S-100 Fast Ethernet Converters

perle.com/products/fast-ethernet-media-converters.shtml

100Base-TX to 100Base-FX Fiber Mode Conversion

- 100Base-TX to 100Base-FX Fiber Media Converters
- Extend network distances up to 120km
- SC, LC and ST Media Converters
- Advanced Features: Link Pass-Through, Far-End Fault, Auto-MDIX

Fast Ethernet Converter

Perle's feature rich **fast ethernet converter** family transparently connects UTP copper to fiber. Our fast ethernet media 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 rest assured with Perle's advanced features such as Auto-Negotiation, Auto-MDIX, Link Pass-Through, Far End Fault, and Pause which make the end to end link completely transparent. 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's fast ethernet media converters** the smart choice for IT professionals.

Fast Ethernet Converter Features: 100Base-TX to 100Base-FX

Auto-Negotiation (802.3u)	The media converter supports auto negotiation on the fast ethernet 100Base-TX interface.
Auto-MDIX	Auto-MDIX (automatic medium-dependant interface crossover) detects the signaling on the 100Base-TX 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 100Base-TX receiver is passed to the 100Base-FX 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 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-FX fiber connection. With Far-End Fault enabled the media converter transmits the Far-End Fault Indication over the 100Base-FX fiber connection whenever a receive failure is detected on the 100Base-FX fiber connection. The media converter continuously monitors the 100Base-FX 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 fast ethernet media converter supports pause negotiation on the 100Base-TX copper connection.
VLAN	The media converter is transparent to VLAN tagged packets.

Power

Input Supply Voltage	6 - 30 vDC, unregulated (12 vDC Nominal)
Current	167 mA
Power Consumption	2.0 watts
Power Connector	5.5mm x 9.5mm x 2.1mm barrel socket

Power Adapter

Universal AC/DC Adapter	100-240v AC, regulated DC adapter included

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.

Switches - accessible through a side opening in the chassis

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 100Base-TX port to full duplex.
Pause	Pause should be enabled when all devices connected to the media converter support pause. Auto-Negotiation must be Enabled to use this feature. *Enabled (Default)* - The Media converter will advertise Pause capability during Auto-Negotiation on the 100Base-TX interface. *Disabled* - The Media converter will advertise that it does not have Pause capability during Auto-Negotiation on the 100Base-TX interface.
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* - 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-FX fiber connection whenever a receive failure is detected on the 100Base-FX fiber connection. The media converter continuously monitors the 100Base-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 convertor's transmitter and the partner devices transmitter are connected to the others receiver. The Media Convertor's 100Base-TX port is configured as MDI with this switch setting.

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)

Packet Transmission Characteristics

Bit Error Rate (BER)	$<10^{-12}$

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)	6.8
MTBF (Hours)**	Without power adaptor: 595,000 With power adaptor: 333,000
Chassis	Metal with an IP20 ingress protection rating

Mounting

Din Rail Kit	Optional
Rack Mount Kit	Optional

Product Weight and Dimensions

Weight	0.3 kg, 0.66 lbs
Dimensions	120 x 80 x 26 mm, 4.7 x 3.1 x 1.0 inches

Packaging

Shipping Weight	0.55 kg, 1.2 lbs
Shipping Dimensions	170 x 280 x 70 mm, 6.7 x 10.2 x 2.8 inches

Regulatory Approvals

Emissions	FCC Part 15 Class B*, EN55022 Class B*
	CISPR 22 Class B* 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
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	Reach, RoHS and WEEE Compliant

| Other	ECCN: 5A991
	HTSUS Number: 8517.62.0020
	Perle Limited Lifetime Warranty

* When used with a Class B rated AC power adapter.

**Calculation model based on MIL-HDBK-217-FN2 @ 30 °C

Fast Ethernet UTP Switch to UTP Switch

Extend the network distance between two twisted pair switches
Two Fast Ethernet Media Converters can extend the distance between UTP Switches across a fiber link up to 120km in length.

