

## User's Guide

### CDFTFxxxx-10x

#### Slide-in-Module Media Converter

- **Telco Network**
- **Copper to Fiber**
- **100Base-TX to 100Base-FX**

Transition Networks CDFTFxxxx-10x series dual-port media converters are designed to be installed in a CPSMC1850-150 *PointSystem*™ chassis. The CDFTFxxxx-10x connects twisted-pair copper Telco signals (received at the back of the CPSMC1850-150 chassis) to fiber-optic cable ports on each CDFTFxxxx-10x series media converter (installed at the front of the CPSMC1850-150 chassis).

Part Number	Copper - Twisted-pair Telco signals	Fiber-Optic - Two (2) external 100Base-FX ports
CDFTF1111-100	Two (2) internal signals	ST, 1300 nm multimode 2 km (1.2 miles)*
CDFTF1313-100	Two (2) internal signals	SC, 1300 nm multimode 2 km (1.2 miles)*
CDFTF1414-100	Two (2) internal signals	SC, 1310 nm single mode 20 km (12.4 miles)*
CDFTF1515-100	Two (2) internal signals	SC, 1310 nm single mode 40 km (24.9 miles)*
CDFTF1616-100	Two (2) internal signals	SC, 1310 nm single mode 60 km (37.3 miles)*
CDFTF1717-100	Two (2) internal signals	SC, 1550 nm single mode 80 km (49.7 miles)*

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

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## CDTFxxxx-10x

Part Number	Copper - Twisted-pair Telco signals	Fiber-Optic - Two (2) external 100Base-FX ports
CDTF2929-100	Two (2) internal signals	SC, 1310 nm (TX)/1550 nm (RX) 20 km (12.4 miles)*
CDTF2929-101	Two (2) internal signals	SC, 1550 nm (TX)/1310 nm (RX) 20 km (12.4 miles)*
CDTF2929-100 and CDTF2929-101 are intended to be installed in the same network where one is the local converter and the other is the remote converter.		
CDTF2929-102	Two (2) internal signals	SC, 1310 nm (TX)/1550 nm (RX) 40 km (24.8 miles)*
CDTF2929-103	Two (2) internal signals	SC, 1550 nm (TX)/1310 nm (RX) 40 km (24.8 miles)*
CDTF2929-102 and CDTF2929-103 are intended to be installed in the same network where one is the local converter and the other is the remote converter.		

\* Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network. (TX) = transmit, (RX) = receive

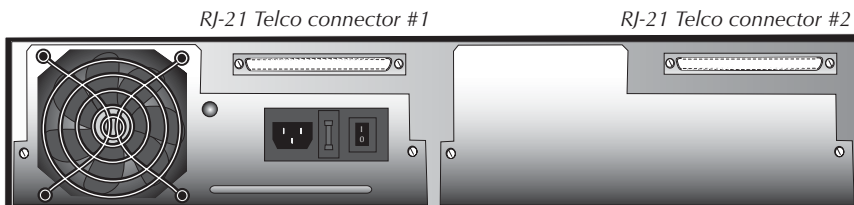
### Related Transition Networks Equipment (sold separately)

Part Number	Description
CPSMC1850-150	18-slot <i>PointSystem</i> ™ chassis with two (2) external RJ-21 Telco connectors. **
21HC45-6	Telco cable with RJ-21 connector at one end and twelve (12) RJ-45 connectors at the other end.
21HC21-6	Telco cable with RJ-21 connectors at both ends.

\*\*For more information on the CPSMC1850-150 chassis, see the user's guide online at [www.transition.com](http://www.transition.com)

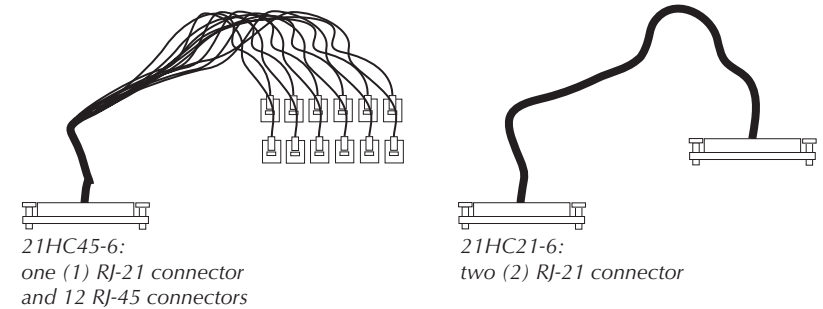
### CPSMC1850-150 Chassis

The CPSMC1850-150 *PointSystem*™ chassis provides two (2) 50-pin Telco connectors installed at the chassis back. The two Telco 50-pin connectors concentrate a total of 24 UTP connections, which are distributed to twelve (12) installation slots in the front of the CPSMC1850-150 chassis.



