

COMPLIANCE INFORMATION

UL Listed
C-UL Listed (Canada)
CISPR/EN55022 Class A & B

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 classe A & B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

Warning

This is a Class A & B 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 & B. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in weichen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention !

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



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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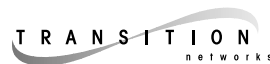
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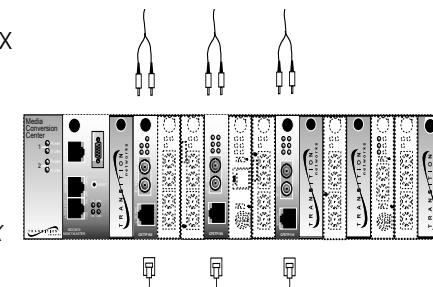
100BASE-TX to 100BASE-FX

Slide-In-Module Media Converters

CFETF10xx*-200

USER'S GUIDE

TRANSITION Networks CFETF10xx series Fast Ethernet™ media converters, designed to be installed in a *PointSystem™ Conversion Center™*, connect 100BASE-TX shielded or unshielded twisted-pair copper cable to 100BASE-FX multimode or singlemode fiber-optic cable.



CFETF1011-200

Provides an RJ-45 twisted-pair copper 100BASE-TX connector and a set of RX (receive) and TX (transmit) ST 100BASE-FX connectors to **multimode 1300 nm** fiber-optic cable.

CFETF1013-200

Provides an RJ-45 twisted-pair copper 100BASE-TX connector and an RX (receive) and TX (transmit) MM-SC 100BASE-FX connector to **multimode 1300 nm** fiber-optic cable.

CFETF1014-200

Provides an RJ-45 twisted-pair copper 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to **singlemode 1300 nm** fiber-optic cable.

CFETF1015-200

Provides an RJ-45 twisted-pair copper 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to **singlemode 1300 nm** fiber-optic cable.

CFETF1016-200

Provides an RJ-45 twisted-pair copper 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to **singlemode 1300 nm** fiber-optic cable.

CFETF1017-200

Provides an RJ-45 twisted-pair copper 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to **singlemode 1550 nm** fiber-optic cable.

CFETF1018-200

Provides an RJ-45 twisted-pair copper 100BASE-TX connector and an RX (receive) and TX (transmit) MT-RJ 100BASE-FX connector to **multimode 1300 nm** fiber-optic cable.

*In CFETF10xx model designation, **10** represents the 100BASE-TX RJ-45 connector; **xx** represents the selectable fiber connector installed on the media converter.

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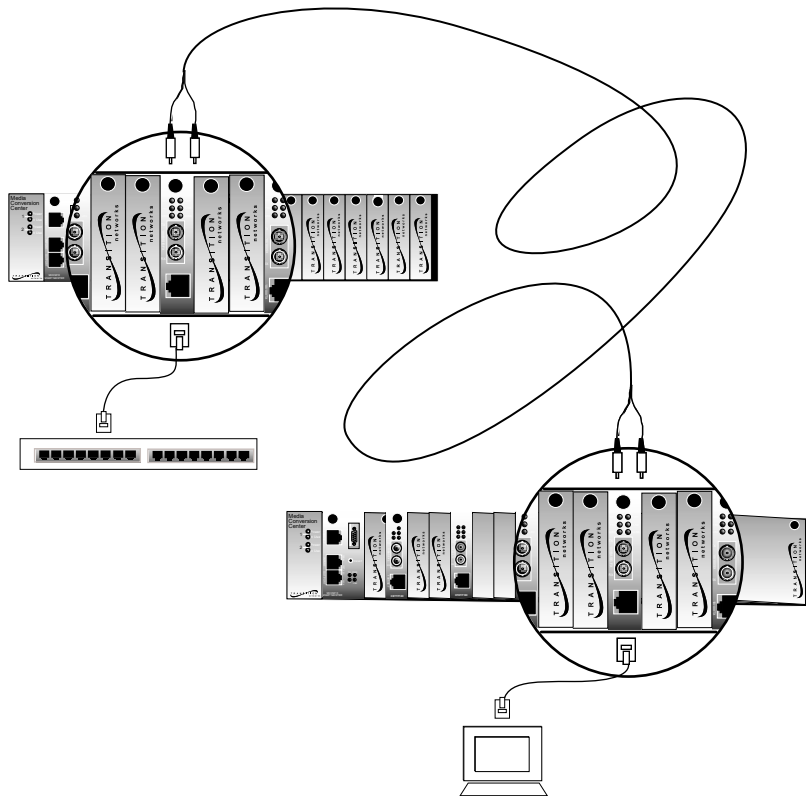
CFETF10xx IN THE NETWORK

The CFETF10xx receives and transmits network signals in either full-duplex or half-duplex mode, depending upon the network devices to which the media converter is attached and upon the Auto-negotiation switch setting. (See page 4 for switch setting description.)

