

CM-1000MM Gigabit Fiber to Fiber Managed Media Converter Module

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Managed

- 1000Base-SX to 1000Base-X Fiber to Fiber Media Converter
- Multimode to multimode or multimode to single mode
- Extend multimode fiber to 160km and beyond (through cascading)
- Choice in SC, LC and ST fiber connector models
- Signal regeneration prevents signal degradation
- Advanced Features: Smart Link Pass-Through, Fiber Fault Alert, loopback for each fiber connection
- High density applications with Perle Media Converter Chassis
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package with an MCR-MGT Media Converter Management Module



Installed in a high density Perle Media Converter Chassis, Perle's feature rich **CM-1000MM Gigabit Fiber to Fiber Managed Media Converter Modules** enable transparent fiber extension of 1000Base-SX multimode fiber to 1000Base-SX multimode or 1000Base-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. When used with a Media Converter Management Module in the chassis, configuration and monitoring of the fiber ports can be performed. In addition, a lifetime warranty and free worldwide technical support make **Perle's CM-1000MM Gigabit Fiber to Fiber Managed 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.

Whether you need to extend **multimode to multimode** or **multimode to single mode**, Perle has an extensive range of CM-1000MM Gigabit Fiber to Fiber Managed Media Converter Modules to meet your fiber conversion requirement.

CM-1000MM Fiber to Fiber Features: 1000Base-SX to 1000Base-X

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.
Module Information	<ul style="list-style-type: none">• Chassis Slot number that the module is in• Media converter model and serial• User configurable module name• User configurable fiber port name• Hardware revision number• Firmware version number
Module DIP switch settings	View hardware DIP switch settings
Port Control	Enable or disable individual fiber ports on the module

Fiber Port Status	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Reset card • Reset to factory default • Ability to specific read/write phy registers. • Update firmware • Fiber Loopback mode (Yes/No) • 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.
Auto-Negotiation (802.3ab)	The 1000Base-X fiber interfaces negotiate according to 802.3 clause 37.
<u>Smart Link Pass-Through</u>	When the Link Mode switch is placed into Smart Link Pass-Through mode, the 1000BASE-X link on one port will reflect the state of the other 1000Base-X media converter port. This feature can be used whether fiber auto-negotiation is enabled or disabled.
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.
Pause (IEEE 802.3x)	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 is transparent to Pause frames.
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
Duplex	Full and half duplex operation supported.
Jumbo Packets	Transparent to jumbo packets up to 10KB-default. Jumbo packet support can be disabled.
VLAN	Transparent to VLAN tagged packets.
Remote Loopback	The Media Converter can perform a loopback on each 1000Base-X fiber interface.

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: On-Board (If Auto/Switch strap is set to Switch)

Auto-Negotiation	<p><i>Auto (default up)</i> - Fiber Negotiation is performed for both fiber ports. Full and half duplex will be advertised. Pause will advertise support for Symmetrical and Asymmetrical Pause. Pause frame will not be acted upon or generated but will be passed through.</p> <p><i>Off</i> - Negotiation on both fiber ports will be disabled. Settings of Link mode and Fiber fault alert will be determined by those switch settings. Pause frames will not be acted upon or generated but will continue to be passed through.</p>
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Link Mode	<p><i>Smart Link Pass-Through: - (default up) -</i> In this mode, the link state on one connection is directly reflected through the media converter to the other connection. If link is lost on one of the connections, then the other link will be brought down by the media converter.</p> <p><i>Standard: -</i> In this mode the links on both fiber ports can be brought up and down independently of each other. A loss of link on either link can take place without affecting the other connection.</p>
Fiber Fault Alert	<p><i>Enabled - (default up) -</i> If the media converter detects a loss of fiber signal on a fiber receiver, it will immediately disable its fiber transmitter signal. This, in effect, notifies the remote fiber link partner that an error condition exists on the fiber connection. The setting of this switch applies to both fiber ports.</p> <p><i>Disabled:</i> The media converter will not monitor for fiber fault or generate them.</p> <p>Enabled - The 1000Base-X receiver is looped to the 1000Base-X transmitter. Link #2's fiber transmitter is taken off the interface.</p>
Remote Loopback #1	<p>The media converter can perform a loopback on the link #1 fiber interface.</p> <p>Disabled (Default - Up)</p> <p><i>Enabled -</i> The 1000Base-X receiver is looped to the 1000Base-X transmitter. Link #2's fiber transmitter is taken off the interface.</p>
Remote Loopback #2	<p>The media converter can perform a loopback on the link #2 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. Link #1's fiber transmitter is taken off the interface.</p>
Configuration Mode Strap	Auto (default) enable management module to overwrite hardware switch settings Switch - Use on-board DIP switches
Fiber Connectors	
1000Base-X	Available in SC, ST and LC connector models
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)	8.53
Maximum Power Consumption (Watts)	2.5
MTBF (Hours)*	417,722
Mechanical - Hot Swapping Card	

