

CFMFFxxxx-2xx User's Guide

- Slide-in-Module Media Converter
- Fast Ethernet, ATM, SONET, or Gigabit

Transition Networks CFMFFxxxx-2xx series media converters extend multimode and singlemode interfaces to singlemode fiber optic cable over Fast Ethernet, ATM, SONET, and Gigabit networks. The CFMFFxxxx-2xx is also designed to install into the Transition Networks *PointSystem*™ chassis.

622 Mb/s cable speed:

The models with the -21x extension are for cable speeds of 622 Mb/s and extend ATM or SONET over singlemode fiber up to 60 km.

Part Number	Port One - Fiber-Optic	Port Two - Fiber-Optic
CFMFF1314-210	SC, 1300 nm multimode 2 km (1.2 miles)	SC, 1310 nm singlemode 15 km (9.3 miles)
CFMFF1316-210	SC, 1300 nm multimode 2 km (1.2 miles)	SC, 1310 nm singlemode 40 km (24.8 miles)
CFMFF1317-210	SC, 1300 nm multimode 2 km (1.2 miles)	SC, 1550 nm singlemode 60 km (37.2 miles)
CFMFF1717-210	SC, 1550 nm singlemode 60 km (37.2 miles)	SC, 1550 nm singlemode 60 km (37.2 miles)
CFMFF1329-210	SC, 1300 nm multimode duplex, 2 km (1.2 miles)	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1329-211	SC, 1300 nm multimode duplex, 2 km (1.2 miles)	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1329-212	SC, 1300 nm multimode duplex, 2 km (1.2 miles)	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 40 km (24.8 mi)
CFMFF1329-213	SC, 1300 nm multimode duplex, 2 km (1.2 miles)	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 40 km (24.8 mi)
CFMFF1429-210	SC, 1310 nm singlemode duplex, 15 km (9.3 miles)	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1429-211	SC, 1310 nm singlemode duplex, 15 km (9.3 miles)	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1429-212	SC, 1310 nm singlemode duplex, 15 km (9.3 miles)	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 40 km (24.8 mi)
CFMFF1429-213	SC, 1310 nm singlemode duplex, 15 km (9.3 miles)	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 40 km (24.8 mi)

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155 Mb/s cable speed:

The models with the -20x extension are for cable speeds of 155 Mb/s and extend ATM or Fast Ethernet over singlemode fiber up to 80 km.

Part Number	Port One - Fiber-Optic	Port Two - Fiber-Optic
CFMFF1313-200	SC, 1300 nm multimode 2 km (1.2 miles)	SC, 1300 nm multimode 2 km (1.2 miles)
CFMFF1314-200	SC, 1300 nm multimode 2 km (1.2 miles)	SC, 1310 nm singlemode 20 km (12.4 miles)
CFMFF1315-200	SC, 1300 nm multimode 2 km (1.2 miles)	SC, 1310 nm singlemode 40 km (24.8 miles)
CFMFF1316-200	SC, 1300 nm multimode 2 km (1.2 miles)	SC, 1310 nm singlemode 60 km (37.2 miles)
CFMFF1317-200	SC, 1300 nm multimode 2 km (1.2 miles)	SC, 1550 nm singlemode 80 km (49.7 miles)
CFMFF1414-200	SC, 1310 nm singlemode duplex, 20 km (12.4 miles)	SC, 1310 nm singlemode duplex, 20 km (12.4 miles)
CFMFF1415-200	SC, 1310 nm singlemode duplex, 20 km (12.4 miles)	SC, 1310 nm singlemode duplex, 40 km (24.8 miles)
CFMFF1329-200	SC, 1300 nm multimode duplex, 2 km (1.2 miles)	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1329-201	SC, 1300 nm multimode duplex, 2 km (1.2 miles)	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1329-202	SC, 1300 nm multimode duplex, 2 km (1.2 miles)	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 40 km (24.8 mi)
CFMFF1329-203	SC, 1300 nm multimode duplex, 2 km (1.2 miles)	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 40 km (24.8 mi)
CFMFF1429-200	SC, 1310 nm singlemode duplex, 20 km (12.4 miles)	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1429-201	SC, 1310 nm singlemode duplex, 20 km (12.4 miles)	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1429-202	SC, 1310 nm singlemode duplex, 20 km (12.4 miles)	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 40 km (24.8 mi)
CFMFF1429-203	SC, 1310 nm singlemode duplex, 20 km (12.4 miles)	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 40 km (24.8 mi)

