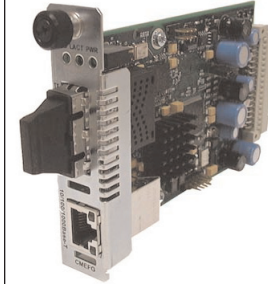


**CMEFG10xx-1xx
(local)**



Transition Networks CMEFG10xx-1xx and SMEFG10xx-1xx series gigabit Ethernet media converters connect 10/100/1000Base-T shielded or unshielded twisted-pair copper cable to 1000Base-SX/LX fiber-optic cable.

The media converters are designed to be installed in pairs where the CMEFG10xx-1xx is the local media converter and the SMEFG10xx-1xx is the remote media converter.

User's Guide

CMEFG10xx-1xx - Slide-in-Module
SMEFG10xx-1xx - Stand-Alone
Media Converters

- **Copper to Fiber Gigabit Ethernet**
- **10/100/1000Base-T to 1000Base-SX/LX**

**SMEFG10xx-1xx
(remote)**



Remote management

The CMEFG10xx-1xx (*chassis version*) is designed to remotely manage the SMEFG10xx-1xx (*the stand-alone version*) or another CMEFG10xx-1xx per IEEE 802.3ah™:2004 standard.

For example, a local CMEFG1011-100 converter installed in a managed Transition Networks PointSystem™ chassis is connected, via fiber, to a remote SMEFG1011-100 converter.

Network management

The SNMP section lists commands for monitoring and managing a networked media converter at a remote location. The CMEFG10xx-2xx and SMEFG10xx-2xx devices are supported by 050xxxxx and later revisions of the management agent. Please download the latest management firmware at www.transition.com.

Installation	.5
Operation	.7
Diagnostic Management Interface (DMI)	.14
Cable Specification	.15
Technical Specifications	.18
Troubleshooting	.19
Contact Us	.22
Compliance	.23

Standard Models (-10x)

The standard models (*listed below*) perform as described in the user's guide with one exception: These models do not include DMI functionality.

Part Number	Port 1 - Copper 10/100/1000Base-T	Port 2 - Duplex Fiber-Optic
CMEFG1013-100 SMEFG1013-100	RJ-45 100m (328 ft)	SC, 1000Base-SX, 850 nm multimode 220 m (720 ft)
CMEFG1014-100 SMEFG1014-100	RJ-45 100m (328 ft)	SC, 1000Base-LX, 1310 nm Single Mode 10 km (6.2 miles)
CMEFG1015-100 SMEFG1015-100	RJ-45 100m (328 ft)	SC, 1000Base-LX, 1310 nm single mode 25 km (15.5 miles)
CMEFG1017-100 SMEFG1017-100	RJ-45 100m (328 ft)	SC, 1000Base-LX, 1550 nm single mode 65 km (40.4 miles)
CMEFG1035-100 SMEFG1035-100	RJ-45 100m (328 ft)	SC, 1000Base-LX, 1550 nm single mode 125 km (77.6 miles)

The standard models also include single mode, single fiber models (*listed below*.)

Part Number	Port 1 - Copper 10/100/1000Base-T	Port 2 - Single Fiber-Optic 1000Base-BX-U/D, single mode
CMEFG1029-100 SMEFG1029-100	RJ-45 100m (328 ft)	SC, 1310 nm (TX) / 1490 nm (RX) 20 km (12.4 miles)
CMEFG1029-101 SMEFG1029-101	RJ-45, 100m (328 ft)	SC, 1490 nm (TX) / 1310 nm (RX) 20 km (12.4 miles)
Install a CMEFG1029-100 (<i>local</i>) with a SMEFG1029-101 (<i>remote</i>). Or install a CMEFG1029-101 (<i>local</i>) with a SMEFG1029-100 (<i>remote</i>).		
CMEFG1029-102 SMEFG1029-102	RJ-45 100m (328 ft)	SC, 1310 nm (TX) / 1490 nm (RX) 40 km (24.9 miles)
CMEFG1029-103 SMEFG1029-103	RJ-45 100m (328 ft)	SC, 1490 nm (TX) / 1310 nm (RX) 40 km (24.9 miles)
Install a CMEFG1029-102 (<i>local</i>) with a SMEFG1029-103 (<i>remote</i>). Or install a CMEFG1029-103 (<i>local</i>) with a SMEFG1029-102 (<i>remote</i>).		

TX = transmit, RX = receive

Note: The distances listed are the typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network.

DMI Models (-11x)

The Diagnostic Monitoring Interface (DMI) models (*listed below*) allow diagnosing problems within the network. These devices have four functions:

- Transmit power
- Receive power
- Transmit bias current
- Temperature

Within each function, the device will send a trap (*i.e., error*) whenever a high or low warning event or a high or low alarm event occurs (*for a total of 16 traps*).

In addition, if both the local and remote media converters are DMI models, the device will distinguish whether the trap event is from a local or a remote device.