Fast Ethernet UTP Switch to UTP Switch Diagram
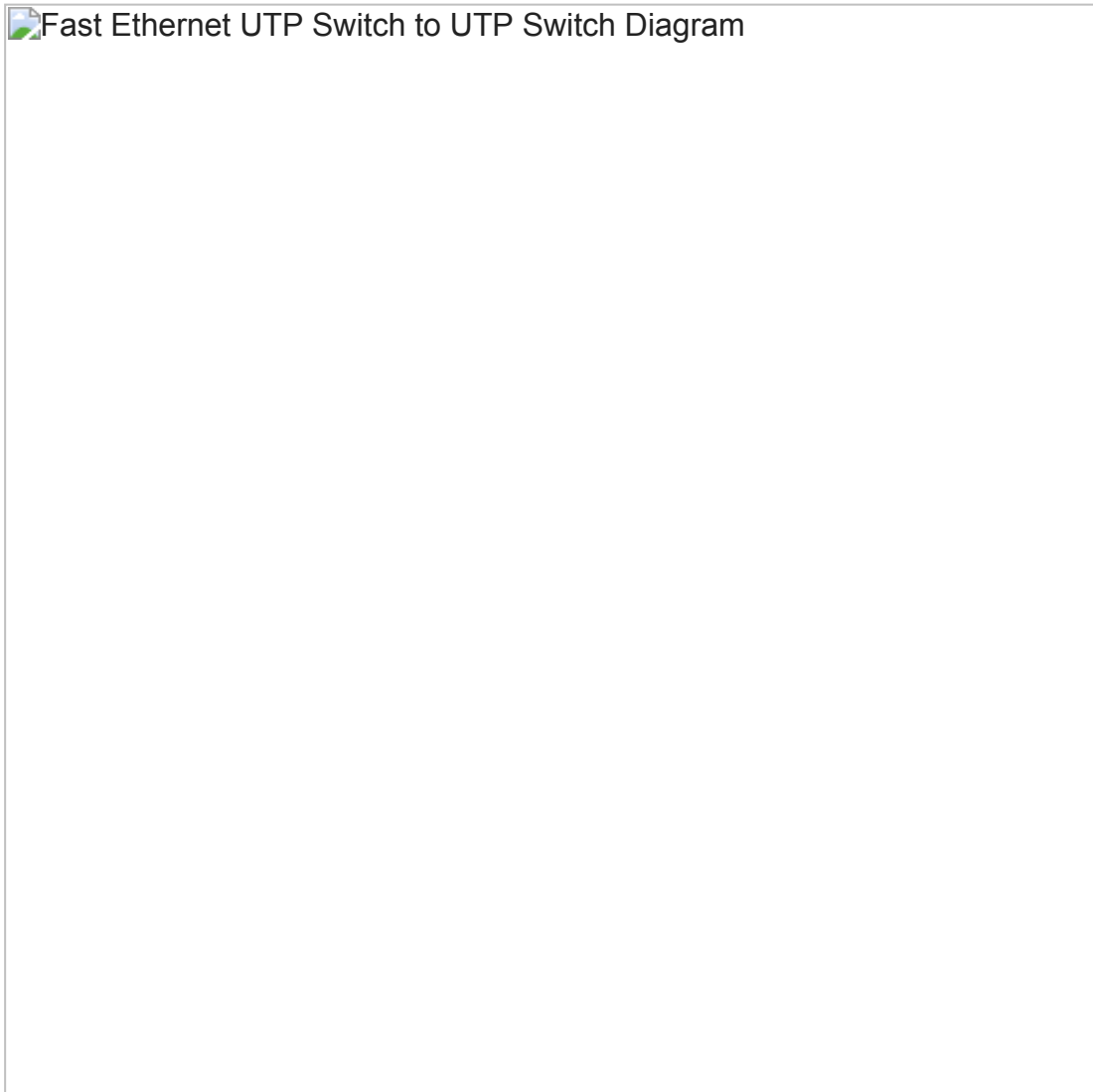
Fast Ethernet UTP Switch to Fiber Switch