The cable distances listed are typically maximum. The actual maximum cable distances are dependent upon the physical characteristics of the network installation.

SM = singlemode, TX = transmit, RX = receive.

1.25 Gb/s cable speed:

The models with the -22x extensions are for cable speeds of 1.2Gb/s and can extend gigabit Ethernet over a singlemode fiber up to 125 km.

Part Number	Port One – Fiber Optic	Port Two – Fiber-Optic
CFMFF1313-220	SC, 850 nm multimode 220 m (721 ft)**	SC, 850 nm multimode 220 m (721 ft)**
CFMFF1314-220	SC, 850 nm multimode 220 m (721 ft)**	SC, 1310 nm singlemode 10 km (6.2 miles)
CFMFF1315-220	SC, 850 nm multimode 220 m (721 ft)**	SC, 1310 nm singlemode 25 km (15.5 miles)
CFMFF1317-220	SC, 850 nm multimode 220 m (721 ft)**	SC, 1550 nm singlemode 65 km (40.3 miles)
CFMFF1324-220	SC, 850 nm multimode 220 m (721 ft)**	SC, 1300 nm extended MM up to 2 km (1.2 miles) (62.5/125 mm fiber only)
CFMFF1335-220	SC, 850 nm multimode 220 m (721 ft)**	SC, 1550 nm singlemode 125 km (77.5 mi)
CFMFF1414-220	SC, 1310 nm singlemode 10 km (6.2 miles)	SC, 1310 nm singlemode 10 km (6.2 miles)
CFMFF1424-220	SC, 1310 nm singlemode 10 km (6.2 miles)	SC, 1300 nm extended MM up to 2 km (1.2 miles) (62.5/125 mm fiber only)
CFMFF1429-220	SC, 1310 nm singlemode 10 km (6.2 miles)	SC, 1310 nm (TX)1550 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1825-220	MJ-RJ, 850 nm multimode 220 m (721 ft)	MJ-RJ, 1310 nm singlemode 10 km (6.2 miles)
CFMFF1329-220	SC, 850 nm duplex MM 220 m (721 ft)**	SC, 1310 nm (TX)/1550 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1329-221	SC, 850 nm duplex MM 220 m (721 ft)**	SC, 1550 nm (TX)/1310 nm (RX) SM single fiber, 20 km (12.4 mi)
CFMFF1329-222	SC, 850 nm multimode 220 m (721 ft)**	SC, 1310 nm (TX)/1550 nm (RX) SM SF, 40 km (24.9 miles)
CFMFF1329-223	SC, 850 nm multimode 220 m (721 ft)**	SC, 1310 nm (TX)/1550 nm (RX) SM SF, 40 km (24.9 miles)

SM = singlemode, MM = multimode, TX = transmit, RX = receive.

Unless otherwise indicated, the distances listed are the typical maximum cable distance. The actual maximum cable distances are dependent upon the physical characteristics of the network installation.

** Minimum cable distance: 2 meters
Typical maximum cable distance: 220 meters for 160/500MHz•Km
270 meters for 200/500MHz•Km

Installation

Install these Models in Pairs

The following media converter pairs are to be installed in the same network, where one serves as the local converter and the other a remote converter (*either converter can be installed in either location*).