Part Number	Port 1 - Copper 10/100/1000Base-T	Port 2 - Duplex Fiber-Optic
CMEFG1013-110 SMEFG1013-110	RJ-45 100m (328 ft)	SC, 1000Base-SX, 850 nm multimode 220 m (720 ft)
CMEFG1014-110 SMEFG1014-110	RJ-45 100m (328 ft)	SC, 1000Base-LX-10, 1310 nm singlemode 10 km (6.2 miles)
CMEFG1015-110 SMEFG1015-110	RJ-45 100m (328 ft)	SC, 1000Base-LX, 1310 nm single mode 25 km (15.5 miles)

The DMI models also include single mode, single fiber models listed below.

Part Number	Port 1 - Copper 10/100/1000Base-T	Port 2 - Single Fiber-Optic 1000Base-BX-U/D, single mode
CMEFG1029-110 SMEFG1029-110	RJ-45 100m (328 ft)	SC, 1310 nm (TX) / 1490 nm (RX) 20 km (12.4 miles)
CMEFG1029-111 SMEFG1029-111	RJ-45, 100m (328 ft)	SC, 1490 nm (TX) / 1310 nm (RX) 20 km (12.4 miles)
Install a CMEFG1029-110 (<i>local</i>) with a SMEFG1029-111 (<i>remote</i>). Or install a CMEFG1029-111 (<i>local</i>) with a SMEFG1029-110 (<i>remote</i>).		
CMEFG1029-112 SMEFG1029-112	RJ-45 100m (328 ft)	SC, 1310 nm (TX) / 1490 nm (RX) 40 km (24.9 miles)
CMEFG1029-113 SMEFG1029-113	RJ-45 100m (328 ft)	SC, 1490 nm (TX) / 1310 nm (RX) 40 km (24.9 miles)
Install a CMEFG1029-112 (<i>local</i>) with a SMEFG1029-113 (<i>remote</i>). Or install a CMEFG1029-113 (<i>local</i>) with a SMEFG1029-112 (<i>remote</i>).		

TX = transmit, RX = receive

Note: The distances listed are the typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network.



CMEFG1040-1xx
Slide-in-Module Media Converter

- Copper to Fiber
- 10/100/1000Base-TX to 1000Base-SX/LX
- Small Form Fact Pluggable (SFP) Fiber Port

Transition Networks CMEFG1040-1xx series media converters, designed to be installed in a PointSystem™ chassis connect 10Base-TX, 100Base-TX, or 1000Base-TX twisted-pair copper cable to 1000Base-SX or 1000Base-LX fiber cable. It has one copper port and one SFP port.

Stand-Alone Media Converter

- Copper to Fiber
- 10/100/1000Base-TX to 1000Base-SX/LX
- Small Form Fact Pluggable (SFP) Fiber Port

Transition Networks SMEFG1040-1xx series media converters connect 10Base-TX, 100Base-TX, or 1000Base-TX twisted-pair copper cable to 1000Base-SX or 1000Base-LX fiber cable.

The SMEFG1040-10x has one copper port and one SFP port.



Part Numbers CMEFG1040-1xx and SMEFG1040-1xx

Copper Port 1: 10/100/1000-Base-TX

RJ-45 100 m (328 ft)

The following DMI supported SFP transceiver modules are compatible with the SFMFF1040-1xx converter and are available from Transition Networks (sold separately).

Part Number	Duplex Fiber-Optic Port 2
TN-SFP-SX	LC, 1000Base-SX, 850 nm multimode, 220-550 m (720-1804 ft)*
TN-SFP-LX1	LC, 1000Base-LX, 1310 nm single mode, 10 km (6.2 miles)*
TN-SFP-LX3	LC, 1000Base-LX, 1310 nm single mode, 30 km (18.8 miles)*
TN-SFP-LX5	LC, 1000Base-LX, 1550 nm single mode, 50 km (31.2 miles)*
TN-SFP-LX8	LC, 1000Base-LX, 1550 nm single mode, 80 km (50.0 miles)*

*Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network.

Note: Third-party Multi-Source Agreement (MSA) compliant Small Form Factor Pluggables (SFPs) can also be used in the SFMFF1040-1xx device.

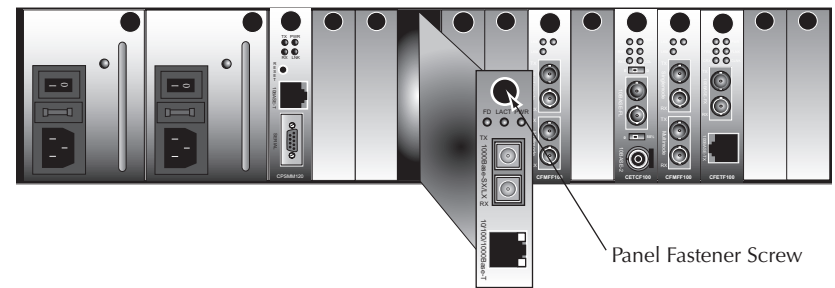
Installation

Install the CMEFG10xx-10x

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing the CMEFG10xx-1xx media converter in the PointSystem™ chassis. Failure to observe this caution could result in damage to, and subsequent failure of the CMEFG10xx-1xx media converter.