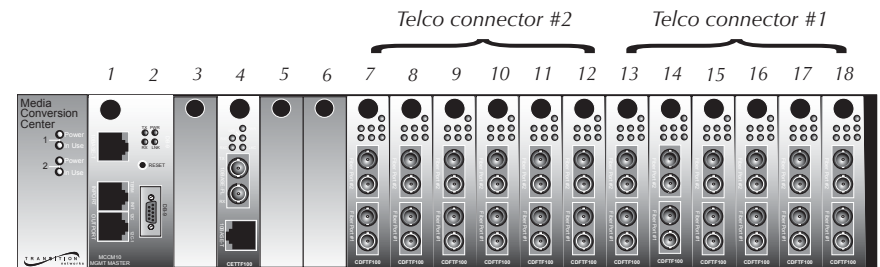
## Telco Cables and Signals

The two kinds of Telco cables available from Transition Networks are pictured below:



The signals from the Telco connectors are distributed as follows:

- Signals from Telco connector #2 go to chassis slots 7 - 12.
- Signals from Telco connector #1 go to chassis slots 13 - 18.



In order to fully utilize the Telco option on the CPSMC1850-150 chassis, the Transition Networks CDTFxxxx-10x is required and it must be installed in slots 7 through 18.

### Please note:

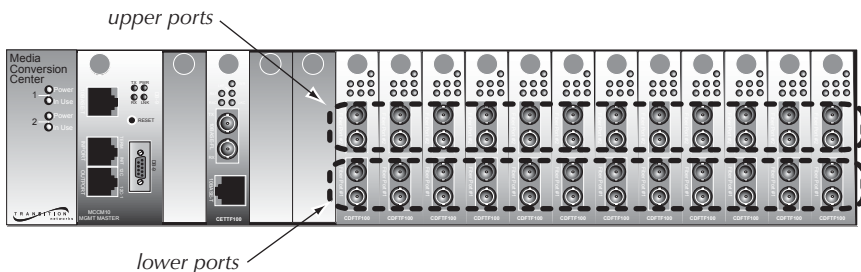
- Slots 1-6 on the CPSMC1850-150 are designed for any Transition Networks media converter slide-in-module.
- Slots 7-18 on the CPSMC1850-150 can accommodate any Transition Networks media converter slide-in-module. However the Telco option will not function unless a CDTFxxxx-10x media converter is installed in those slots.

## Telco Connectors and Signals -- Continued

The chart below shows the 50 signals that go through each Telco connector on the CPSMC1850-150 to slots 7-12 (Telco connector #2) **OR** to slots 13-18 (Telco connector #1).

	Pin #	Signal	Pin #	Signal	
Chassis Slot #7 or 13	upper	1	Port 1 Transmit -	26	Port 1 Transmit +
		2	Port 1 Receive -	27	Port 1 Receive +
	lower	3	Port 2 Transmit -	28	Port 2 Transmit +
		4	Port 2 Receive -	29	Port 2 Receive +
Chassis Slot #8 or 14	upper	5	Port 3 Transmit -	30	Port 3 Transmit +
		6	Port 3 Receive -	31	Port 3 Receive +
	lower	7	Port 4 Transmit -	32	Port 4 Transmit +
		8	Port 4 Receive -	33	Port 4 Receive +
Chassis Slot #9 or 15	upper	9	Port 5 Transmit -	34	Port 5 Transmit +
		10	Port 5 Receive -	35	Port 5 Receive +
	lower	11	Port 6 Transmit -	36	Port 6 Transmit +
		12	Port 6 Receive -	37	Port 6 Receive +
Chassis Slot #10 or 16	upper	13	Port 7 Transmit -	38	Port 7 Transmit +
		14	Port 7 Receive -	39	Port 7 Receive +
	lower	15	Port 8 Transmit -	40	Port 8 Transmit +
		16	Port 8 Receive -	41	Port 8 Receive +
Chassis Slot #11 or 17	upper	17	Port 9 Transmit -	42	Port 9 Transmit +
		18	Port 9 Receive -	43	Port 9 Receive +
	lower	19	Port 10 Transmit -	44	Port 10 Transmit +
		20	Port 10 Receive -	45	Port 10 Receive +
Chassis Slot #12 or 18	upper	21	Port 11 Transmit -	46	Port 11 Transmit +
		22	Port 11 Receive -	47	Port 11 Receive +
	lower	23	Port 12 Transmit -	48	Port 12 Transmit +
		24	Port 12 Receive -	49	Port 12 Receive +
	25	N.C.	50	N.C.	

