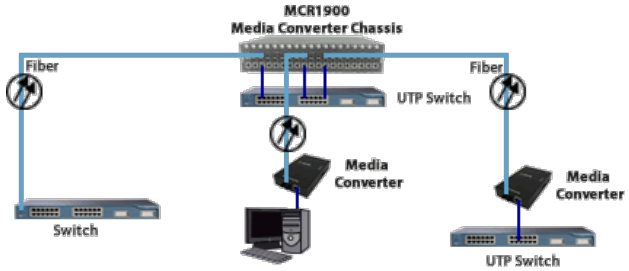
| | |
|---|---|
| Auto-Negotiation (802.3u) | The media converter supports auto negotiation on the 10/100Base-TX interface. |
| Auto-MIDX | Auto-MDIX (automatic medium-dependant interface crossover) detects the signaling on the UTP interface to determine the type of cable connected (straight-through 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. |
| 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.<br><br>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 the100Base-X fiber connection for a valid signal.<br><br>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. |
| VLAN | The media converter is transparent to VLAN tagged packets. |
| Remote LookBack | The media converter is capable of performing a lookback on the fiber port. |

| 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 operatinal 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 operatinal 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.<br><br>*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.<br><br>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.<br><br>*Disabled* - The 100Base-TX and the 100Base-FX fiber interface operate independently. Far-End Fault indication on the 100Base-FX fiber interface has no effect on the 100Base-TX interface. |
| Far-End Fault (FEF) | *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.<br><br>*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.<br><br>*Disabled (Default - Up)*<br><br>*Enabled* - The 100Base-X receiver is looped to the 100Base-X transmitter. The 100Base-TX transmitter is taken off the interface. |
| Auto-MDIX (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.<br><br>*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.<br><br>*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)<br>10 |
| Duplex Copper | Full (Default)<br>Half |
| Duplex Fiber | Full (Default)<br>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<br>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 |
| MTBF (Hours) | 598,000 |
| 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, EN55022 Class A |
| | CISPR 22 Class A |
| | EN61000-3-2 |
| Immunity | EN55024 |
| Electrical Safety | UL 60950-1 |
| | EN60950 |
| | CE |
| Laser Safety | EN 60825-1:2007 |
| | 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. |
| Environmental | RoHS - 2002/95/EC Directive |
| | WEEE - 2002/96/EC Directive |
| | Reach compliant |
| Other | ECCN: 5A991A |
| | HTSUS Number: 8517.62.0050 |
| | Perle Lifetime warranty |

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

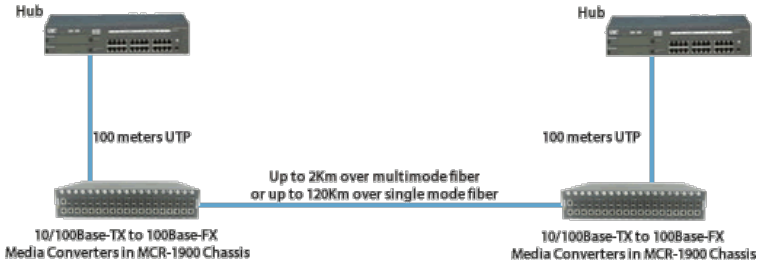
In this enterprise campus application, up to 19 Perle C-110 10/100 Media Converters are installed in the MCR1900 Media Converter Chassis. A remote fiber enabled Ethernet switch is connected directly to the central MCR1900 Chassis. A standalone S-110 Media Converter converts the fiber to Ethernet in a fiber-to-desktop application. Another S-110 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.




## 10/100 – Extend Network between Ethernet Hubs

### Extend the network distance between two Ethernet Hubs

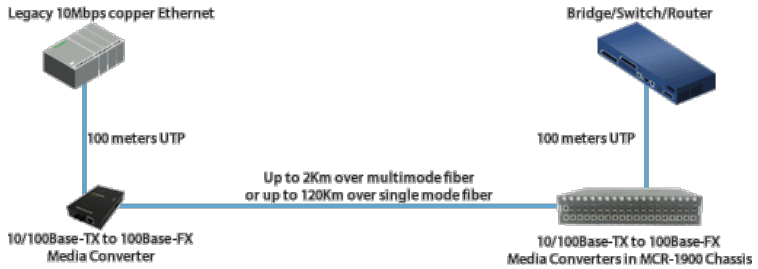
A pair of 10/100 media converters can extend the distance between hubs across a fiber link up to 120km in length.