To install the CMEFG10xx-1xx media converter slide-in-module:

1. Locate an empty installation slot on the PointSystem™ chassis.
2. Carefully insert the slide-in-module into the slot, aligning the module with the slot guides.
3. Ensure that the module is firmly seated against the back of the chassis.
4. Push in and rotate the panel-fastener screw

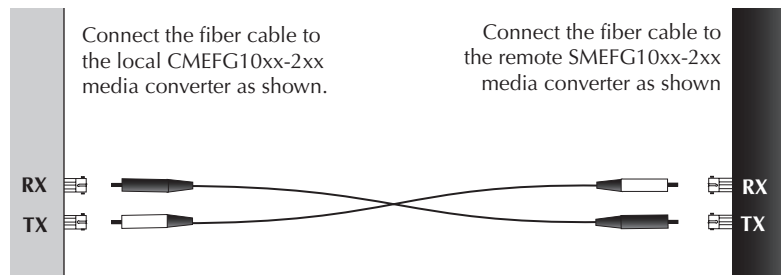


Note: The CMEFG10xx.1xx is not designed for use in the Transition Networks single-slot chassis. It will work in all other Transition Networks chassis.

Installation -- Continued

Install the fiber cable

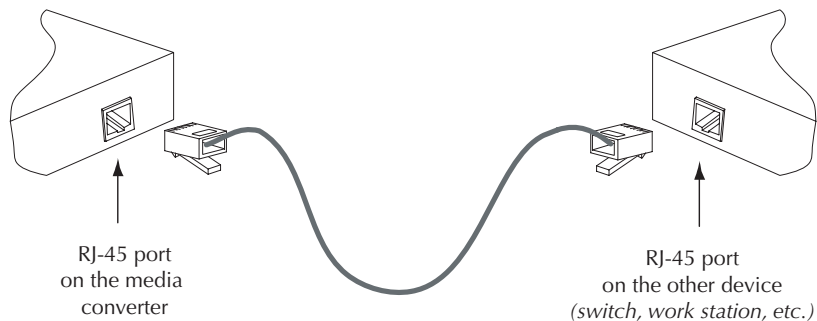
1. Locate or build 1000Base-SX/LX compliant fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the CMEFG10xx-1xx media converter as described:
 - Connect the male TX cable connector to the female TX connector.
 - Connect the male RX cable connector to the female RX connector.
3. Connect the fiber cables to the SMEFG10xx-1xx media converter as described:
 - Connect the male TX cable connector to the female RX connector.
 - Connect the male RX cable connector to the female TX connector.



Install the copper cable

1. Locate or build 10, 100, or 1000Base-T compliant copper cables with male, RJ-45 connectors installed at both ends.
2. Connect the RJ-45 connector at one end of the cable to the media converter's 10/100/1000Base-T RJ-45 port.
3. Connect the RJ-45 connector at the other end of the cable to the 10, 100, or 1000Base-T RJ-45 port on the other device (*switch, workstation, etc.*).

Note: The AutoCross feature allows the use of either straight-through or crossover configuration cables.



Installation -- Continued

Powering the CMEFG10xx-1xx converter

The CMEFG10xx-1xx slide-in-module is powered through the Transition Networks *PointSystem™* chassis.

Powering the SMEFG10xx-1xx converter

To power the SMEFG10xx-1xx media converter:

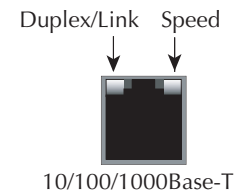
1. Connect the barrel connector on the power adapter cord to the media converter's power port (*located on the back of the media converter*).
2. Connect the power adapter plug to AC power.
3. Verify that the media converter has powered UP: the LED power indicator light will be ON.

For DC power, consult the user's guide for the Transition Networks DC external power supply (*P/N SPS1872-xx*) for powering the media converter.

Operation

Status LEDs

The CMEFG10xx-1xx and SMEFG10xx-1xx series media converters are designed to operate without user intervention. Use the status LEDs to monitor the media converter operation in the network.



Copper status LEDs

The status LEDs for the copper connection are integrated into the RJ-45 port. These LEDs are not labeled on the media converter. Refer to the drawing to the right for their locations.

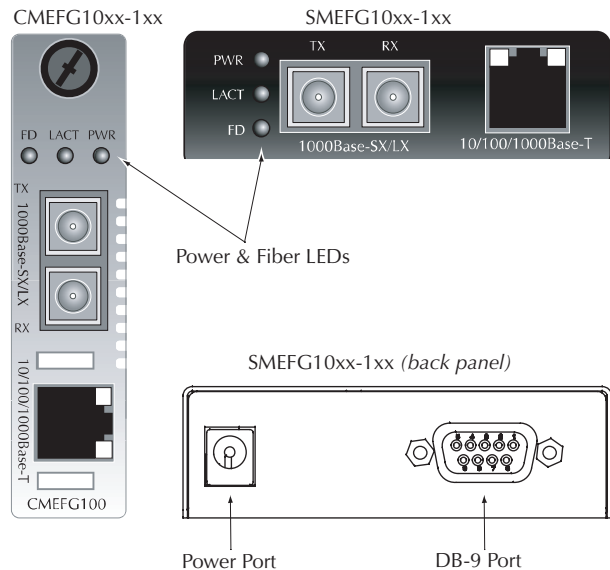
Duplex/Link	Yellow	A link in half-duplex mode has been established for the copper connection.
	Flashing Yellow	The copper connection is transmitting/receiving data in half-duplex mode.
	Green	A link in full-duplex mode has been established for the copper connection.
	Flashing Green	The copper connection is transmitting/receiving data in full-duplex mode.
Speed	OFF	10 Mb/s operation.
	Yellow	100 Mb/s operation.
	Green	1000 Mb/s operation.