155 Mb/s network:

- CFMFF1329-200 and CFMFF1329-201
- CFMFF1329-202 and CFMFF1329-203
- CFMFF1429-200 and CFMFF1429-201
- CFMFF1429-202 and CFMFF1429-203

622 Mb/s network:

- CFMFF1329-210 and CFMFF1329-211
- CFMFF1329-212 and CFMFF1329-213
- CFMFF1429-210 and CFMFF1429-211
- CFMFF1429-212 and CFMFF1429-213

1.2 GB/s network:

- CFMFF1329-220 and CFMFF1329-221
- CFMFF1329-222 and CFMFF1329-223

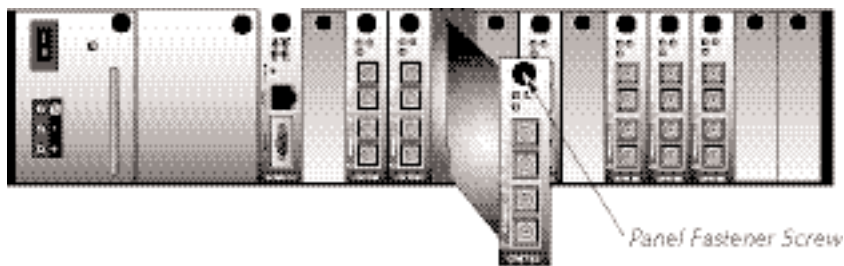
Install Slide-in-module in PointSystem™ chassis

CAUTION: Slots in the PointSystem™ chassis without a slide-in-module MUST have a protective plate covering the empty slot for Class B compliance.

The media converter slide-in-modules may be installed in any slot, in any order.

To install the slide-in-module:

1. Carefully slide the slide-in-module into the slot, aligning the module's circuit board with the slot guides.
2. Ensure that the module is firmly seated in the chassis slot.
3. Secure the module by pushing its fastener in and turning it clockwise.

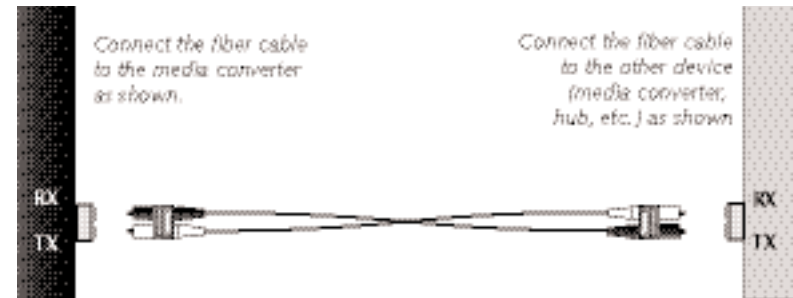


Installation – Continued

Install the fiber cable

CAUTION: Both connections (*Port 1 and Port 2*) to the CFMFFxxxx-2xx media converter must be the same network speed and network protocol. Failure to observe this caution could cause data transfers to fail.

1. Locate or build IEEE 802.3™ compliant fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the CFMFFxxxx-2xx media converter as described:
 - Connect the male TX cable connector to the female TX port.
 - Connect the male RX cable connector to the female RX port.
3. Connect the fiber cables to the other device (*another media converter, hub, etc.*) as described:
 - Connect the male TX cable connector to the female RX port.
 - Connect the male RX cable connector to the female TX port.



Power the Media Converter

The media converter is powered through the Transition Networks *PointSystem™* chassis.

Delay Times

Network worst-case delay through the CFMFFxxxx-2xx converter:

623 Mbps – 1 Gbps	1 nsec
156 Mbps – 622 Mbps	2 nsec
125-155 Mbps	3 nsec
<125 Mbps	7 nsec

For example, in Ethernet environments, ensure that the network conforms to the 512-bit Rule by using the above numbers to determine the 'bit-time' delay, as:

$$125 \text{ Mbps Ethernet: } \frac{3 \text{ nsec}}{(1/125 \text{ Mbps})} = \frac{3 \text{ nsec}}{8 \text{ nsec}} = 0.4 \text{ bit times}$$

Operation

Status LEDs

Use the three status LEDs on the media converter (*shown here*) to monitor its operation in the network.

PWR ON = Connection to external power.