Edge Connector	32 pin DIN 41612 / IEC 60603-2 Type B/2 Male. First make, last break for ground and power
Card insertion and removal	Captive thumb screws enable fast insertion and removal. Can be further tightened with a screwdriver.
Product Weight	
Weight	0.15 kg, 0.33 lbs
Packaging	
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 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	<u>Reach, RoHS and WEEE Compliant</u>
Other	ECCN: 5A991 HTSUS Number: 8517.62.0050 Perle Limited Lifetime Warranty

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

High Density Fiber Distribution from UTP Switch Equipment at Corporate Headquarters

In this enterprise campus application, up to 18 Perle CM-1000MM Multimode to Single Mode Media Converters are installed in the MCR1900 Media Converter Chassis. The 19th slot in the chassis is filled with the MCR-MGT Management Module. All media converters in the chassis are managed by SNMP, Telnet or an internet browser interface. A remote fiber-enabled Ethernet switch is connected directly to the central MCR1900 Chassis. Another S-1000MM Fiber to Fiber Media Converter is connected to a remote office switch. In all cases, multimode or single-mode fiber can be used. Fiber links can be extended up to 160km using single-mode fiber.

Managed Ethernet over Fiber Links

Manage your **multimode to single mode or multimode to multimode** link with an MCR200 chassis housing a media converter and management module. Ideal for use in managed networks with low density fiber applications, this Managed Media Converter is connected across a fiber link to a remote media converter. The copper or fiber link on the managed standalone unit can provide vital information and status to network management tools such as SNMP.

Extend between two Gigabit Fiber Switches

Extend the network distance between two Multimode Fiber Gigabit Switches

Two Multimode to Single Mode Media Converters can extend the distance between Fiber Switches across a fiber link up to 160Km in length.

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 CM-1000MM-S1SC20U (“Up”) and CM-1000MM-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.

CM-1000MM-S1SC20UCM-1000MM-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 (**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 - CM-1000MM Gigabit Fiber to Fiber Managed Media Converter Module

Model	Port	Connector	Type	Transmit (dBm)		Receive (dBm)		Power Budget (dBm)	Wavelength (nm)	Fiber Type	Core Size (um)	Modal Bandwidth (MHz* Km)	Operating Distance
				Min	Max	Min	Max						
CM-1000MM-M2ST05	Port 1	Dual ST	1000BASE-SX	-9.5	-4.0	-	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual ST	1000BASE-SX	-9.5	-4.0	-	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)

<u>CM-1000MM-M2SC05</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
<u>CM-1000MM-M2LC05</u>	Port 1	Dual LC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual LC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
<u>CM-1000MM-M2ST2</u>	Port 1	Dual ST	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)

	Port 2	Dual ST	1000BASE-LX	-6.0	0.0	-0.0	-17.0	6.0	1310	MMF	62.5	160	2 km (1.2 mi)
											50	500	1000 m (3281 ft)
<u>CM-1000MM-M2SC2</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual SC	1000BASE-LX	-6.0	0.0	-0.0	-17.0	6.0	1310	MMF	62.5	160	2 km (1.2 mi)
											50	500	1000 m (3281 ft)
<u>CM-1000MM-M2LC2</u>	Port 1	Dual LC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual LC	1000BASE-LX	-6.0	0.0	-0.0	-17.0	6.0	1310	MMF	62.5	160	2 km (1.2 mi)
											50	500	1000 m (3281 ft)
<u>CM-1000MM-S2ST10</u>	Port 1	Dual ST	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual ST	1000BASE-LX/LH	-9.5	-3.0	-20.0	-3.0	10.5	1310	MMF*	62.5	500	550 m (1,804 ft)
											50	400	550 m (1,804 ft)
											50	500	550 m (1,804 ft)
										SMF**	**	-	10 km (6.2 mi)

<u>CM-1000MM-S2SC10</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual SC	1000BASE-LX/LH	-9.5	-3.0	-20.0	-3.0	10.5	1310	MMF*	62.5	500	550 m (1,804 ft)
											50	400	550 m (1,804 ft)
											50	500	550 m (1,804 ft)
										SMF**	**	-	10 km (6.2 mi)
<u>CM-1000MM-S2LC10</u>	Port 1	Dual LC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual LC	1000BASE-LX/LH	-9.5	-3.0	-20.0	-3.0	10.5	1310	MMF*	62.5	500	550m (1,804 ft)
											50	400	550m (1,804 ft)
											50	500	550m (1,804 ft)
										SMF**	**	-	10 km (6.2 mi)
<u>CM-1000MM-S2ST40</u>	Port 1	Dual ST	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Dual ST	1000BASE-EX	-2	2.0	-23.0	-3.0	21	1310	SMF	**	-	40 km (25 mi)
<u>CM-1000MM-S2SC40</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)