Operation -- Continued

Fiber status LEDs

The status LEDs for the 1000Base-SX-LX fiber connection (*FD and LACT*) as well as the LED for the power (*PWR*) are located next to the fiber port.

PWR	ON	Connection to external AC power.
LACT	ON	A link has been established for the fiber connection.
	FLASHING	The fiber connection is transmitting/receiving data.
FD	ON	Full-duplex mode for the fiber connection.
	OFF	Half-duplex mode for the fiber connection.



DB-9 port on the SMEFG10xx-1xx

The SMEFG10xx-1xx stand-alone media converter is equipped with an RS-232 DB-9 port. This port is included to allow the user to quickly configure network settings on the remote SMEFG10xx-1xx converter.

Operation -- Continued

DB-9 port on the SMEFG10xx-1xx

To configure the network settings:

1. Connect the SMEFG10xx-1xx DB-9 port to a terminal or terminal emulator using a null modem RS-232 DB-9 serial port cable.
2. Using methods appropriate to the attached terminal, verify that the serial port parameters of the attached terminal match those of the SMEFG10xx-1xx. If necessary, modify the port parameter values for the attached terminal. The default serial port parameter values for the media converter are:

bits per second	38400
stop bits	1
data bits	8
parity	NONE
3. Power up the media converter.
4. Press the [enter]/[return] key (*or enter the password*) to bring up a command-line prompt on the attached terminal or terminal emulator.

The following will appear on the screen after a successful login:

```

Login successful
Uptime (D:H:M:S) 00:00:22:06
Group string: <empty>
Commands:
n          - Display firmware revision and serial number
b          - Display port statistics (link state, speed,
duplex)
d          - Display fiber DMI statistics
l          - Display learned address database
gXXXXXXX - Change group string (Maximum of 64
characters)
pXXXXXXX - Change password (Maximum of 8 characters)
f          - Restore device to factory defaults
r          - Reset device
s          - Disable serial port
<return> - Refresh screen
q          - Logout
%
```

Use the commands listed above to configure the desired network settings on the remote SMEFG10xx-1xx media converter.

Note: Please note that the “group string” feature does not function when configuring network settings via the DB-9 port. For additional information on this feature, contact Transition Networks Technical Support.

Operation -- Continued

Features

Rate conversion

The media converter allows the connection of 10 Mb/s, 100 Mb/s, and 1000 Mb/s terminal devices over a 1000Base-SX/LX gigabit Ethernet fiber network.

Bandwidth allocation

Bandwidth allocation allows the network administrator to set the bandwidth of the media converter to in 64 KB increments via SNMP management. The bandwidth can be allocated in any multiple of 64 KB from “0” up to the converter’s full bandwidth capability in either KB or Mb values.

AutoCross™

The AutoCross feature allows either straight-through (MDI) or crossover (MDI-X) cables to be used when connecting to devices such as hubs, transceivers, or network interface cards (NICs). AutoCross determines the characteristics of the cable connection and automatically configures the unit to link up, regardless of the cable configuration. *(Requires no operator intervention.)*

Pause

The pause feature is used to temporarily suspend data transmission in order to relieve buffer congestion. If a media converter needs some time to clear network congestion, it will send a pause signal to the media converter at the other end, which will wait a predetermined amount of time before re-transmitting the data. This feature reduces data bottlenecks, allows for a more efficient use of the network devices, and prevents the loss of valuable data.

The pause feature is set in the Software mode using the SNMP interface, and can be set to one of four settings:

- Disable (*i.e., no pause*)
- Symmetrical pause
- Asymmetric TX (*transmit*) pause
- Asymmetric RX (*receive*) pause

Notes:

1. Enable the “pause feature” if it is present on ALL network devices attached to the media converter(s). Otherwise, disable the pause feature.
2. The “pause feature” is not supported in the SMEFG10xx-1xx Stand-Alone models.

Operation -- Continued

Automatic link restoration

The CMEFG10xx-1xx and SMEFG10xx-1xx media converters include a unique feature called automatic link restoration. These two converters will automatically restore the link between network devices after a fault condition has been corrected. The competitors’ products, in contrast, require the user to power down, then power up the converters, after a fault condition has been corrected.

