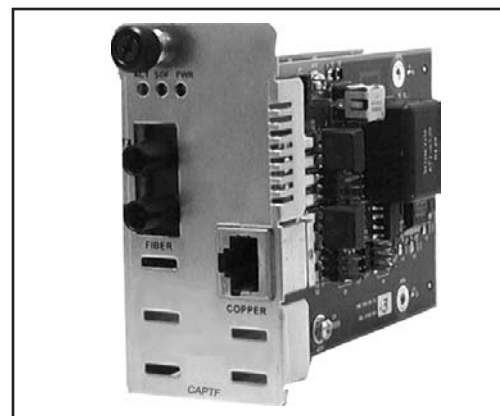


POTS to Fiber Optic Slide-in-Module Media Converter

CAPTF33xx-1xx User's Guide



Transition Networks CAPTF33xx-1xx POTS to fiber-optic media converter connects central-office voice-grade signals to distant POTS (Plain Old Telephone Service) equipment using standard telephone signaling. It can extend, over fiber, the distance between two voice path communication devices by up to 40 km using either single mode or multimode fiber cable.

The CAPTF33xx-1xx provides audio transmission, caller ID, ringing at the distant end and automatic ring-down. Two units are required to implement an end-to-end system. An RJ-11 female connector provides the electrical interface between the media converter and the telephone device.

The CAPTF33xx-1xx is designed to be installed in the Transition Networks *PointSystem*™ chassis.

NOTE: The the **stand alone version** of the media converter is **SAPTF33xx-1xx**. For more information, see the SAPTF33xx-1xx user's guide on-line at: www.transition.com.

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Unit A - CAPTF33xx-100

Unit A (CAPTF33xx-100) connects to a Central Office (CO) telephone line or a PBX (Private Branch Exchange). It mimics a telephone device (Line-Side FXS) and has the ability to detect ringing voltages. The available models are:

Product Number	Port One - Copper Twisted-Pair	Port Two - Duplex Fiber-Optic
CAPTF3311-100	RJ-11C connector 5 km (3.1 miles)*	ST connector, 1300 nm multimode 2 km (1.2 miles)*
CAPTF3313-100	RJ-11C connector 5 km (3.1 miles)*	SC connector, 1300 nm multimode 2 km (1.2 miles)*
CAPTF3314-100	RJ-11C connector 5 km (3.1 miles)*	SC connector, 1310 nm single mode 20 km (12.4 miles)*
CAPTF3315-100	RJ-11C connector 5 km (3.1 miles)*	SC connector, 1310 nm single mode 40 km (24.9 miles)*

Unit A is also available in single mode, single fiber models.

Product Number	Port One - Copper Twisted-Pair	Port Two - Fiber-Optic Single Mode, Single Fiber
CAPTF3329-100	RJ-11C connector 5 km (3.1 miles)*	SC, 1310 nm (TX) / 1550 nm (RX), 20 km (12.4 miles)*
CAPTF3329-101	RJ-11C connector 5 km (3.1 miles)*	SC, 1550 nm (TX) / 1310 nm (RX), 20 km (12.4 miles)*
CAPTF3329-102	RJ-11C connector 5 km (3.1 miles)*	SC, 1310 nm (TX) / 1550 nm (RX), 40 km (24.9 miles)*
CAPTF3329-103	RJ-11C connector 5 km (3.1 miles)*	SC, 1550 nm (TX) / 1310 nm (RX), 40 km (24.9 miles)*

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

The single mode, single fiber models are designed to be installed in pairs. The table below lists which models should be installed in the same network for the **standard configuration** (see page 4):

If this model is installed as Unit A:	Install this model as Unit B:
CAPTF3329-100	CAPTF3329-111
CAPTF3329-101	CAPTF3329-110
CAPTF3329-102	CAPTF3329-113
CAPTF3329-103	CAPTF3329-112

Unit B - CAPTF33xx-110

Unit B (CAPTF33xx-110), the reciprocal unit to unit A, connects to a telephone device and mimics a Central Office (Customer-Side FXO). The available models are:

Product Number	Port One - Copper Twisted-Pair	Port Two - Duplex Fiber-Optic
CAPTF3311-110	RJ-11C connector 5 km (3.1 miles)*	ST connector, 1300 nm multimode 2 km (1.2 miles)*
CAPTF3313-110	RJ-11C connector 5 km (3.1 miles)*	SC connector, 1300 nm multimode 2 km (1.2 miles)*
CAPTF3314-110	RJ-11C connector 5 km (3.1 miles)*	SC connector, 1310 nm single mode 20 km (12.4 miles)*
CAPTF3315-110	RJ-11C connector 5 km (3.1 miles)*	SC connector, 1310 nm single mode 40 km (24.9 miles)*

Unit B is also available in single mode, single fiber models.