												62.5	200	275 m (902 ft)
												50	400	500 m (1,640 ft)
												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Dual SC	1000BASE- EX	-2	2.0	- 23.0	-3.0	21	1310	SMF	**	-		40 km (25 mi)
<u>CM- 1000MM- S2LC40</u>	Port 1	Dual LC	1000BASE- SX	-9.5	-4.0	- 17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)
											62.5	200		275 m (902 ft)
											50	400		500 m (1,640 ft)
											50	500		550 m (1,804 ft)
											50	2000		1000 m (3281 ft)
	Port 2	Dual LC	1000BASE- EX	-3	2.0	- 23.0	-3.0	20	1310	SMF	**	-		40 km (25 mi)
<u>CM- 1000MM- S2ST70</u>	Port 1	Dual ST	1000BASE- SX	-9.5	-4.0	- 17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)
											62.5	200		275 m (902 ft)
											50	400		500 m (1,640 ft)
											50	500		550 m (1,804 ft)
											50	2000		1000 m (3281 ft)
	Port 2	Dual ST	1000BASE- ZX	-2	5.0	- 23.0	-3.0	21	1550	SMF	**	-		70 km (43,5 mi)
<u>CM- 1000MM- S2SC70</u>	Port 1	Dual SC	1000BASE- SX	-9.5	-4.0	- 17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)
											62.5	200		275 m (902 ft)
											50	400		500 m (1,640 ft)
											50	500		550 m (1,804 ft)
											50	2000		1000 m (3281 ft)
	Port 2	Dual SC	1000BASE- ZX	-2	5.0	- 23.0	-3.0	21	1550	SMF**	**	-		70 km (43,5 mi)
<u>CM- 1000MM- S2LC70</u>	Port 1	Dual LC	1000BASE- SX	-9.5	-4.0	- 17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)
											62.5	200		275 m (902 ft)

												50	400	500 m (1,640 ft)
												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Dual LC	1000BASE-ZX	0	5.0	-23.0	-3.0	23	1550	SMF	**	-		70 km (43,5 mi)
<u>CM-1000MM-S2ST120</u>	Port 1	Dual ST	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)
														275 m (902 ft)
														500 m (1,640 ft)
														550 m (1,804 ft)
														1000 m (3281 ft)
	Port 2	Dual ST	1000BASE-ZX	0	5.0	-9.0	-32.0	32.0	1550	SMF**	**	-		120 km (75 mi)
<u>CM-1000MM-S2SC120</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)
														275 m (902 ft)
														500 m (1,640 ft)
														550 m (1,804 ft)
														1000 m (3281 ft)
	Port 2	Dual SC	1000BASE-ZX	0	5.0	-9.0	-32.0	32.0	1550	SMF	**	-		120 km (75 mi)
<u>CM-1000MM-S2LC120</u>	Port 1	Dual LC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)
														275 m (902 ft)
														500 m (1,640 ft)
														550 m (1,804 ft)
														1000 m (3281 ft)
	Port 2	Dual LC	1000BASE-ZX	0	5.0	-9.0	-32.0	32.0	1550	SMF	**	-		120 km (75 mi)
<u>CM-1000MM-S2SC160</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)
														275 m (902 ft)
														500 m (1,640 ft)

												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Dual SC	1000BASE-ZX	2	5.0	-9.0	-32.0	34.0	1550	SMF**	**	-	-	160 km (100 mi)
	<u>CM-1000MM-S2LC160</u>	Port 1	Dual LC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
												62.5	200	275 m (902 ft)
												50	400	500 m (1,640 ft)
												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Dual LC	1000BASE-ZX	2	5.0	-9.0	-32.0	34.0	1550	SMF**	**	-	-	160 km (100 mi)
	<u>CM-1000MM-S2ST160</u>	Port 1	Dual ST	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
												62.5	200	275 m (902 ft)
												50	400	500 m (1,640 ft)
												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Dual ST	1000BASE-ZX	2	5.0	-9.0	-32.0	34.0	1550	SMF**	**	-	-	160 km (100 mi)