Loop-Back

When activated via SNMP management, this diagnostic feature enables the media converter to loop back the signal from the RX port to the TX port for testing and troubleshooting purposes. Test signals from a bit error test unit (*Smartbits™, etc.*) can then be inserted into either the copper or fiber link to test a particular segment.

This type of diagnostic test can only be performed on the remote location. See the “Troubleshooting” section for an example.

Auto-Negotiation

The Auto-Negotiation feature allows the media converter to perform automatic configuration to achieve the best possible mode of operation over both the copper and fiber links. The media converter will broadcast its speed (*10 Mb/s, 100 Mb/s, or 1000 Mb/s*) and duplex mode (*full/half*) to the other devices and negotiate the best mode of operation. Auto-Negotiation allows quick and easy installation because the optimal link is established automatically. No user intervention is required to determine the best mode of operation.

Disable Auto-Negotiation

There may be a scenario where the user may want to disable Auto-Negotiation (*e.g., when the media converter is linked to a non-negotiating device*). In this instance, the mode of operation will drop to the least common denominator between the two devices (*e.g., 100 Mb/s, half-duplex*). Disabling this feature gives the user the ability to force the connection to the desired speed and duplex mode of operation.

Note: When Auto-Negotiation is disabled, the copper port can only be forced to 10 or 100 Mb/s and half- or full-duplex. 1000 Mb/s on the copper link always requires Auto-Negotiation to be enabled.

Operation -- Continued

Automatic firmware upgrade

The media converter has an automatic firmware upgrade feature. This feature applies to a data link consisting of a local and remote media converter connected via fiber optic cable. If the remote converter is not in active mode, and an in-active-mode local converter detects a different firmware revision in the remote converter, the local converter will force a boot-load condition and download its firmware revision. Please note that the local converter may have an earlier or a later revision than the remote converter. In either case, the local converter's firmware revision will replace the remote converter's revision.

Full-Duplex network

In a full-duplex network, maximum cable lengths are determined by the type of cables used. See the "cable specifications" section for the different CMEFG10xx-xx models. The 512-Bit Rule does not apply in a full-duplex network.

Half-Duplex network (512-Bit Rule)

In a half-duplex network, the maximum cable lengths are determined by the round trip delay limitations of each Fast Ethernet collision domain. (*A collision domain is the longest path between any two terminal devices, e.g. a terminal, switch, or router.*)

The 512-Bit Rule determines the maximum length of cable permitted by calculating the round-trip delay in bit-times (BT) of a particular collision domain. If the result is less than or equal to 512 BT, the path is good.

For more information on the 512-Bit Rule, see the white paper titled "Collision Domains" on the Transition Networks website at: www.transition.com

Note: For the SMEFG10xx-1xx media converter:

- When Auto-Negotiation is enabled, the fiber port operates in both full- and half-duplex modes.
- When Auto-Negotiation is disabled, the fiber port operates in full-duplex only.

Note: The CMEFG10xx-1xx media converter can operate in either full- or half-duplex mode whether the Auto-Negotiation feature is enabled or disabled.

Operation -- Continued

SNMP

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

Use SNMP at an attached terminal or at a remote location to monitor the local CMEFG10xx-1xx media converter by monitoring:

- Enable/disable the CMEFG10xx-1xx media converter
- Copper and fiber link status
- Copper and fiber port duplex
- Copper port speed
- Enable/disable Auto-Negotiation (*copper and fiber*)
- Enable/disable pause
- Enable/disable AutoCross
- RMON statistics/MIB counters
- *OAM channel statistics
- Uptime (*d:h:m:s*) counter with reset
- Enable/disable tagging and priority
- VLAN tagging (*Virtual Local Area Network*)
- Bandwidth allocation in 64KBytes/s units. (*Two fields, one for TX (copper) to FX (fiber) and one for FX (fiber) to TX (copper), are available.*)

Also, use SNMP to manage the remote SMEFG10xx-1xx or the local CMEFG10xx-1xx media converter with the following network commands:

- Copper and fiber link status
- Set copper full/half-duplex
- Set copper connection speed (*10Mb/s, 100Mb/s, 1000Mb/s*)
- Enable/disable Auto-Negotiation (*copper and fiber*)
- Enable/disable pause
- Enable/disable AutoCross
- RMON statistics/MIB counters
- *OAM channel statistics
- Uptime (*d:h:m:s*) counter with reset command
- *Remote fiber loop-back (*see Troubleshooting for an example*)

* OAM channel statistics and remote fiber loop-back management features will function when the media converter is connected to a IEEE802.3ah™ (2004) compliant device.

Diagnostic Monitoring Interface (DMI)

The following DMI port screen and explanation table contains brief definitions of the DMI support offered on Transition Networks SFP optical interfaces. For further information, please see the help option on the CPSMM-xxx SNMP agent or Focal Point, Transition Networks' GUI.