Interconnect a UTP Switch with a Fiber Switch

A media converter can interconnect a UTP copper based Switch port to a remote switch that has integrated fiber.
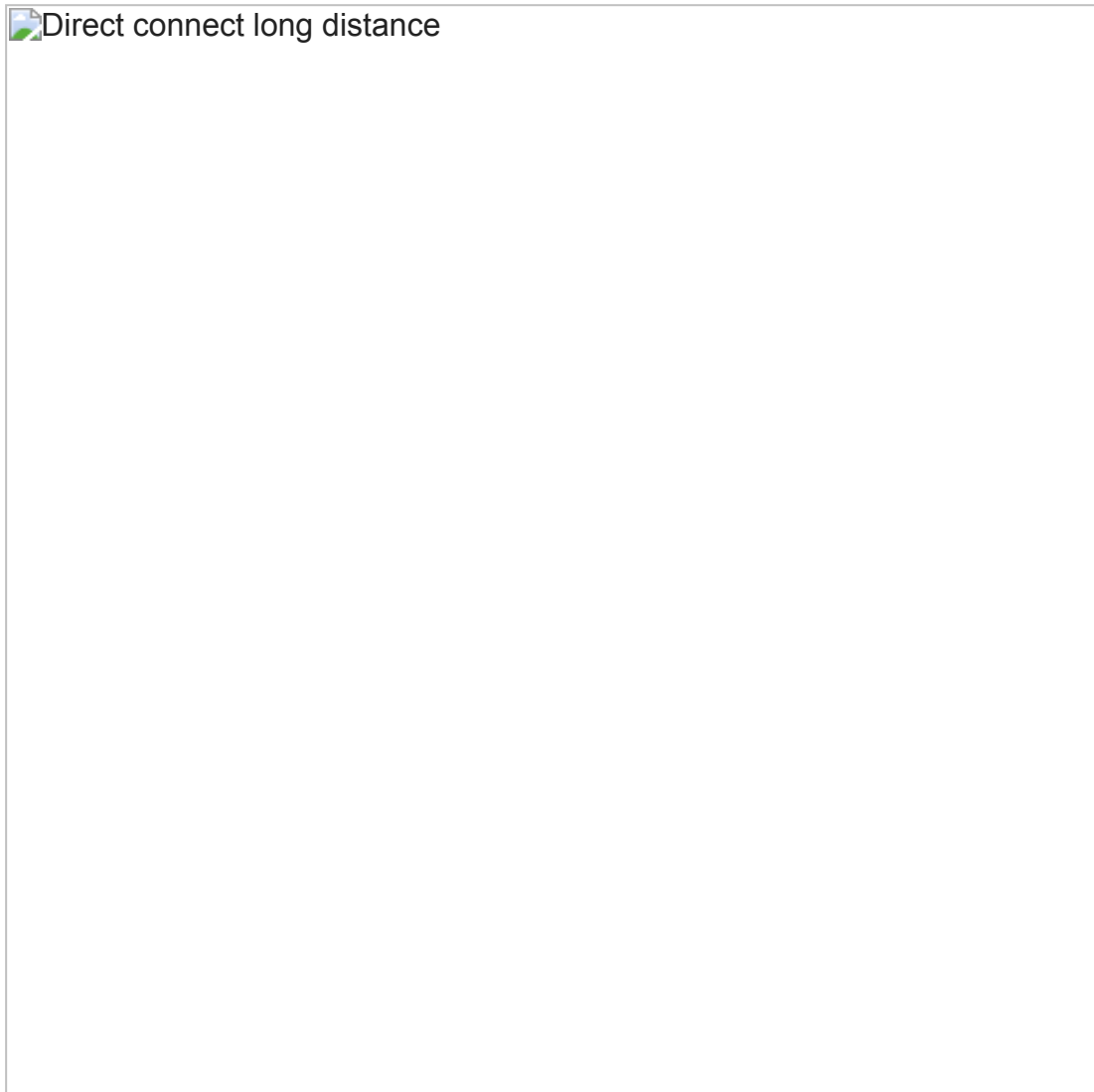
Fast Ethernet UTP Switch to Fiber Switch Diagram

Direct Connect - Long Distance

Direct Connection between two remote devices

With a pair of Fast Ethernet Media Converters two devices, such as file servers, can be connected up to 120km away across a fiber link.

