S-100MM Fast Ethernet Media Converters
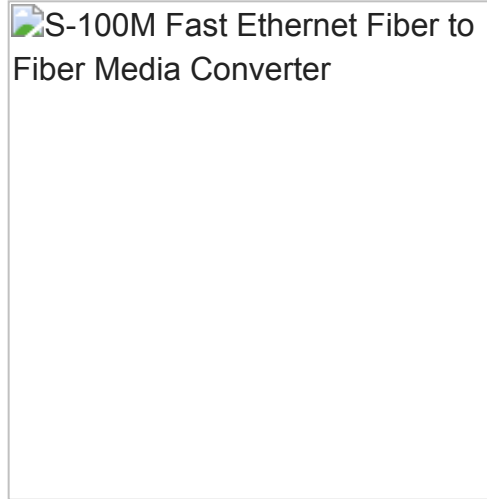
perle.com/products/fast-ethernet-fiber-converter.shtml

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

- 100Base-FX to 100Base-X Fiber to Fiber Media Converters
- Multimode to multimode or multimode to single mode
- Extend multimode fiber to 120km (or more through chaining)
- Choice in SC, LC and ST fiber connector models
- Signal regeneration prevents signal degradation
- Advanced Features: <u>Link Pass-Through</u>, Far-End Fault, loopback for each fiber connection

S-100M Fast Ethernet Fiber to Fiber Media Converter

Perle's feature rich **S-100MM Fast Ethernet Fiber to Fiber** Media Converters enable transparent fiber extension of 100Base-FX multimode fiber to 100Base-FX multimode or 100Base-LX/EX/ZX/BX single mode fiber.

Perle's advanced features make the end to end fiber link completely transparent. This allows for more efficient troubleshooting and less on-site maintenance. In addition, a lifetime warranty and free worldwide technical support make **Perle's S-100MM Fast Ethernet Fiber to Fiber Media Converters** the smart choice for IT professionals.

Whether you need to extend **multimode to multimode** or **multimode to single mode**, Perle has an extensive range of S-100MM Fast Ethernet Fiber to Fiber Media Converters to meet your fiber conversion requirement.

S-100MM Fiber to Fiber Features: 100Base-FX to 100Base-X

<u>Link Pass-Through</u>	When enabled, the state of the receiver on one 100Base-X interface is reflected on the other 100Base-X fiber transmitter.
	If disabled, the 100Base-X fiber interfaces operate independently. Far-End Fault indication on the 100Base-X fiber interface has no effect on the other interface.
	Using Link Pass-Through with Far-End Fault minimizes data loss when a fault occurs. If a fault occurs, the end devices have the indication of a failure available to making trouble shooting easier.

Far-End Fault (FEF)	When enabled, the media converter transmits the Far-End Fault Indication over the fiber connection whenever a receive failure is detected. The media converter continuously monitors the fiber connection and clears the Far-End Fault Indication condition when a valid signal is received. When disabled, Far-End Fault Indications are not transmitted regardless of the condition of the receive signal on the 100Base-X fiber connection. The action the media converter takes on receiving a Far-End Fault Indication is dependent on the Link Pass-Through switch setting.
Signal Regeneration	Signal regeneration maintains signal integrity and allows for maximum fiber to fiber connections without degradation.
Cascading	Media converters can be cascaded. Two or more media converters can be chained in a link to achieve even greater distances.
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.
Remote Loopback	The media converter can perform a loopback on each 100Base-X fiber interface.

Power

Input Supply Voltage	6 - 30 vDC, unregulated (12 vDC Nominal)
Current	0.29 amps
Power Consumption	3.5 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 slowly when in Loopback test mode.

Fiber link 1 / Receive activity (LK1)	This green LED is operational only when power is applied. The LED is on when the 100Base-X link is on and flashes with a 50% duty cycle when data is received.
Fiber link 2 on / Receive activity (LK2)	This green LED is operational only when power is applied. The LED is on when the 100Base-X link is on and flashes with a 50% duty cycle when data is received.