DMI RX Power 210 uW -6.778 dBm	DMI RX Power Alarm <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Low Warn <input type="checkbox"/> High Warn <input type="checkbox"/> Low Alarm <input type="checkbox"/> High Alarm
DMI Temp 30.1 °C 86.2 °F	DMI Temp Alarm <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Low Warn <input type="checkbox"/> High Warn <input type="checkbox"/> Low Alarm <input type="checkbox"/> High Alarm
DMI Bias Current 20 uA	DMI Bias Alarm <input type="checkbox"/> Normal <input type="checkbox"/> Low Warn <input type="checkbox"/> High Warn <input type="checkbox"/> Low Alarm <input type="checkbox"/> High Alarm
DMI TX Power 0 uW 0.000 dBm	DMI TX Power Alarm <input type="checkbox"/> Normal <input type="checkbox"/> Low Warn <input type="checkbox"/> High Warn <input checked="" type="checkbox"/> Low Alarm <input type="checkbox"/> High Alarm
Rx Power Intrusion Threshold 1000 uW 0.000 dBm	<input checked="" type="checkbox"/> Intrusion Detected

Variable Name	Description
DMI Rx Power	Measured Receive optical power in microwatts and in decibels relative to 1mW.
DMI Rx Power Alarm	Alarm status of measured Receive optical power.
DMI Temp	Internally measured temperature of transceiver in degrees C and degrees F.
DMI Temp Alarm	Alarm status for internally measured temperature of transceiver.
DMI Bias Current	Measured transmit bias current in microamperes.
DMI Bias Alarm	Alarm status for measured transmit bias current for the interface.
DMI Tx Power	Measured transmit power, in microwatts and in decibels relative to 1mW..
DMI Tx Power Alarm	Alarm status of measured transmit power.
Rx Power Intrusion Threshold	<p>Instructs the converter to stop passing traffic when the receive power drops below the new threshold. This feature is sometimes referred to as 'Intrusion Detection,' since tapping into a fiber to intercept traffic leads to a reduction in receive power. This value can be entered in microwatts or in decibels relative to 1mW.</p> <p>Note: This feature is not available on all devices.</p>

Cable Specification

The physical characteristics must meet or exceed IEEE 802.3™(2004) specifications.

Fiber cable (*standard models*)

Bit Error Rate:	<10 ⁻⁹
Single mode 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
CMEFG1013-100, SMEFG1013-100	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
CMEFG1014-100, SMEFG1014-100	1310 nm single mode
Fiber Optic Transmitter Power:	min: -9.0 dBm max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -21.0 dBm max: -3.0 dBm
Link Budget:	12.0 dB
CMEFG1015-100, SMEFG1015-100	1310 nm single mode
Fiber Optic Transmitter Power:	min: -5.0 dBm max: -0.0 dBm
Fiber Optic Receiver Sensitivity:	min: -24.0 dBm max: -3.0 dBm
Link Budget:	19.0 dB
CMEFG1017-100, SMEFG1017-100	1550 nm single mode
Fiber Optic Transmitter Power:	min: -3.0 dBm max: +2.0 dBm
Fiber Optic Receiver Sensitivity:	min: -24.0 dBm max: -3.0 dBm
Link Budget:	21.0 dB
CMEFG1035-100, SMEFG1035-100	1550 nm single mode
Fiber Optic Transmitter Power:	min: 0.0 dBm max: +5.0 dBm
Fiber Optic Receiver Sensitivity:	min: -32.0 dBm max: -3.0 dBm
Link Budget:	32.0 dB
CMEFG1029-100, SMEFG1029-100	1310(TX)/1490(RX) nm single mode
Fiber Optic Transmitter Power:	min: -8.0 dBm max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -22.0 dBm max: -3.0 dBm
Link Budget:	14.0 dB
CMEFG1029-101, SMEFG1029-101	1490(TX)/1310(RX) nm single mode
Fiber Optic Transmitter Power:	min: -8.0 dBm max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -22.0 dBm max: -3.0 dBm
Link Budget:	14.0 dB
CMEFG1029-102, SMEFG1029-102	1310(TX)/1490(RX) nm single mode
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:	20.0 dB
CMEFG1029-103, SMEFG1029-103	1490(TX)/1310(RX) nm single mode
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:	20.0 dB

Cable Specification -- continued

Fiber cable (DMI models)

CMEFG1013-110, SMEFG1013-110	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
CMEFG1014-110, SMEFG1014-110	1310 nm single mode
Fiber Optic Transmitter Power:	min: -9.0 dBm max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -21.0 dBm max: -3.0 dBm
Link Budget:	12.0 dB
CMEFG1015-110, SMEFG1015-110	1310 nm single mode
Fiber Optic Transmitter Power:	min: -5.0 dBm max: -0.0 dBm
Fiber Optic Receiver Sensitivity:	min: -24.0 dBm max: -3.0 dBm
Link Budget:	19.0 dB
CMEFG1029-110, SMEFG1029-110	1310(TX)/1490(RX) nm single mode
Fiber Optic Transmitter Power:	min: -8.0 dBm max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -22.0 dBm max: -3.0 dBm
Link Budget:	14.0 dB
CMEFG1029-111, SMEFG1029-111	1490(TX)/1310(RX) nm single mode
Fiber Optic Transmitter Power:	min: -8.0 dBm max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -22.0 dBm max: -3.0 dBm
Link Budget:	14.0 dB
CMEFG1029-112, SMEFG1029-112	1310(TX)/1490(RX) nm single mode
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:	20.0 dB
CMEFG1029-113, SMEFG1029-113	1490(TX)/1310(RX) nm single mode
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:	20.0 dB