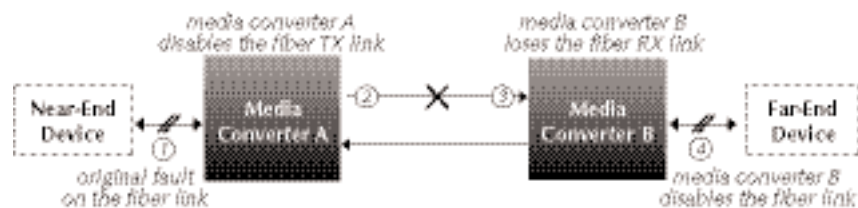
LKS ON = Singlemode fiber link is up.

LKM ON = Multimode fiber link is up.



Link Pass-Through

The Link Pass-Through feature allows the media converter to monitor RX (*receive*) ports for loss of signal. In the event of a loss of an RX signal on one media port, the media converter will automatically disable the TX (*transmit*) signal of the other media port, thus “passing through” the link loss.



SNMP

Use SNMP at an attached terminal or at a remote location to monitor the media converter by monitoring:

- Media converter power
- Singlemode fiber link status
- Multimode fiber link status

Also, use SNMP to enter network commands that:

- Power down the media converter
- Disable the multimode transmitter
- Disable the singlemode transmitter

See the on-line documentation that comes with Transition Networks *FocalPoint*™ software for applicable commands and usage at www.transition.com.

Cable Specifications

The physical characteristics must meet or exceed IEEE 802.3™ specifications.

Singlemode fiber (<i>recommended</i>):	9 μm
Multimode fiber (<i>recommended</i>):	62.5/125 μm
Multimode fiber (<i>optional</i>):	100/140, 85/140, 50/125 μm

155 Mb/s fiber specifications (CFMFF13xx-20x)

Bit Error Rate: <10⁻⁹

Port 1:	1300 nm multimode duplex
Fiber Optic Transmitter Power:	min: -19.0 dBm max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm max: -14.0 dBm
Link Budget:	11.0 dB

Port 2:	1300 nm multimode duplex
CFMFF1313-200	Fiber Optic Transmitter Power: min: -19.0 dBm max: -14.0 dBm
	Fiber Optic Receiver Sensitivity: min: -30.0 dBm max: -14.0 dBm
	Link Budget: 11.0 dB

CFMFF1314-200	1310 nm singlemode
Fiber-optic Transmitter Power:	min: -15.0 dBm max: -8.0 dBm
Fiber-optic Receiver Sensitivity:	min: -31.0 dBm max: -8.0 dBm
Link Budget:	16.0 dB

CFMFF1315-200	1310 nm singlemode
Fiber-optic Transmitter Power:	min: -8.0 dBm max: -2.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm max: -7.0 dBm
Link Budget:	26.0 dB

CFMFF1316-200	1310 nm singlemode
Fiber-optic Transmitter Power:	min: -5.0 dBm max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm max: -7.0 dBm
Link Budget:	29.0 dB

CFMFF1317-200	1550 nm singlemode
Fiber-optic Transmitter Power:	min: -5.0 dBm max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm max: -7.0 dBm
Link Budget:	29.0 dB

CFMFF1329-200	1310 nm (TX) / 1550 nm (RX) singlemode
Fiber-optic Transmitter Power:	min: -13.0 dBm max: -6.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.0 dBm max: -3.0 dBm
Link Budget:	19.0 dB

CFMFF1329-201	1550 nm (TX) / 1310 nm (RX) singlemode
Fiber-optic Transmitter Power:	min: -13.0 dBm max: -6.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.0 dBm max: -3.0 dBm
Link Budget:	19.0 dB

CFMFF1329-202	1310 nm (TX) / 1550 nm (RX) singlemode
Fiber-optic Transmitter Power:	min: -8.0 dBm max: -3.0 dBm
Fiber-optic Receiver Sensitivity:	min: -33.0 dBm max: -3.0 dBm
Link Budget:	25.0 dB