Switches - accessible through a side opening in the chassis

Link Pass Through	*Enabled (Default)* - When the state of the receiver is changed on one of the 100Base-X interfaces it is reflected on the other 100Base-X fiber transmitter. *If disabled,* the 100Base-X fiber interfaces operate independently. Far-End Fault indication on the 100Base-FX fiber interface has no effect on the other interface.
Far-End Fault (FEF)	*Enabled (default)* - The media converter transmits the Far-End Fault Indication over the fiber connection whenever a receive failure is detected. The media converter continuously monitors the fiber connection and clears the Far-End Fault Indication condition when a valid signal is received. *Enabled* - The 100Base-X receiver is looped to the 100Base-X transmitter. Link #2's fiber transmitter is taken off the interface.
Remote Loopback #1	The media converter can perform a loopback on the link #1 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.
Remote Loopback #2	The media converter can perform a loopback on the link #1 fiber interface. *Disabled (Default - Up)* Enabled - The 100Base-X receiver is looped to the 100Base-X transmitter. Link #1's fiber transmitter is taken off the interface.

Cables

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)	11.9
MTBF (Hours)**	Without power adaptor: 503,679 With power adaptor: 302,090
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	IEC 60950-1(ed 2); am1, am2 EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013

	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	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 Fiber Switch to Fiber Switch

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

Fast Ethernet Fiber Switch to Fiber Switch Diagram

Single Mode / Single Fiber

Connect fiber 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 fiber to fiber conversion. Perle Single Fiber Media Converters are also referred to as "Up/Down" models. For example the S-100MM-S1SC20**U** ("Up") and S-100MM-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
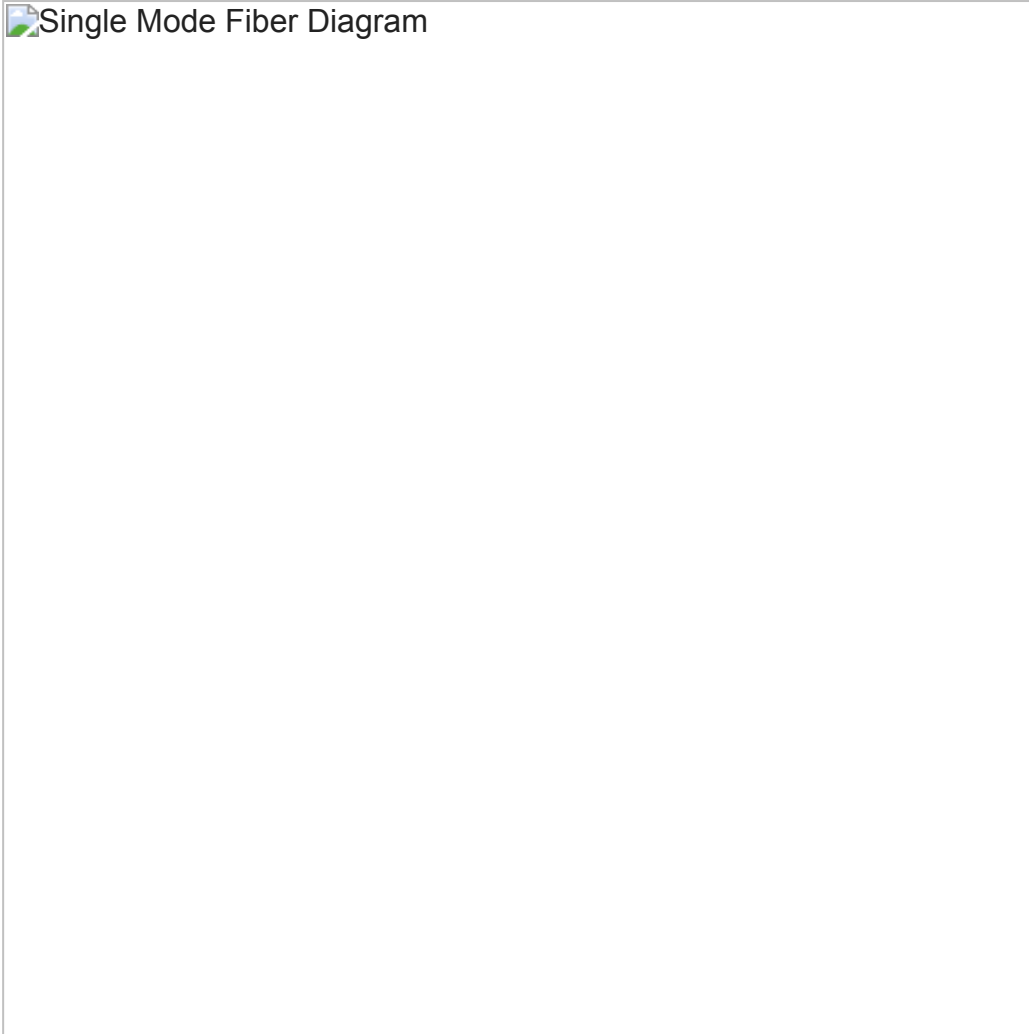
S-100MM-S1SC20US-100MM-S1SC20D