Cable Specification -- Continued

Copper cable

Category 5: (*minimum requirement*)

Gauge:	24 to 22 AWG
Attenuation:	22.0 dB /100m @ 100 MHz
Maximum Cable Distance:	100 meters

- Straight-through (MDI) or crossover (MDI-X) cable may be used.
- Shielded twisted-pair (STP) or unshielded twisted-pair (UTP) may be used.
- All pin pairs (1&2, 3&6, 4&5, 7&8) are active in a gigabit Ethernet network.
- Use only dedicated wire pairs for the active pins:
(*e.g., blue/white & white/blue, orange/white & white/orange, etc.*)
- Do not use flat or silver satin wire.

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.

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

Optional Accessories for the SMEFG10xx-1xx media converter (*sold separately*).

Part #	Description
SPS-1872-SA	Optional External Power Supply; 18-72VDC Stand-Alone Output: 12.6VDC, 1.0 A
WMBL	Optional Wall Mount Brackets; Length: 4.0 in. (<i>102mm</i>)
WMBV	Optional Vertical Mount Bracket; Length: 5.0 in. (<i>127mm</i>)
WMBD	Optional DIN Rail Mount Bracket; Length: 5.0 in. (<i>127mm</i>)
WMBD-F	Optional DIN Rail Mount Bracket (<i>flat</i>); Length: 3.3in. (<i>84mm</i>)

Technical Specifications

For use with Transition Networks Models CMEFG10xx-1xx and SMEFG10xx-1xx or equivalent.

Standards: IEEE 802.3ah™, IEEE 802.1p™, IEEE 802.1q™

SMEFG10xx-1xx (Stand-Alone)

Dimensions: 3.4" x 1.0" x 4.7" (86 mm x 25 mm x 119 mm)

Weight: 10 oz (283 g approximately)

Power Supply: 12VDC, 1.25A (minimum)
(The external power supply provided with this product is UL listed by the power supply's manufacturer.)

CMEFG10xx-1xx (Slide-in-Module)

Dimensions: 5.0" x 3.4" x 0.87" (182 x 86 x 22 mm)

Weight: 3 oz (91 g approximately)

Power Consumption: 5.1 Watts

Data Rate (copper): 10, 100, 1000 Mb/s

Data Rate (fiber): 1000 Mb/s

Latency: 64 256 1024 1518 (frame size)

1000Base-T: 3.2 μs 4.8 μs 10.9 μs 14.8 μs

1000Base-SX/LX: 3.2 μs 4.8 μs 10.9 μs 14.8 μs

Packet Size: Memory: 256 K Bytes (2 Mbit)
Unicast MAC addresses: 4K
Maximum packet size: 1536 Bytes

Environment

Tmra*: 0°C to 50°C (32°F to 122°F)

Storage Temperature: -15°C to 65°C (5°F to 145°F)

Humidity: 5% to 95%, non-condensing

Altitude: 0 to 10,000 feet

Warranty: Lifetime

*Manufacturer's rated ambient temperature. (The Tmra range for the CMEFG10xx-1xx depends on the Transition Networks PointSystem™ chassis in which this slide-in-module will be installed.)

The information in this user's guide is subject to change. For the most up-to-date information on the CMEFG10xx-1xx / SMEFG10xx-1xx media converters, view the user's guide on-line at: www.transition.com.

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:

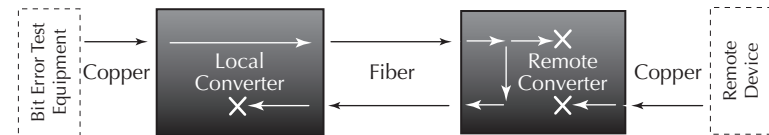
- Is the PWR LED illuminated?
 - NO
 - Is the power adapter for the t SMEFG10xx-1xx the correct type (verify voltage and frequency)?
 - Is the power adapter installed in the SMEFG10xx-1xx converter and plugged into an grounded AC outlet?
 - Is the AC outlet active and at the correct voltage level?
 - Is the CMEFG10xx-1xx converter fully inserted into the PointSystem™ chassis?
 - Is the power cord installed correctly in the PointSystem™ chassis?
 - Is the chassis power cord plugged into a grounded AC outlet?
 - Is the AC outlet active and at the correct voltage level?
 - Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.
 - YES
 - Proceed to step 2.
- Is the LACT LED illuminated?
 - NO
 - Check the 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. (See "install the fiber cable" section.)
 - Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.
 - YES
 - Proceed to step 3.
- Is the FD LED illuminated yellow or green?
 - NO
 - Check the fiber cables for proper connection.
 - Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.
 - YES - Yellow
 - The media converter has selected half-duplex mode for the fiber link. If this is not the correct mode, disconnect and reconnect the fiber cable to restart the initialization process.
 - Proceed to step 4.
 - YES - Green
 - The media converter has selected full-duplex mode for the fiber link. If this is not the correct mode, disconnect and reconnect the fiber cable to restart the initialization process.
 - Proceed to step 4.