Product Number	Port One - Copper Twisted-Pair	Port Two - Fiber-Optic Single Mode, Single Fiber
CAPTF3329-110	RJ-11C connector 5 km (3.1 miles)*	SC, 1310 nm (TX) / 1550 nm (RX), 20 km (12.4 miles)*
CAPTF3329-111	RJ-11C connector 5 km (3.1 miles)*	SC, 1550 nm (TX) / 1310 nm (RX), 20 km (12.4 miles)*
CAPTF3329-112	RJ-11C connector 5 km (3.1 miles)*	SC, 1310 nm (TX) / 1550 nm (RX), 40 km (24.9 miles)*
CAPTF3329-113	RJ-11C connector 5 km (3.1 miles)*	SC, 1550 nm (TX) / 1310 nm (RX), 40 km (24.9 miles)*

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

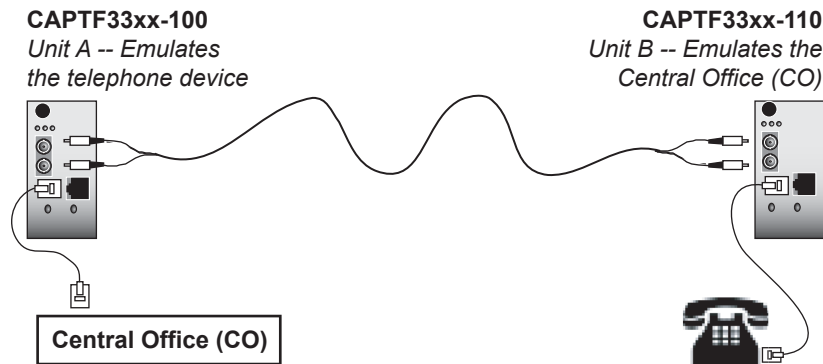
The single mode, single fiber models are designed to be installed in pairs. The table below lists which models should be installed in the same network for the **automatic ring-down configuration** (see page 4):

If this model is installed as Unit B:	Install this model as the other Unit B:
CAPTF3329-110	CAPTF3329-111
CAPTF3329-111	CAPTF3329-110
CAPTF3329-112	CAPTF3329-113
CAPTF3329-113	CAPTF3329-112

CAPTF33xx-1xx in the Network

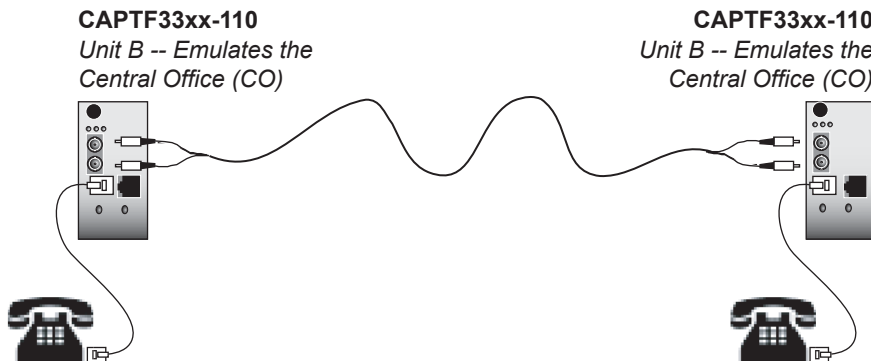
Standard Configuration

One Unit A device (CAPTF33xx-100) and one Unit B device (CAPTF33xx-110) are required for the standard configuration. The Unit A device is connected to the Central Office (CO) while the Unit B device is connected to a telephone device.



Automatic Ring-Down Configuration

Automatic Ring Down (ARD) is a dedicated, point-to-point voice system. When one telephone is taken off-hook, the other telephone rings, without the need to dial. Two Unit B devices (CAPTF33xx-110), connected via the fiber ports, are required for this mode of operation; with a telephone device at each end.



Installation

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

Set the Jumpers

Using small needle-nosed pliers or similar device, move the jumper to the desired position. (Refer to the drawings below.)

Standard / Automatic Ring-Down

The jumper labeled “JP1” is used to switch between the Standard or Automatic Ring-Down configuration and is located on the **top** circuit board of **Unit B (CAPTF33xx-110)**.

The drawing below illustrates the jumper settings.



- Set jumper JP1 on the Unit B device to the **Standard** setting when using the Standard configuration (described on page 4).
- Set jumper JP1 on **both** Unit B devices to the **Automatic Ring-Down** setting when using the Automatic Ring-Down configuration (described on page 4).