Direct connect long distance

Enterprise Infrastructure

Enterprise Infrastructure using Fiber Optics

Create a fiber infrastructure for your enterprise network without any wholesale replacement of existing copper-based equipment.


Enterprise Infrastructure Diagram

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 S-100-S1SC20**U** ("Up") and S-100-S1SC20**D** ("Down"), shown below, must be used in pairs. An "**U**p" must be matched with a "**D**own" peer to deal with transmit and receive frequencies separately.

Single Mode Fiber Diagram
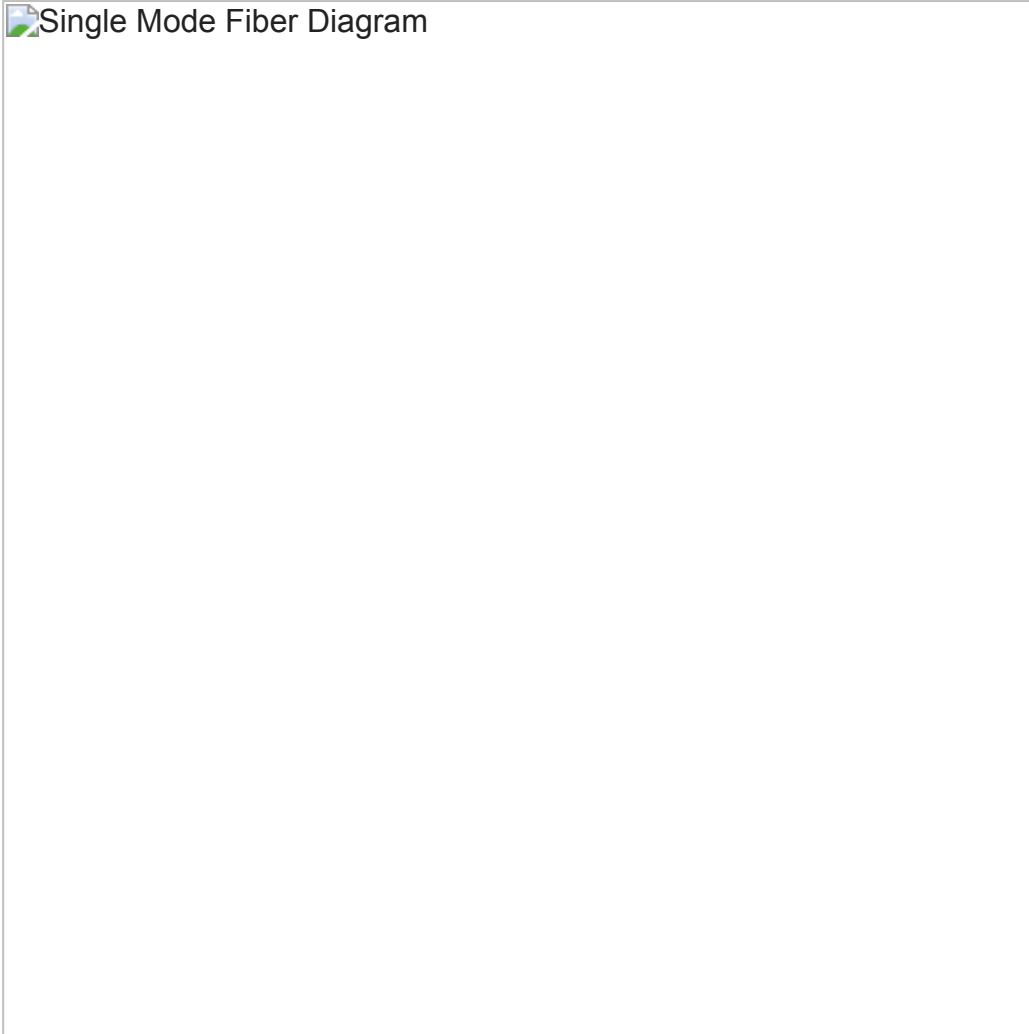
S-100-S1SC20US-100-S1SC20D