CFMFF1329-203	1550 nm (TX) / 1310 nm (RX) singlemode
Fiber-optic Transmitter Power:	min: -8.0 dBm max: -3.0 dBm
Fiber-optic Receiver Sensitivity:	min: -33.0 dBm max: -3.0 dBm
Link Budget:	25.0 dB

Cable Specifications – Continued

155 Mb/s fiber specifications (CFMFF14xx-20x)

Bit Error Rate: <10⁻⁹

Port 1:
 1310 nm singlemode duplex
 Fiber-optic Transmitter Power: min: -15.0 dBm max: -8.0 dBm
 Fiber-optic Receiver Sensitivity: min: -31.0 dBm max: -8.0 dBm
 Link Budget: 16.0 dB

Port 2:
CFMFF1414-200
 1310 nm singlemode duplex
 Fiber-optic Transmitter Power: min: -15.0 dBm max: -8.0 dBm
 Fiber-optic Receiver Sensitivity: min: -31.0 dBm max: -8.0 dBm
 Link Budget: 16.0 dB

CFMFF1415-200
 1310 nm singlemode
 Fiber-optic Transmitter Power: min: -8.0 dBm max: -2.0 dBm
 Fiber-optic Receiver Sensitivity: min: -34.0 dBm max: -7.0 dBm
 Link Budget: 26.0 dB

CFMFF1429-200
 1310 nm (TX) / 1550 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -13.0 dBm max: -6.0 dBm
 Fiber-optic Receiver Sensitivity: min: -32.0 dBm max: -3.0 dBm
 Link Budget: 19.0 dB

CFMFF1429-201
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -13.0 dBm max: -6.0 dBm
 Fiber-optic Receiver Sensitivity: min: -32.0 dBm max: -3.0 dBm
 Link Budget: 19.0 dB

CFMFF1429-202
 1310 nm (TX) / 1550 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -8.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -33.0 dBm max: -3.0 dBm
 Link Budget: 25.0 dB

CFMFF1429-203
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -8.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -33.0 dBm max: -3.0 dBm
 Link Budget: 25.0 dB

Cable Specifications – Continued

622 Mb/s fiber specifications (CFMFF13xx-21x)

Bit Error Rate: <10⁻⁹

Port 1:
 1300 nm multimode duplex
 Fiber-optic Transmitter Power: min: -19.0 dBm max: -14.0 dBm
 Fiber-optic Receiver Sensitivity: min: -26.0 dBm max: -14.0 dBm
 Link Budget: 7.0 dB

Port 2:
CFMFF1314-210
 1310 nm singlemode
 Fiber-optic Transmitter Power: min: -15.0 dBm max: -8.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -7.0 dBm
 Link Budget: 13.0 dB

CFMFF1316-210
 1310 nm singlemode
 Fiber-optic Transmitter Power: min: -3.0 dBm max: +2.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -7.0 dBm
 Link Budget: 25.0 dB

CFMFF1317-210
 1550 nm singlemode
 Fiber-optic Transmitter Power: min: -3.0 dBm max: +2.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -7.0 dBm
 Link Budget: 25.0 dB

CFMFF1329-210
 1310 nm (TX) / 1550 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -14.0 dBm max: -8.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -8.0 dBm
 Link Budget: 14.0 dB

CFMFF1329-211
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -14.0 dBm max: -8.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -8.0 dBm
 Link Budget: 14.0 dB

CFMFF1329-212
 1310 nm (TX) / 1550 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -5.0 dBm max: 0.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -8.0 dBm
 Link Budget: 23.0 dB

CFMFF1329-213
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -6.0 dBm max: 0.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -8.0 dBm
 Link Budget: 22.0 dB

Cable Specifications – Continued

622 Mb/s fiber specifications (CFMFF14xx-21x)

Bit Error Rate: <10⁻⁹

Port 1:
 1310 nm singlemode
 Fiber-optic Transmitter Power: min: -15.0 dBm max: -8.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -7.0 dBm
 Link Budget: 13.0 dB