## 10/100 – Extend Network between 10Mbps and Fast Ethernet

### Extend the network distance between legacy 10Mbps copper Ethernet to Fast Ethernet infrastructure

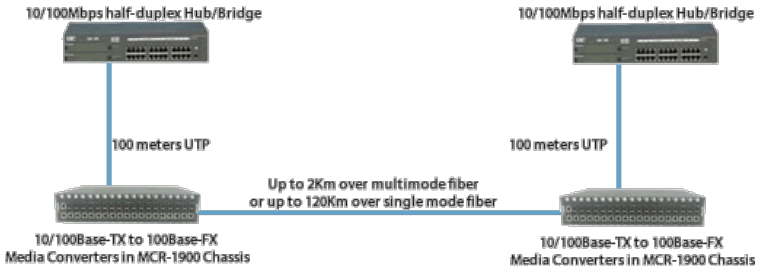
A pair of 10/100 media converters can extend the distance between a legacy 10Mbps device to a Fast Ethernet switch across a fiber link up to 120km in length.




## 10/100 – Extend Network between Half-Duplex Hubs

### Extend the network distance between two Ethernet half-duplex hubs

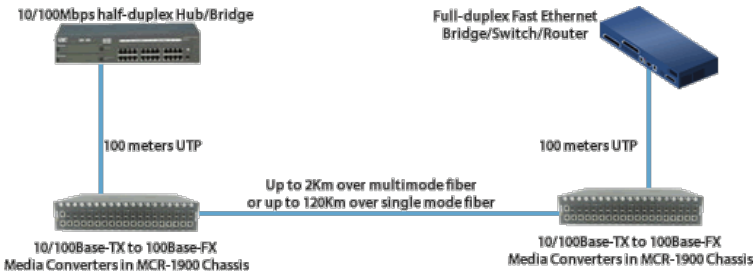
A pair of 10/100 media converters can extend the distance between hubs across a fiber link up to 120km in length. They also isolate the collision domains, associated with half-duplex, from crossing the fiber link.



## 10/100 – Extend Network between Half-Duplex Hub and Switch

### Extend the network distance between an Ethernet half-duplex hub and a full-duplex switch

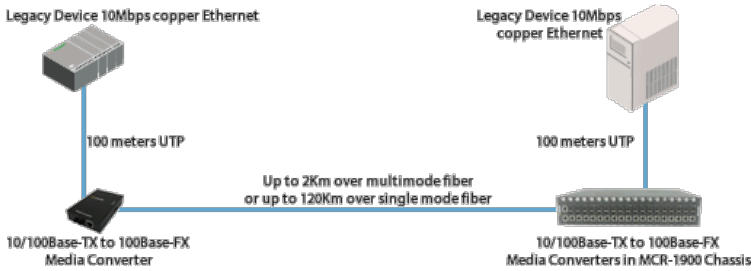
A pair of 10/100 media converters can extend the distance between a half-duplex hub and a full-duplex switch across a fiber link up to 120km in length. They also isolate the collision domains, associated with half-duplex, from crossing the fiber link. In this scenario, the media converter connected to the switch must be forced to half-duplex.




## 10/100 – Extend Network between two legacy 10Mbps Devices

### Extend the network distance between legacy 10Mbps copper Ethernet devices

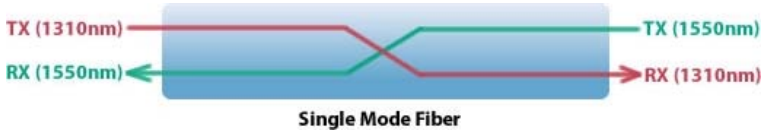
A pair of 10/100 media converters can extend the distance between two legacy 10Mbps devices across a fiber link up to 120km in length.




## Single Mode / Single Fiber

### Connect copper ports over a single fiber strand ( also referred to as “Bi-Directional” BiDi )

When Single Strand fiber is used, a pair of Single Fiber Media Converters is needed for the copper to fiber conversion. Perle Single Fiber Media Converters are also referred to as “Up/Down” models. For example the C-110-S1SC20U (“Up”) and C-110-S1SC20D (“Down”), shown below, must be used in pairs. An “Up” must be matched with a “Down” peer to deal with transmit and receive frequencies separately.




C-110-S1SC20U C-110-S1SC20D

The majority of installations for single mode fiber media converters are of the “dual connector” or “dual fiber” type where one fiber connection is used for transmit, the other for receive. These are physically “crossed” to match up the Transmit/Receive links.

However, to reduce costs, or where there are limits on available fiber, WDM technology may be utilized. WDM uses separate transmit and receive frequencies to communicate on a single fiber strand. WDM technology relies on the fact that optical fibers can carry many wavelengths of light simultaneously without interaction between each wavelength. Thus, a single fiber can carry many separate wavelength signals or channels simultaneously.

So remember, if Single Strand fiber is used, you will need an “Up” Media Converter on one side and a “Down” Media Converter on the other for copper to fiber conversion.