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 ("**U**p/**D**own") 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 Stand-alone Media Converters - Fast Ethernet to Fiber

| Model | Connector | Type | Transmit (dBm) | | Receive (dBm) | | Power Budget (dBm) | Wavelength (nm) |
			Min	Max	Min	Max		
S-100-M2ST2	Dual ST	100Base-FX	-20.0	-12.0	-31.0	-14.0	11.0*	1310
S-100-M2SC2	Dual SC	100Base-FX	-20.0	-12.0	-31.0	-14.0	11.0*	1310
S-100-M2LC2	Dual LC	100Base-FX	-20.0	-12.0	-30.0	-14.0	10.0*	1310
S-100-S2ST20	Dual ST	100Base-LX	-18.0	-7.0	-32.0	-3.0	14.0	1310
S-100-S2SC20	Dual SC	100Base-LX	-18.0	-7.0	-32.0	-3.0	14.0	1310
S-100-S2LC20	Dual LC	100Base-LX	-15.0	0.0	-34.0	-5.0	19.0	1310
S-100-S2ST40	Dual ST	100Base-EX	-5.0	0.0	-34.0	-3.0	29.0	1310
S-100-S2SC40	Dual SC	100Base-EX	-5.0	0.0	-34.0	-3.0	29.0	1310
S-100-S2LC40	Dual LC	100Base-EX	-5.0	0.0	-34.0	-3.0	29.0	1310
S-100-S2ST80	Dual ST	100Base-ZX	-5.0	0.0	-34.0	-3.0	29.0	1550
S-100-S2SC80	Dual SC	100Base-ZX	-5.0	0.0	-34.0	-3.0	29.0	1550
S-100-S2LC80	Dual LC	100Base-ZX	-5.0	0.0	-34.0	-3.0	29.0	1550
S-100-S2ST120	Dual ST	100Base-ZX	0.0	5.0	-35.0	-3.0	35.0	1550
S-100-S2SC120	Dual SC	100Base-ZX	0.0	5.0	-35.0	-3.0	35.0	1550
S-100-S2LC120	Dual LC	100Base-ZX	0.0	5.0	-34.0	-3.0	34.0	1550

Single Fiber Models Recommended use in pairs

Model	Connector	Type	Transmit (dBm)	Receive (dBm)	Power Budget (dBm)	Wavelength (nm)

			Min	Max	Min	Max		
S-100-M1ST2U	Single ST	100Base-BX-U	-15.0	0.0	-28.0	-8.0	13.0	1310 / 1550
S-100-M1ST2D	Single ST	100Base-BX-D	-15.0	0.0	-28.0	-8.0	13.0	1550 / 1310
S-100-M1SC2U	Single SC	100Base-BX-U	-15.0	0.0	-28.0	-8.0	13.0	1310 / 1550
S-100-M1SC2D	Single SC	100Base-BX-D	-15.0	0.0	-28.0	-8.0	13.0	1550 / 1310
S-100-S1ST20U	Single ST	100Base-BX-U	-14.0	-8.0	-32.0	-3.0	18.0	1310 / 1550
S-100-S1ST20D	Single ST	100Base-BX-D	-14.0	-8.0	-32.0	-3.0	18.0	1550 / 1310
S-100-S1SC20U	Single SC	100Base-BX-U	-14.0	-8.0	-32.0	-3.0	18.0	1310 / 1550
S-100-S1SC20D	Single SC	100Base-BX-D	-14.0	-8.0	-32.0	-3.0	18.0	1550 / 1310
S-100-S1SC40U	Single SC	100Base-BX-U	-8.0	-3.0	-33.0	-3.0	25.0	1310 / 1550
S-100-S1SC40D	Single SC	100Base-BX-D	-8.0	-3.0	-33.0	-3.0	25.0	1550 / 1310

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

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

Media Converter Accessories

4 DIN Rail Mount Bkt	DIN Rail Mounting Kit
MCSM	Standalone media converter wall mount bracket