Single Fiber Models Recommended use in pairs

Model	Port	Connector	Type	Transmit (dBm)		Receive (dBm)		Power Budget (dBm)	Wavelength (nm)	Fiber Type	Core Size (um)	Modal Bandwidth (MHz* Km)	Operating Distance
				Min	Max	Min	Max						
<u>CM-1000MM-S1SC10U</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
<u>CM-1000MM-S1SC10D</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
											62.5	200	275 m (902 ft)
											50	400	500 m (1,640 ft)
											50	500	550 m (1,804 ft)
											50	2000	1000 m (3281 ft)
	Port 2	Single SC	1000BASE-BX10-U	-9	-3.0	-20.0	-3.0	11	1310/1490	SMF	**	-	10 km (6.2 mi)

												62.5	200	275 m (902 ft)
												50	400	500 m (1,640 ft)
												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Single SC	1000BASE-BX10-D	-9	-3.0	-20.0	-3.0	11	1490/1310	SMF	**	-	-	10 km (6.2 mi)
	<u>CM-1000MM-S1SC20U</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
												62.5	200	275 m (902 ft)
												50	400	500 m (1,640 ft)
												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Single SC	1000BASE-BX-U	-8	-3.0	-3.0	-22.0	14.0	1310/1490	SMF**	**	-	-	20 km (12.4 mi)
	<u>CM-1000MM-S1SC20D</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
												62.5	200	275 m (902 ft)
												50	400	500 m (1,640 ft)
												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Single SC	1000BASE-BX-D	-8	-3.0	-3.0	-22.0	14.0	1490/1310	SMF**	**	-	-	20 km (12.4 mi)
	<u>CM-1000MM-S1SC40U</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
												62.5	200	275 m (902 ft)
												50	400	500 m (1,640 ft)
												50	500	550 m (1,804 ft)
												50	2000	1000 m (3281 ft)
	Port 2	Single SC	1000BASE-BX-U	-3	2.0	-3.0	-23.0	20.0	1310/1490	SMF**	**	-	-	40 km (25 mi)
	<u>CM-1000MM-S1SC40D</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	62.5	160	220 m (722 ft)
												62.5	200	275 m (902 ft)

														50	400	500 m (1,640 ft)
														50	500	550 m (1,804 ft)
														50	2000	1000 m (3281 ft)
	Port 2	Dual SC	1000BASE-BX-D	-3	2.0	-3.0	- 23.0	20.0	1490/1310	SMF**	**	-		40 km (25 mi)		
<u>CM-1000MM-S1SC80U</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	- 17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)		
											62.5	200		275 m (902 ft)		
											50	400		500 m (1,640 ft)		
											50	500		550 m (1,804 ft)		
											50	2000		1000 m (3281 ft)		
	Port 2	Single SC	1000BASE-BX-U	-2	3.0	-3.0	- 26.0	24.0	1510/1590	SMF**	**	-		80 km (50 mi)		
<u>CM-1000MM-S1SC80D</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	- 17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)		
											62.5	200		275 m (902 ft)		
											50	400		500 m (1,640 ft)		
											50	500		550 m (1,804 ft)		
											50	2000		1000 m (3281 ft)		
	Port 2	Single SC	1000BASE-BX-D	-2	3.0	-3.0	- 26.0	24.0	1590/1510	SMF**	**	-		80 km (50 mi)		
<u>CM-1000MM-S1SC120U</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	- 17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)		
											62.5	200		275 m (902 ft)		
											50	400		500 m (1,640 ft)		
											50	500		550 m (1,804 ft)		
											50	2000		1000 m (3281 ft)		
	Port 2	Single SC	1000BASE-BX-U	-3.0	2.0	-9.0	- 34.0	31.0	1510/1590	SMF**	**	-		120 km (75 mi)		
<u>CM-1000MM-S1SC120D</u>	Port 1	Dual SC	1000BASE-SX	-9.5	-4.0	- 17.0	-3.0	7.5	850	MMF	62.5	160		220 m (722 ft)		
											62.5	200		275 m (902 ft)		
											50	400		500 m (1,640 ft)		

													50	500	550 m (1,804 ft)
													50	2000	1000 m (3281 ft)
	Port 2	Single SC	1000BASE- BX-D	-3.0	2.0	-9.0	- 34.0	31.0	1590/1510	SMF**	**	-			120 km (75 mi)

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

*A mode-conditioning adapter as specified by the IEEE standard, is required regardless of the span length. Note how the mode conditioning adapter for 62.5-um fibers has a different specification from the mode-conditioning adapter for 50-um fibers.

**ITU-T G.652 SMF as specified by the IEEE 802.3z standard

Media Converter Accessories

<u>4 DIN Rail Mount Bkt</u>	DIN Rail Mounting Kit
<u>MCSM</u>	Standalone media converter wall mount bracket