Fast Ethernet™ in full-duplex mode allows the maximum cable distances shown in the cable specifications on page 10. Fast Ethernet™ in half-duplex mode requires attention to the 512-bit Rule. (See page 3.)

Network Configurations

Install two CFETF10xx series media converters in series to extend, over fiber, the distance between two 100BASE-TX devices:



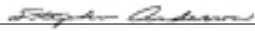
Alternatively, use one CFETF10xx media converter to connect a 100BASE-TX terminal device and a 100BASE-FX hub, switch, or router.

Or use one CFETF10xx media converter to connect a 100BASE-TX hub, switch, or router and a 100BASE-FX terminal device.

TECHNICAL SPECIFICATIONS

Standards	IEEE 802.3 1998
Data Rate	100 Mb/s
Dimensions	3.4" x 0.86" x 5.0" (86mm x 22mm x 127mm)
Weight	8 oz (approximate)
Power Consumption	3.4 watts
Environment	Typical Operating Temperature*: 0-50°C (32° to 122° F) Storage Temperature: -20 to 85°C Humidity: 10-90%, non condensing Altitude: 0-10,000 feet
Warranty	Lifetime

*Operating temperature range for this Slide-In-Module depends on the physical characteristics and the installation configuration of the TRANSITION Networks chassis in which this Slide-In-Module will be installed. See the User's Guide **for the chassis in which this Slide-In-Module will be installed** for a discussion of temperature-related installation constraints.

TRANSITION NETWORKS		DECLARATION OF CONFORMITY	
Name of Mfg:	Transition Networks 6475 City West Parkway, Minneapolis MN 55344 USA		
Model:	CFETF10xx-200 Series Media Converters		
Part Number(s):	CFETF1011-200, CFETF1012-200, CFETF1013-200, CFETF1014-200, CFETF1015-200, CFETF1016-200, CFETF1017-200, CFETF1018-200		
Regulation:	EMC Directive 89/336/EEC		
Purpose:	To declare that the CFETF10xx-200 to which this declaration refers is in conformity with the following standards. EMC-CISPR 22: 1985 Class A&B; EN 55022: 1988 Class A&B; EN 50082-1:1992; EN 60950 A & B4:1997; IEC 801.2, IEC 801.3, and IEC 801.4; IEC 950		
I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).			
			March 16, 2001
Stephen Anderson, Vice-President of Engineering			Date

CABLE SPECIFICATIONS (continued)

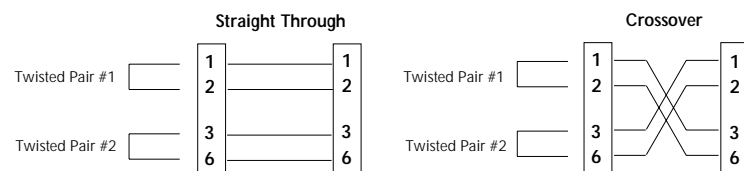
Copper Cable

Category 5 twisted-pair copper wire is required. Either shielded twisted-pair (STP) or unshielded twisted-pair (UTP) can be used. DO NOT USE FLAT OR SILVER SATIN WIRE.

CATEGORY 5:

Gauge 24 to 22 AWG
 Attenuation 22.0 dB /100m @ 100 MHz
 Maximum Cable Distance: 80 meters

The two active pairs in an Ethernet™ network are pins 1 & 2 and pins 3 & 6. Use only dedicated wire pairs (such as blue/white & white/blue, orange/white & white/orange), configured as straight through or crossover, for the active pins.