US / EU Telephone Regulation

The jumper labeled “US EU” is used to switch between the US or EU telephone configuration and is located on the **top** circuit board of **Unit A (CAPTF33xx-100)**. This feature is required to comply with the EU TBR21 telephone regulation. The jumper has been set at the factory to the US setting as the default.

The drawing below illustrates the jumper settings.



- Set jumper “US EU” on the Unit A device to the **US** setting if the device is to be used with US-based telephone systems.
- Set jumper “US EU” on the Unit A device to the **EU** setting if the device is to be used with European-based telephone systems.

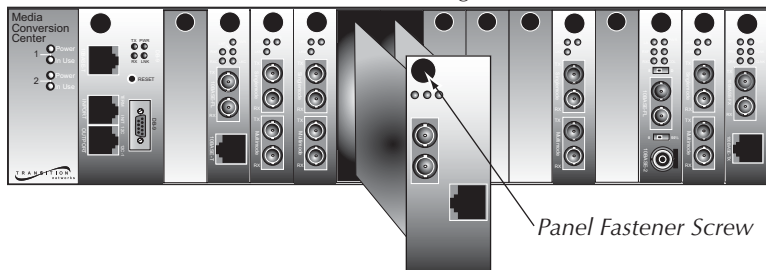
Installation -- Continued

Install the Slide-In-Module

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

To install the CAPTF33xx-1xx media converter slide-in-module:

1. Locate an empty installation slot on the *PointSystem™* chassis.
2. Carefully slide the slide-in-module into the installation slot, aligning the module's circuit board with the installation guides.



3. Ensure that the module is firmly seated inside the chassis.
4. Push in and rotate the attached panel fastener screw clockwise to secure it to the module to the chassis front.

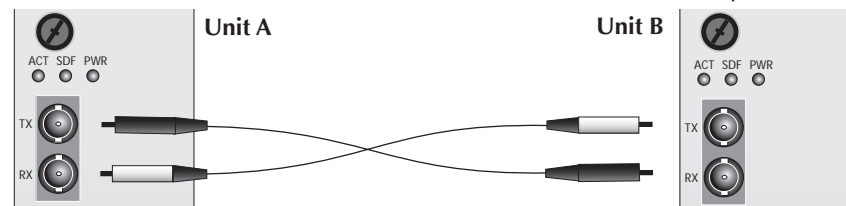
Installation -- Continued

Install the Cable -- Standard Configuration

NOTE: Unit B **must** be configured for Standard Configuration (see page 4).

Fiber

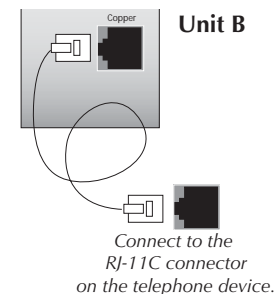
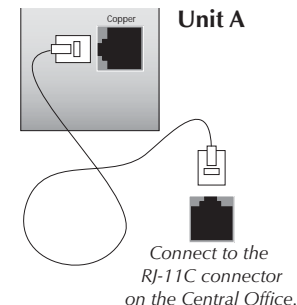
1. Locate or build fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to **Unit A** (CAPTF33xx-100) as described:
 - Connect the male **TX** cable connector to the female **TX** port.
 - Connect the male **RX** cable connector to the female **RX** port.



3. Connect the fiber cables to **Unit B** (CAPTF33xx-110) as described:
 - Connect the male **TX** cable connector to the female **RX** port.
 - Connect the male **RX** cable connector to the female **TX** port.

Copper

1. Locate or build copper cables with male, RJ-11C connectors installed at both ends.
2. Connect the copper cables to **Unit A** (CAPTF33xx-100) as described:
 - Connect the RJ-11C connector at one end of the cable to the RJ-11C port **on Unit A**.
 - Connect the RJ-11C connector at the other end of the cable to the RJ-11C port **on the Central Office**.
3. Connect the copper cables to **Unit B** (CAPTF33xx-110) as described:
 - Connect the RJ-11C connector at one end of the cable to the RJ-11C port **on Unit B**.
 - Connect the RJ-11C connector at the other end of the cable to the RJ-11C port **on the telephone device**.



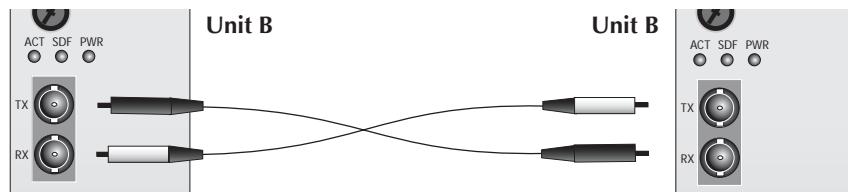
Installation -- Continued

Install the Cable -- Automatic Ring-Down Configuration

NOTE: Both Unit B's **must** be configured for Automatic Ring-Down (see page 4).