Perle offers a wide variety of Single Fiber (“Up/Down”) Media Converters to connect 10BaseT, Fast Ethernet and Gigabit to single fiber. Whether you need Managed or Unmanaged, Standalone or Modular Chassis Based, 20km or 120km, Perle has the right model to meet your fiber conversion requirement.

## Select a Model to obtain a Part Number - Unmanaged Media Converter Chassis Modules - Fast Ethernet to Fiber

| Model | Connector | Type | Transmit (dBm) | | Receive (dBm) | | Power Budget (dBm) | Wavelength (nm) | Fiber Type | Operating Distance |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Max | Min | Max | | | | |
| C-110-M2ST2 | Dual ST | 100Base-FX | -20.0 | -12.0 | -31.0 | -14.0 | 11.0* | 1310 | MMF | 2 km (1.2 mi) |
| C-110-M2SC2 | Dual SC | 100Base-FX | -20.0 | -12.0 | -31.0 | -14.0 | 11.0* | 1310 | MMF | 2 km (1.2 mi) |
| C-110-M2LC2 | Dual LC | 100Base-FX | -20.0 | -12.0 | -30.0 | -14.0 | 10.0* | 1310 | MMF | 2 km (1.2 mi) |
| C-110-S2ST20 | Dual ST | 100Base-LX | -18.0 | -7.0 | -32.0 | -3.0 | 14.0 | 1310 | SMF | 20 km (12.4 mi) |
| C-110-S2SC20 | Dual SC | 100Base-LX | -18.0 | -7.0 | -32.0 | -3.0 | 14.0 | 1310 | SMF | 20 km (12.4 mi) |
| C-110-S2LC20 | Dual LC | 100Base-LX | -15.0 | 0.0 | -34.0 | -5.0 | 19.0 | 1310 | SMF | 20 km (12.4 mi) |
| C-110-S2ST40 | Dual ST | 100Base-EX | -5.0 | 0.0 | -34.0 | -3.0 | 29.0 | 1310 | SMF | 40 km (25 mi) |
| C-110-S2SC40 | Dual SC | 100Base-EX | -5.0 | 0.0 | -34.0 | -3.0 | 29.0 | 1310 | SMF | 40 km (25 mi) |
| C-110-S2LC40 | Dual LC | 100Base-EX | -5.0 | 0.0 | -34.0 | -3.0 | 29.0 | 1310 | SMF | 40 km (25 mi) |
| C-110-S2ST80 | Dual ST | 100Base-ZX | -5.0 | 0.0 | -34.0 | -3.0 | 29.0 | 1550 | SMF | 80 km (50 mi) |
| C-110-S2SC80 | Dual SC | 100Base-ZX | -5.0 | 0.0 | -34.0 | -3.0 | 29.0 | 1550 | SMF | 80 km (50 mi) |
| C-110-S2LC80 | Dual LC | 100Base-ZX | -5.0 | 0.0 | -34.0 | -3.0 | 29.0 | 1550 | SMF | 80 km (50 mi) |
| C-110-S2ST120 | Dual ST | 100Base-ZX | 0.0 | 5.0 | -35.0 | -3.0 | 35.0 | 1550 | SMF | 120 km (75 mi) |
| C-110-S2SC120 | Dual SC | 100Base-ZX | 0.0 | 5.0 | -35.0 | -3.0 | 35.0 | 1550 | SMF | 120 km (75 mi) |
| C-110-S2LC120 | Dual LC | 100Base-ZX | 0.0 | 5.0 | -34.0 | -3.0 | 34.0 | 1550 | SMF | 120 km (75 mi) |

## Single Fiber Models ( Recommended use in pairs )

| Model | Connector | Type | Transmit (dBm) | | Receive (dBm) | | Power Budget (dBm) | Wavelength (nm) | Fiber Type | Operating Distance |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Max | Min | Max | | | | |
| C-110-S1SC20U | Single SC | 100Base-BX | -14.0 | -8.0 | -32.0 | -3.0 | 18.0 | 1310 / 1550 | SMF | 20 km (12.4 mi) |
| C-110-S1SC20D | Single SC | 100Base-BX | -14.0 | -8.0 | -32.0 | -3.0 | 18.0 | 1550 / 1310 | SMF | 20 km (12.4 mi) |
| C-110-S1SC40U | Single SC | 100Base-BX | -8.0 | -3.0 | -33.0 | -3.0 | 25.0 | 1310 / 1550 | SMF | 40 km (25 mi) |
| C-110-S1SC40D | Single SC | 100Base-BX | -8.0 | -3.0 | -33.0 | -3.0 | 25.0 | 1550 / 1310 | SMF | 40 km (25 mi) |

The minimum fiber cable distance for all converters listed is 2 meters.

*Based on use with 62.5/125 micron multimode fiber.