RJ-45 Pin-out: Pin 1=TD+, Pin 2=TD-, Pin 3=RD+, Pin 6=RD-

Media Converter in Full-Duplex Network

In a full-duplex network, maximum cable lengths are determined by the cables used. See page 10 for cable specifications. THE 512-BIT RULE DESCRIBED BELOW DOES **NOT** APPLY IN A FULL-DUPLEX NETWORK.

Media Converter in Half-Duplex Network

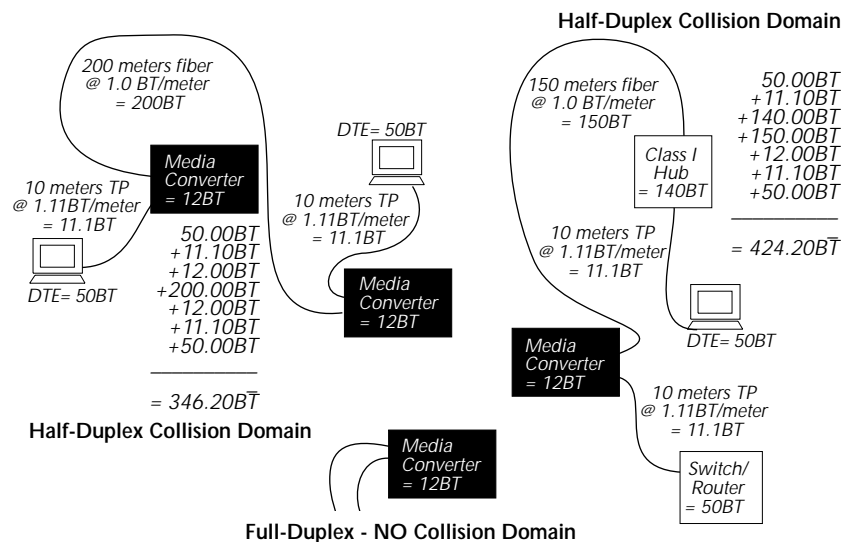
NOTE: The 512-Bit Rule applies separately to each collision domain.

USING THE 512-BIT RULE

In a half-duplex network, maximum cable lengths are determined by the round trip delay limitations of each Fast Ethernet™ collision domain. (Switches and routers divide the network into separate Ethernet™ collision domains.) The 512-Bit Rule determines maximum distances by calculating the collision domain round-trip delay in bit-times.

To calculate a collision domain round-trip delay, find the longest path between any two terminal devices in the collision domain. Calculate the round trip delay by multiplying the length of the cable (in meters) by the delay per meter (in bit-times – BT), then take the sum of all cable delays plus station (DTE), repeater, and media converter delays. If the result is less than or equal to 512 bit-times, the path is good.

Class I repeater	140 BT
Class II repeater	92 BT
DTE (PC, switch, router)	50 BT
CFETF10xx	12 BT
1 meter CAT.5 TP cable	1.11 BT
1 meter fiber cable	1 BT
Fast Ethernet switch	50 BT



INSTALLATION

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when setting switch and when installing Media Converter Slide-in-Module in the Media Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the Media Converter Slide-in-Module.

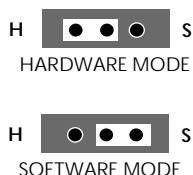
Set 3-Position Jumper

NOTE: Jumper is located on Media Converter Slide-in-Module circuit board.

Use small needle-nosed pliers or similar device to set jumper. Refer to drawing for jumper positions.

HARDWARE Converter mode is determined by 4-position switch settings below.

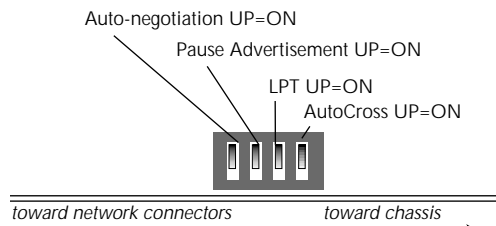
SOFTWARE Converter mode is determined by most-recently-saved on-board microprocessor settings.



Set 4-Position Switch

NOTE: Switch is located on Media Converter Slide-in-Module circuit board.

Use small flatblade screwdriver or similar device to set recessed switches. Refer to drawing for four-position switch locations.



Auto-negotiation (UP=Enabled) Allows detection of, and adaptation to, full-duplex or half-duplex mode in device attached to copper (100BASE-TX) link. (DOWN) Disables auto-negotiation to force half-duplex mode in attached device.