Troubleshooting -- Continued

4. Is the copper Duplex/Link LED illuminated yellow or green?
NO
- Check the twisted pair cables for proper connection.
 - Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.
- YES - Yellow
- The media converter has selected half-duplex mode for the twisted pair link. If this is not the correct mode, disconnect and reconnect the twisted pair cable to restart the initialization process.
 - Proceed to step 5.
- YES - Green
- The media converter has selected full-duplex mode for the twisted pair link. If this is not the correct mode, disconnect and reconnect the twisted pair cable to restart the initialization process.
 - Proceed to step 5.
5. Is the copper Speed LED illuminated?
NO
- The media converter has selected 10 Mb/s operation. If this is not the correct speed, disconnect and reconnect the twisted pair cable to restart the initialization process.
 - Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.
- YES - Flashing Yellow
- The media converter has selected 100 Mb/s speed. If this is not the correct speed, disconnect and reconnect the twisted pair cable to restart the initialization process.
 - Proceed to step 6.
- YES - Flashing Green
- The media converter has selected 1000 Mb/s operation. If this is not the correct speed, disconnect and reconnect the twisted pair cable to restart the initialization process.
 - Proceed to step 6.

Troubleshooting -- Continued

6. Is data transfer failing? (*Loop-back test scenario #1*)
YES
- Verify the local fiber connection by starting a remote fiber loop-back (*enter the remote fiber loop-back command in software mode*) and then use a bit error test unit to run a bit error test.

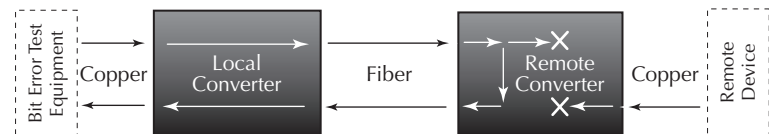


OAM mode: The signal received on the remote connector's RX fiber interface is looped back over the TX fiber cable. In this scenario, the loop-back data is not transmitted over the copper cable.

NO

- Proceed to step 7.

7. Is data transfer failing? (*Loop-back test scenario #2*)
YES
- Verify the local fiber connection by starting a remote fiber loop-back (*enter the remote fiber loop-back command in software mode*) and then use a bit error test unit to run a bit error test.



Set the test equipment's destination address to FF:FF:FF:FF:FF:FF (*broadcast*). The signal received on the remote connector's RX fiber interface is looped back over the TX fiber cable. In this scenario, the loop-back data is transmitted over the copper cable.

NO

- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

Contact Us

Technical support

Technical support is available at techsupport@transition.com

- US and Canada: 1-800-260-1312 (24 hours)
- International: 00-1-952-941-7600 (24 hours)

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 seminar


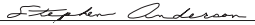
Transition networks provides seminars via live, web-based training. Log onto www.transition.com and click the Learning Center link.

Email

Ask a question anytime by sending an email to our technical support staff: techsupport@transition.com

Address

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Minneapolis, MN 55344, U.S.A.
Telephone: 952-941-7600,
Toll free: 800-526-9267
Fax: 952-941-2322

	Declaration of Conformity
	<p>Name of Mfg: Transition Networks 6475 City West Parkway, Minneapolis MN 55344 U.S.A.</p> <p>Model: xMEFG10xx-1xx Series Media Converters</p> <p>Part Number(s): CMEFG1013-100, CMEFG1014-100, CMEFG1015-100, CMEFG1017-100, CMEFG1035-100, CMEFG1029-100, CMEFG1029-101, CMEFG1029-102, CMEFG1029-103, CMEFG1013-110, CMEFG1014-110, CMEFG1015-110, CMEFG1029-110, CMEFG1029-111, CMEFG1029-112, CMEFG1029-113, CMEFG1040-100 SMEFG1013-100, SMEFG1014-100, SMEFG1015-100, SMEFG1017-100, SMEFG1035-100, SMEFG1029-100, SMEFG1029-101, SMEFG1029-102, SMEFG1029-103, SMEFG1013-110, SMEFG1014-110, SMEFG1015-110, SMEFG1029-110, SMEFG1029-111, SMEFG1029-112, SMEFG1029-113, SMEFG1040-100</p> <p>Regulation: EMC Directive 89/336/EEC</p> <p>Purpose: To declare that the xMEFG10xx-1xx to which this declaration refers is in conformity with the following standards: CISPR 22:1993; 55022:1994+A1:1995+A2:1997 Class A; FCC Part 15 subpart B; 21 CFR subpart J; EN60950</p> <p>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).</p> <p> Stephen Anderson, Vice-President of Engineering</p>

August, 2006
Date

Compliance Information

CISPR22/EN55022 Class A, CE Mark, EN60950

FCC regulations

This equipment has been tested and found to comply with the limits for a Class A 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 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 prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European regulations

Warning This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung! Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention! Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.



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.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstößt gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

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