The chart also shows how the signals are distributed to either the UPPER or LOWER port on the CDTFxxxx-10x (see figure below).



The figure to the right illustrates the locations of pins 1-50 on the Telco connector.



## Installation

### Set the Hardware/Software Jumper

- The jumper is located on the circuit board and is labeled "H" and "S".
- Use small needle-nose pliers to set the jumper.

**Hardware** The media converter settings such as AutoCross and Link Pass-Through cannot be changed.

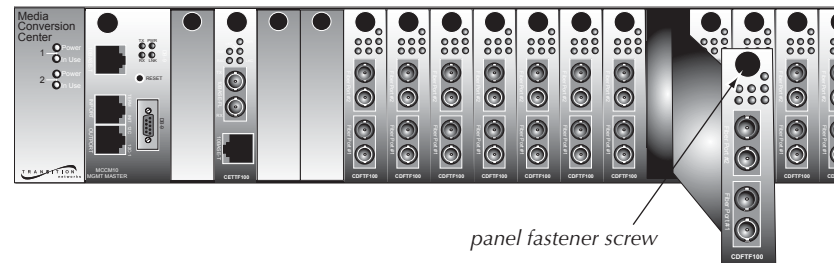


**Software** The media converter settings are determined by the most-recently saved, on-board microprocessor settings.



### Install the Slide-in-Module

**CAUTION:** Wear a grounding device and observe electrostatic discharge precautions when installing the CDTFxxxx-10x. **Failure to observe this caution could result in damage to, and subsequent failure of, the media converter.**



To install the CDTFxxxx-10x into the CPSMC1850-150 *PointSystem*™ chassis:

- Locate an empty installation slot on the *PointSystem*™ chassis.
- Carefully slide the slide-in-module into the installation slot, aligning the module's circuit board with the installation guides.
- Ensure that the module is firmly seated inside the chassis.
- Push in and rotate the the attached panel fastener screw clockwise to secure the module to the chassis front.

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

## Installation -- Continued

**NOTE:** The media converter does not support Auto-Negotiation. Set the external devices to forced 100 Mb/s full-duplex.

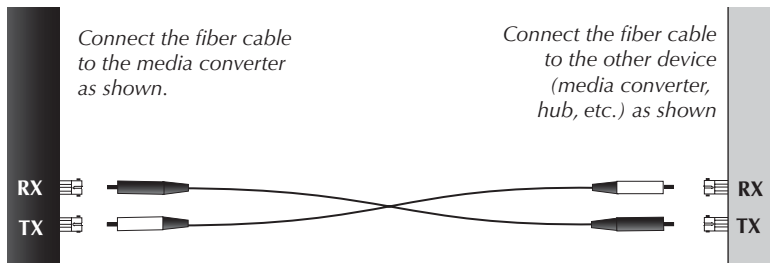
### Connect the Telco Copper Cable

**CAUTION:** The twisted-pair copper Telco cables must be less than 60 m (196 ft.). Failure to observe this caution could cause data transfer to fail.

1. Locate the 100Base-TX cable with the male 50-pin Telco connector at one end and with twelve (12) RJ-45 connectors at other end (P/N 21HC45-6). Alternatively, the male 50-pin Telco connector at both ends (P/N 21HC21-6) may also be used.
2. Connect the male 50-pin Telco cable connector to the female 50-pin Telco connector at the chassis back.
3. Connect the twelve (12) RJ-45 connectors or the male 50-pin Telco cable connector at the other cable end to the 100Base-TX Telco device(s).
4. Repeat steps 3 and 4 to connect the second 100Base-TX Telco cable to the second 50-pin Telco connector at the chassis back.

### Connect the Fiber Cable

1. Locate or build IEEE 803.2™ compliant 100Base-FX fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the CDFTFxxxx-10x 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

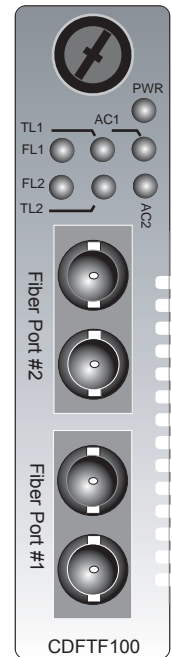
The slide-in-module media converter is powered through the Transition Networks PointSystem™ chassis.