Pause Advertisement (UP=Enabled) Allows auto-negotiation pause. (DOWN) Allows NO auto-negotiation pause.

NOTE: If the *Pause* feature is present on all network devices attached to the media converter(s), enable *Pause* on the media converter(s). Otherwise, disable *Pause* on the media converter(s).

LPT (UP=Enabled) Allows a fault EITHER on the copper OR on the fiber side of the media coverter to stop signal and data transmission on the other side. (DOWN) Disables LPT to allow a fault ONLY on the fiber side of the media coverter to stop signal and data transmission on the other side.

AutoCross™ (UP=Enabled) Allows straight-through twisted-pair cable to be used for crossover connections. (DOWN) Disables AutoCross™ and requires correct (straight-through or crossover) twisted-pair cable to be installed.

CABLE SPECIFICATIONS

The physical characteristics of the media cable must meet or exceed IEEE 802.3 specifications.

Fiber Cable

Bit error rate:	≤10-9	
MULTIMODE		
Fiber Optic Cable Recommended:	62.5 / 125 μm multimode fiber	
Optional:	100 / 140 μm multimode fiber 85 / 125 μm multimode fiber 50 / 125 μm multimode fiber	
CFETF1011	1300 nM	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Typical Maximum Cable Distance*:	2 kilometers	
CFETF1013	1300 nM	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Typical Maximum Cable Distance*:	2 kilometers	
CFETF1018	1300 nM	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -33.5 dBm	max: -14.0 dBm
Typical Maximum Cable Distance*:	2 kilometers	

SINGLEMODE

Fiber Optic Cable Recommended:	9 μm singlemode fiber	
CFETF1014	1300 nM	
Fiber-optic Transmitter Power:	min: -15.0 dBm	max: -8.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.5 dBm	max: -8.0 dBm
Typical Maximum Cable Distance*:	20 kilometers	
CFETF1015	1300 nM	
Fiber-optic Transmitter Power:	min: -8.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -8.0 dBm
Minimum Attenuation:	8 dB	
Typical Maximum Cable Distance*:	40 kilometers	
CFETF1016	1300 nM	
Fiber-optic Transmitter Power:	min: -5.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -7.0 dBm
Minimum Attenuation:	7 dB	
Typical Maximum Cable Distance*:	60 kilometers	
CFETF1017	1550 nM	
Fiber-optic Transmitter Power:	min: -5.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -7.0 dBm
Spectral Width	0.4 nm FWHM	
Minimum Attenuation:	7 dB	
Typical Maximum Cable Distance*:	80 kilometers	

*Actual distance dependent upon physical characteristics of network installation.

FAULT ISOLATION and CORRECTION

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

1. **Is the *P(o)W(e)R* 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: (800) 260-1312.

YES

- Proceed to step 2.

2. **Is the *LKC* LED on the media converter illuminated?**

NO

- Check twisted-pair cables for proper connection.
- Contact Technical Support: (800) 260-1312.

YES

- Proceed to step 3.

3. **Is the *LKF* LED on the media converter illuminated?**

NO

- Check fiber cables for proper connection.
- Verify that TX and RX cables on media converter are connected to RX and TX ports, respectively, on other device.
- Contact Technical Support: (800) 260-1312.

YES

- Proceed to step 4.

4. **Is the *RXC* LED on the media converter flashing?**

NO

- If there is **NO ACTIVITY** on the 100BASE-TX port, proceed to step 5.
- If there is **ACTIVITY** on the 100BASE-TX port, disconnect and reconnect the 100BASE-TX cable to restart the initialization process.
- Restart the workstation to restart the initialization process.
- Contact Technical Support: (800) 260-1312.

YES

- Proceed to step 5.

5. **Is the *RXF* LED on the media converter flashing?**

NO

- If there is **NO ACTIVITY** on the 100BASE-FX port, continue below
- If there is **ACTIVITY** on the 100BASE-FX port, disconnect and reconnect the fiber cable to restart the initialization process.
- Restart the workstation to restart the initialization process.
- Contact Technical Support: (800) 260-1312.

YES

- Contact Technical Support: (800) 260-1312.

Install Slide-In-Module in PointSystem™ Chassis

CAUTION: Any Slide-in-Module installation slot in which a Media Converter Slide-in-Module is **NOT** installed **MUST** have a protective plate instead. Failure to observe this caution will void Class A and/or Class B compliance.