Port 2:
CFMFF1429-210
 1310 nm (TX) / 1550 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -14.0 dBm max: -8.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -8.0 dBm
 Link Budget: 14.0 dB

CFMFF1429-211
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -14.0 dBm max: -8.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -8.0 dBm
 Link Budget: 14.0 dB

CFMFF1429-212
 1310 nm (TX) / 1550 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -5.0 dBm max: 0.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -8.0 dBm
 Link Budget: 23.0 dB

CFMFF1429-213
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -6.0 dBm max: 0.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -8.0 dBm
 Link Budget: 22.0 dB

622 Mb/s Fiber Specifications (CFMFF1717-210)

Bit Error Rate: <10⁻⁹

Port 1
 1310 nm singlemode
 Fiber-optic Transmitter Power: min: -3.0 dBm max: +2.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -7.0 dBm
 Link Budget: 25.0 dB

Port 2
 1310 nm singlemode
 Fiber-optic Transmitter Power: min: -3.0 dBm max: +2.0 dBm
 Fiber-optic Receiver Sensitivity: min: -28.0 dBm max: -7.0 dBm
 Link Budget: 25.0 dB

Cable Specifications – Continued

1.25 Gb/s fiber specifications (CFMFF13xx-22x)

Bit error rate: <10⁻¹²

Port 1:
 1300 nm multimode
 Fiber-optic Transmitter Power: min: -10.0 dBm max: -4.0 dBm
 Fiber-optic Receiver Sensitivity: min: -17.0 dBm max: 0.0 dBm
 Link Budget: 7.0 dB

Port 2:
CFMFF1313-220
 1300 nm multimode
 Fiber-optic Transmitter Power: min: -10.0 dBm max: -4.0 dBm
 Fiber-optic Receiver Sensitivity: min: -17.0 dBm max: 0.0 dBm
 Link Budget: 7.0 dB

CFMFF1314-220
 1310 nm singlemode
 Fiber-optic Transmitter Power: min: -13.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -20.0 dBm max: -3.0 dBm
 Link Budget: 7.0 dB

CFMFF1315-220
 1310 nm singlemode
 Fiber-optic Transmitter Power: min: -5.0 dBm max: 0.0 dBm
 Fiber-optic Receiver Sensitivity: min: -20.0 dBm max: -3.0 dBm
 Link Budget / Spectral Width: 15.0 dB / 5.9 nm FWHM

CFMFF1317-220
 1550 nm singlemode
 Fiber-optic Transmitter Power: min: -3.0 dBm max: +2.0 dBm
 Fiber-optic Receiver Sensitivity: min: -23.0 dBm max: -3.0 dBm
 Link Budget / Spectral Width: 20.0 dB / 2.3 nm FWHM

CFMFF1324-220
 1300 nm extended multimode
 Fiber-optic Transmitter Power: min: -10.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -17.0 dBm max: -3.0 dBm
 Link Budget: 7.0 db

CFMFF1329-220
 1310 nm (TX) / 1550 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -8.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -21.0 dBm max: -3.0 dBm
 Link Budget: 13.0 dB

CFMFF1329-221
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -8.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -21.0 dBm max: -3.0 dBm
 Link Budget: 13.0 dB

CFMFF1329-222
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -3.0 dBm max: +2.0 dBm
 Fiber-optic Receiver Sensitivity: min: -23.0 dBm max: -8.0 dBm
 Link Budget: 20.0 dB

CFMFF1329-223
 1550 nm (TX) / 1310 nm (RX) singlemode
 Fiber-optic Transmitter Power: min: -3.0 dBm max: +2.0 dBm
 Fiber-optic Receiver Sensitivity: min: -23.0 dBm max: -8.0 dBm
 Link Budget: 20.0 dB

CFMFF1335-220
 1550 nm singlemode
 Fiber-optic Transmitter Power: min: 0.0 dBm max: +5.0 dBm
 Fiber-optic Receiver Sensitivity: min: -27.0 dBm max: -3.0 dBm
 Link Budget / Spectral Width: 27.0 db / 0.3 nm FWHM