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 fiber 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 - S-100MM Fast Ethernet Fiber to Fiber Media Converter Module

| Model | Port | Connector | Type | Transmit (dBm) | | Receive (dBm) | | Power Budget (dBm) | Wa (nm |
				Min	Max	Min	Max		
S-100MM-M2ST2	Port 1	Dual ST	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual ST	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
S-100MM-M2SC2	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
S-100MM-M2LC2	Port 1	Dual LC	100BASE-FX	-20.0	-12.0	-30.0	-14.0	10.0*	131
	Port 2	Dual LC	100BASE-FX	-20.0	-12.0	-30.0	-14.0	10.0*	131
S-100MM-S2ST20	Port 1	Dual ST	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual ST	100BASE-LX	-18.0	-7.0	-32.0	-3.0	14.0	131
S-100MM-S2SC20	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual SC	100BASE-LX	-18.0	-7.0	-32.0	-3.0	14.0	131
S-100MM-S2LC20	Port 1	Dual LC	100BASE-FX	-20.0	-12.0	-30.0	-14.0	10.0*	131
	Port 2	Dual LC	100BASE-LX	-15.0	0.0	-34.0	-5.0	19.0	131
S-100MM-S2ST40	Port 1	Dual ST	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual ST	100BASE-EX	-5.0	0.0	-34.0	-3.0	29.0	131
S-100MM-S2SC40	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual SC	100BASE-EX	-5.0	0.0	-34.0	-3.0	29.0	131
S-100MM-S2LC40	Port 1	Dual LC	100BASE-FX	-20.0	-12.0	-30.0	-14.0	10.0*	131

Model	Port	Connector	Type	Transmit (dBm) Min	Max	Receive (dBm) Min	Max	Power Budget (dBm)	Wa (nr
	Port 2	Dual LC	100BASE-EX	-5.0	0.0	-34.0	-3.0	29.0	131
S-100MM-S2ST80	Port 1	Dual ST	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual ST	100BASE-ZX	-5.0	0.0	-34.0	-3.0	29.0	155
S-100MM-S2SC80	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual SC	100BASE-ZX	-5.0	0.0	-34.0	-3.0	29.0	155
S-100MM-S2LC80	Port 1	Dual LC	100BASE-FX	-20.0	-12.0	-30.0	-14.0	10.0*	131
	Port 2	Dual LC	100BASE-ZX	-5.0	0.0	-34.0	-3.0	29.0	155
S-100MM-S2ST120	Port 1	Dual ST	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual ST	100BASE-ZX	0.0	5.0	-35.0	-3.0	35.0	155
S-100MM-S2SC120	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Dual SC	100BASE-ZX	0.0	5.0	-35.0	-3.0	35.0	155
S-100MM-S2LC120	Port 1	Dual LC	100BASE-FX	-20.0	-12.0	-30.0	-14.0	10.0*	131
	Port 2	Dual LC	100BASE-ZX	0.0	5.0	-34.0	-3.0	34.0	155

Single Fiber Models Recommended use in pairs

Model	Port	Connector	Type	Transmit (dBm) Min	Max	Receive (dBm) Min	Max	Power Budget (dBm)	Wa (nr
S-100MM-S1ST20U	Port 1	Dual ST	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131
	Port 2	Single ST	100BASE-BX	-14.0	-8.0	-32.0	-3.0	18.0	131
S-100MM-S1ST20D	Port 1	Dual ST	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	131

	Port 2	Single ST	100BASE-BX	-14.0	-8.0	-32.0	-3.0	18.0	15!
S-100MM-S1SC20U	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	13
	Port 2	Single SC	100BASE-BX	-14.0	-8.0	-32.0	-3.0	18.0	13
S-100MM-S1SC20D	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	13
	Port 2	Single SC	100BASE-BX	-14.0	-8.0	-32.0	-3.0	18.0	15!
S-100MM-S1SC40U	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	13
	Port 2	Single SC	100BASE-BX	-8.0	-3.0	-33.0	-3.0	25.0	13
S-100MM-S1SC40D	Port 1	Dual SC	100BASE-FX	-20.0	-12.0	-31.0	-14.0	11.0*	13
	Port 2	Single SC	100BASE-BX	-8.0	-3.0	-33.0	-3.0	25.0	15!

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

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