NOTE: Install Media Converter Slide-in-Modules in any slot, in any order.

1. Carefully slide Media Converter Slide-in-Module into installation slot, aligning Media Converter Slide-in-Module with installation guides.

NOTE: Ensure that Slide-in-Module is firmly seated against backplane.

2. Secure Slide-in-Module by securing panel fastener screw (attached to Slide-in-Module) to chassis front.
3. Install protective plate at ANY Slide-in-Module installation slot in which a Media Converter Slide-in-Module is not installed by securing attached protective plate panel fastener screw to chassis front.

Install Cable

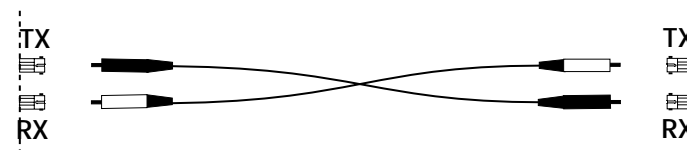
COPPER

NOTE: AutoCross™ allows the use of either straight-through or crossover configuration cables. (See page 7 for discussion of AutoCross™ feature. See page 11 for straight-through/crossover cable diagram.)

1. Locate or build 100BASE-TX-compliant cables with male RJ-45 connectors installed at both ends.
2. Connect RJ-45 connector at one end of cable to media converter RJ-45 port connector.
3. Connect RJ-45 connector at other end of cable to 100BASE-TX-compliant device RJ-45 port connector.

FIBER

1. Locate or build 100BASE-FX-compliant fiber cable with male two-stranded TX to RX connectors installed at both ends.
2. Connect cable with connector installed at TX location on media converter to RX location on attached device.



3. Connect cable with connector installed at RX location on media converter to TX location on attached device..

Power the Slide-In-Module

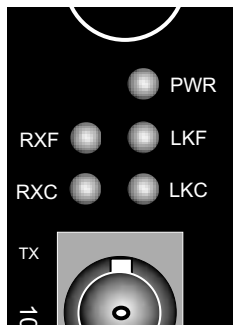
NOTE: The Slide-In-Module is powered through the Conversion Center™.

OPERATION

Using Status LEDs

Use the status LEDs to monitor media converter operation in the network.

P(o)W(e)R	Steady LED indicates connection to external AC power.
LKF	(Fiber Link) Steady LED indicates fiber link connection. Flashing LED indicates reception of Far End Fault (FEF) on fiber link.
RXF	(Fiber receive) Flashing LED indicates reception of data on fiber link.
RXC	(Copper receive) Flashing LED indicates reception of data on copper link.
LKC	(Copper link) Steady LED indicates copper link connection.



Using SNMP*

Use SNMP at an attached terminal or at a remote location to:

- Monitor media converter by monitoring:
 - Media Converter Power
 - Copper Link Status
 - Fiber Link Status
 - Copper Receive Status
 - Fiber Receive Status
 - Hardware Switch settings
 - Fault Condition
- Enter network commands that:
 - Enable/disable Auto-negotiation
 - Enable/disable LPT
 - Enable/disable Pause
 - Enable/disable AutoCross™
 - Power Down Media Converter.

*See the on-line documentation that comes with TRANSITION Networks FocalPoint™ software for applicable commands and usage.

Using AutoCross™**

The **AutoCross™** feature allows either straight-through (MDI) or crossover (MDI-X) copper cables to be used when connecting to 100BASE-TX devices, such as hubs, transceivers, or network interface cards (NICs). **AutoCross™** determines the characteristics of the cable connection and automatically configures the media converter to link up.

**Requires no operator intervention.

Using Auto-negotiation***

The CFETF10xx series media converter *auto-negotiation* feature allows the media converter to bring up the copper link in the highest mode possible for ALL the attached network devices.

***Requires no operator intervention.

Using Link Pass Through

When the *Link Pass Through (LPT)* function is active, a fault on one side of the media converter stops signal and data transmission on the other side.

NOTE: The network Far End Fault (FEF) function cannot be disabled. However, if the LPT function is **enabled**, a far-end fault condition is observed if **EITHER** the twisted-pair copper **OR** the fiber link is down. If the LPT function is **disabled**, a far-end fault condition is observed **ONLY** if the fiber link is down.