Cable Specifications – Continued

1.25 Gb/s fiber specifications (CFMFF14xx-22x)

Bit error rate: <10⁻¹²

Port 1:

CFMFF1414-220

1310 nm singlemode
 Fiber-optic Transmitter Power: min: -13.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -20.0 dBm max: -3.0 dBm
 Link Budget: 7.0 db

Port 2:

CFMFF1414-220

1310 nm singlemode
 Fiber-optic Transmitter Power: min: -13.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -20.0 dBm max: -3.0 dBm
 Link Budget: 7.0 db

Port 1:

CFMFF1424-220

1310 nm singlemode
 Fiber-optic Transmitter Power: min: -13.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -20.0 dBm max: -3.0 dBm
 Link Budget: 7.0 db

Port 2:

CFMFF1424-220

1300 nm extended multimode
 Fiber-optic Transmitter Power: min: -10.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -17.0 dBm max: -3.0 dBm
 Link Budget: 7.0 db

Port 1:

CFMFF1429-220

1310 nm singlemode
 Fiber-optic Transmitter Power: min: -13.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -20.0 dBm max: -3.0 dBm
 Link Budget: 7.0 db

Port 2:

CFMFF1429-220

1310 nm singlemode
 Fiber-optic Transmitter Power: min: -8.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -21.0 dBm max: -3.0 dBm
 Link Budget: 13.0 db

1.25 Gb/s Fiber Specifications (CFMFF1825-220)

Bit error rate: <10⁻¹²

Port 1:

850 nm multimode
 Fiber-optic Transmitter Power: min: -10.0 dBm max: -4.0 dBm
 Fiber-optic Receiver Sensitivity: min: -17.0 dBm max: 0.0 dBm
 Link Budget: 7.0 db

Port 2:

1310 nm singlemode
 Fiber-optic Transmitter Power: min: -11.0 dBm max: -3.0 dBm
 Fiber-optic Receiver Sensitivity: min: -20.0 dBm max: -3.0 dBm
 Link Budget/Spectral Width: 9.0 db/7.0 nm FWHM

Technical Specifications

Applies to Transition Networks Model CFMFFxxxx-2xx or equivalent

Standards	IEEE 802.3™ 1998 Fast Ethernet, ATM, OC-3, STM-1, HSTR, FDDI	
Dimensions	3.4" x 0.86" x 5.0" (86 mm x 22mm x 127mm)	
Weight	3 oz (91 g) (approximate)	
MTBF	650,318 hours (MIL217F2 V5.0) (MIL-HDBK-217F) 1,793,425 hours (Bellcore7 V5.0)	
Delay	623 Mbps - 1 Gbps:	1 nsec
	156 Mbps - 622 Mbps:	2 nsec
	125-155 Mbps:	3 nsec
	<125 Mbps:	7 nsec
Power Consumption	3.0 watts (typical)	
Environment	Tmra*:	0°C to 50°C (32°F to 122°F)
	Storage Temp:	-20°C to 85°C (-4°F to 185°F)
	Humidity:	10 to 90%, non condensing
	Altitude:	0 to 10,000 feet
Warranty	Lifetime	

*Manufacturer's rated ambient temperature: "Tmra" range for this slide-in-module depends on the physical characteristics and the installation configuration of the Transition Networks PointSystem™ chassis in which this slide-in-module will be installed.

Note: The CFMFFxxxx-2xx media converters are for use in Transition Networks' model CPSMCxxxx-xxx chassis only. See the CPSMCxxxx-xx chassis manuals, available on-line @ www.transition.com, for information about the chassis.

Note: For the most up-to-date information on the CFMFFxxxx-2xx media converter, view the user's guide on-line @ www.transition.com

Note: The SFMFFxxxx-2xx model is the stand alone version of the media converter. For more information, see the user's guide on-line at: www.transition.com.