## Operation

### Status LEDs

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

- PWR** **Power:** On = Connection to external AC power.
- TL1** **Twisted-Pair Link 1:** On = A link on the twisted-pair Telco connection to media converter #1.
- FL1** **Fiber Link 1:** On = A link on the fiber connection to media converter #1.
- AC1** **Activity 1:** Flashing = Activity on media converter #1.
- TL2** **Twisted-Pair Link 2:** On = A link on the twisted-pair Telco connection to media converter #2.
- FL2** **Fiber Link 2:** On = A link on the fiber connection to media converter #2.
- AC2** **Activity 2:** Flashing = Activity on media converter #2.



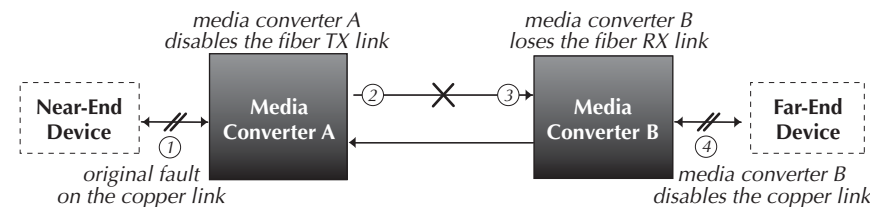
### Product Features

#### AutoCross™

When the AutoCross feature is activated, it allows either straight-through (MDI) or crossover (MDI-X) copper cables to be used when connecting to 100Base-TX devices. AutoCross determines the characteristics of the connection and automatically configures the unit to link up, regardless if the copper cable is MDI or MDI-X configuration.

#### Link Pass Through

The Link Pass-Through feature allows the media converter to monitor both the fiber and copper RX (receive) ports for loss of signal. In the event of a loss of an RX signal (1), the media converter will automatically disable the TX (transmit) signal (2), thus, “passing through” the link loss (3). The far-end device is automatically notified of the link loss (4), which prevents the loss of valuable data unknowingly transmitted over an invalid link.



## Operation -- Continued

### SNMP

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

- Media converter power.
- Copper link status on media converter #1.
- Fiber link status on media converter #1.
- Activity on media converter #1.
- Copper link status on media converter #1.
- Fiber link status on media converter #1.
- Activity on media converter #1.

Also, use SNMP to enter network commands that:

- Enable/disable AutoCross.

See the on-line documentation that comes with Transition Networks *FocalPoint*™ software for commands and usage at [www.transition.com](http://www.transition.com).

## Technical Specifications

For use with Transition Networks Model CDFTFxxxx-10x or equivalent.

<b>Standards</b>	IEEE 802.3™
<b>Data Rate</b>	10 Mb/s
<b>Dimensions</b>	3.4" x 0.86" x 5.0" (86 x 22 x 127 mm)
<b>Weight</b>	3 oz (91 g) (approximate)
<b>Power Consumption</b>	6.8 watts
<b>MTBF</b>	484,000 hours (MIL217F2 V5.0) (MIL-HDBK-217F) 1,359,000 hours (Bellcore7 V5.0)
<b>Environment</b>	Tmra*: 0 to 60°C (32 to 140°F) Storage Temp: -20 to 85°C (-4 to 185°F) Humidity: 5 to 95%, non condensing Altitude: 0 to 10,000 feet
<b>Warranty</b>	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.

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 the 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.

## Cable Specifications

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

**Telco Copper Cable** Maximum cable distance = 60 m (197 ft.)

### Category 5: (minimum requirement)

Gauge	24 to 22 AWG
Attenuation	22.0 dB /100m @ 100 MHz

(See page 4 for the Telco cable signal distribution over the 50-pin connector at the back of the CPSMC1850-150 *PointSystem*™ chassis.)

### Fiber Cable

Bit Error Rate:	<10 <sup>-9</sup>
Single mode fiber (recommended):	9 μm
Multimode fiber (recommended):	62.5/125 μm
Multimode fiber (optional):	100/140, 85/140, 50/125 μm

<b>CDFTF1111-100</b>	1300 nm multimode
<b>CDFTF1313-100</b>	1300 nm multimode
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

<b>CDFTF1414-100</b>	1310 nm single mode
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

<b>CDFTF1515-100</b>	1310 nm single mode
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

<b>CDFTF1616-100</b>	1310 nm single mode
<b>CDFTF1717-100</b>	1550 nm single mode
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

<b>CDFTF2929-100</b>	1310 nm (TX)/1550 nm (RX) simplex
<b>CDFTF2929-101</b>	1550 nm (TX)/1310 nm (RX) simplex
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

<b>CDFTF2929-102</b>	1310 nm (TX)/1550 nm (RX) simplex
<b>CDFTF2929-103</b>	1550 nm (TX)/1310 nm (RX) simplex
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

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



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# Compliance Information

CISPR22/EN55022 Class A + EN55204

CE Mark

## 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.



**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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