The fiber optic transmitters on this device meet Class I Laser safety requirements per IEC-825/CDRH standards and complies with 21 CFR1040.10 and 21CFR1040.11.

Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.

CAUTION: Visible and Invisible Laser Radiation When Open. Do Not Stare Into Beam Or View Directly With Optical Instruments.

CAUTION: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Troubleshooting

If the media converter fails, isolate and correct the fault by determining the answers to the following questions and then taking the indicated action:

- Is the *PWR (power)* LED on the media converter illuminated?
 - NO
 - Is the media converter inserted properly into the chassis?
 - Is the power cord properly installed in the chassis and at the external power source?
 - Does the external power source provide power?
 - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
 - YES
 - Proceed to step 2.
- Is the *LKS (link singlemode)* LED illuminated?
 - NO
 - Check the singlemode fiber cables for proper connection.
 - Verify that the TX and RX cables on the media converter are connected to the RX and TX ports, respectively, on the other device.
 - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
 - YES
 - Proceed to step 3.
- Is the *LKM (link multimode)* LED illuminated?
 - NO
 - Check the multimode fiber cables for proper connection.
 - Verify that the TX and RX cables on the media converter are connected to the RX and TX ports, respectively, on the other device.
 - Restart the workstation to restart the initialization process.
 - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
 - YES
 - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

Contact Us

Technical support

Technical support is available 24 hours a day.

US and Canada: 1-800-260-1312
International: 00-1-952-941-7600

Transition now

Chat live via the Web with Transition Networks Technical Support. Log onto www.transition.com and click the Transition Now link.

Web-Based seminars

Transition Networks provides seminars via live web-based training. Log onto www.transition.com and click the Learning Center link.

E-Mail

Ask a question anytime by sending an e-mail to our technical support staff. techsupport@transition.com

Address

Transition Networks
6475 City West Parkway
Minneapolis, MN 55344, U.S.A.
telephone: 952-941-7600
toll free: 800-526-9267
fax: 952-941-2322



DECLARATION OF CONFORMITY

Name of Mfg: Transition Networks
6475 City West Parkway, Minneapolis MN 55344 U.S.A.

Model: CFMFFxxxx-2xx Series Media Converters

Part Number(s): CFMFF1313-200, CFMFF1314-200, CFMFF1314-210, CFMFF1313-220, CFMFF1314-220, CFMFF1315-200, CFMFF1315-220, CFMFF1316-200, CFMFF1316-210, CFMFF1317-200, CFMFF1317-210, CFMFF1317-220, CFMFF1717-210, CFMFF1329-200, CFMFF1329-201, CFMFF1329-202, CFMFF1329-203, CFMFF1329-210, CFMFF1329-211, CFMFF1329-212, CFMFF1329-213, CFMFF1329-220, CFMFF1329-221, CFMFF1329-222, CFMFF1329-223, CFMFF1414-200, CFMFF1415-200, CFMFF1429-200, CFMFF1429-201, CFMFF1429-202, CFMFF1429-203, CFMFF1429-210, CFMFF1429-211, CFMFF1429-212, CFMFF1429-213, CFMFF1324-220, CFMFF1825-220, CFMFF1335-220, CFMFF1414-220, CFMFF1424-220, CFMFF1429-220

Regulation: EMC Directive 89/336/EEC

Purpose: To declare that the *CFMFFxxxx-2xx* to which this declaration refers is in conformity with the following standards.
EN 55022:1994, A-1:1995, A-2:1997 Class A&B; FCC Part 15 Subpart B; UL1950
EN 55024:1998; EN 61000-3-2:1995; EN 61000-3-3:1995; 21CFR subpart J
I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).


Stephen Anderson, Vice-President of Engineering

May, 2005
Date

Compliance Information

UL Listed Accessory

C-UL Listed (Canada)

CISPR22/EN55022 Class A & B + EN55024

CE Mark

FCC regulations

This equipment has been tested and found to comply with the limits for a Class A & B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian regulations

This digital apparatus does not exceed the Class A & B limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications. Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A & B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.



In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.

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