Fiber

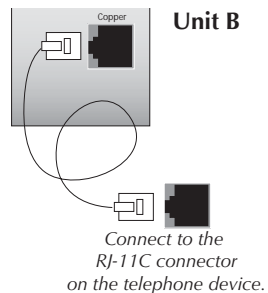
1. Locate or build fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the **first Unit B** (CAPTF33xx-110) as described:
 - Connect the male **TX** cable connector to the female **TX** port.
 - Connect the male **RX** cable connector to the female **RX** port.



3. Connect the fiber cables to the **second Unit B** (CAPTF33xx-110) as described:
 - Connect the male **TX** cable connector to the female **RX** port.
 - Connect the male **RX** cable connector to the female **TX** port.

Copper

1. Locate or build copper cables with male, RJ-11C connectors installed at both ends.
2. Connect the copper cables to **both Unit B's** (CAPTF33xx-110) as described:
 - Connect the RJ-11C connector at one end of the cable to the RJ-11C port on the **first Unit B**.
 - Connect the RJ-11C connector at the other end of the cable to the RJ-11C port **on the telephone device**.
3. Connect the copper cables to the **second Unit B** (CAPTF33xx-110) as described in step 2.



Operation

Power the Media Converter

The CAPTF33xx-1xx media converter is powered through the Transition Networks *PointSystem*™ chassis..

Status LEDs

Use the status LEDs to monitor the CAPTF33xx-1xx media converter operation in the network.

PWR (Power)

On = The media converter is connected to external power.

SDF (Signal Detect Fiber Link)

On = The fiber link is active.

ACT (Activity)

On = The telephone device is in use (off-hook).

Flashing = The telephone device is ringing or pulse-dialing.



SNMP

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

- Media converter power.
- Copper and fiber link status.
- Copper in-use status.
- Media converter speed.

Also, use SNMP to enter network commands that:

- Disable the media converter.

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

Operation - Continued

Loop-Start Operation

Loop-Start Service -- commonly known as "Plain Old Telephone Service" (POTS) -- is the primary analog signaling method used between telephone switches such as the Central Office (CO) and a telephone device. Loop-Start provides a way to indicate on-hook and off-hook conditions, which facilitates outgoing and incoming calls in a voice network.

When a customer wants to make an **outgoing** call, he or she takes a telephone device off-hook. This action completes the loop, which signals the CO that a customer desires to use the telephone line. To signal the customer of an **incoming** call, the CO applies a ring voltage to alert the customer.

The three states of the Loop-Start signaling protocol are described below:

Idle State (On-Hook)

1. The CO applies a battery voltage to the ring lead and monitors the tip-ring current for closure of the tip-ring.
2. The telephone device draws less than 10 μ A of from the line while waiting for the superimposition of the ringing voltage over the ring lead.

Telephone In-Use (Off-Hook)

1. The customer takes the telephone device off-hook, drawing a minimum of 20 to 30 mA of current.
2. The CO senses the tip-ring current and issues a dial tone on the line.
3. Communication can now begin.

Central Office (CO) Rings the Telephone

1. The CO superimposes the ringing voltage over the ring lead battery.
2. The telephone device uses the ring voltage to operate the ringer, which alerts the customer of an incoming telephone call.
3. The customer takes the phone off-hook, which closes the tip-ring connection and allows the tip-ring current to flow.
4. The CO senses the DC current from the telephone device and connects the call to the telephone line.
5. Communication can now begin.

Cable Specifications

The physical characteristics must meet or exceed FCC part 68 specifications.

Copper Cable -- Category 1

Either shielded (STP) or unshielded (UTP) twisted-pair is acceptable.	
Gauge:	24 to 22 AWG
Maximum # Nodes:	2
Maximum Cable Length:	5 meters (16.4 ft) (Unit A and CO) 5 km (3.1 mi) (Unit B and telephone)

Fiber Cable

Bit error rate:	$\leq 10^{-9}$
Single mode fiber (recommended):	9 μ m
Multimode fiber (recommended):	62.5/125 μ m
Multimode fiber (optional):	100/140, 85/140, 50/125 μ m
CAPTF3311-100, CAPTF3311-110	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
CAPTF3313-100, CAPTF3313-110	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
CAPTF3314-100, CAPTF3314-110	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
CAPTF3315-100	1310 nm single mode
Fiber Optic Transmitter Power:	min: -27.0 dBm max: -10.0 dBm
Fiber Optic Receiver Sensitivity:	min: -34.0 dBm max: -14.0 dBm
Link Budget:	13.0 dB
CAPTF3315-110	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
CAPTF3329-100, CAPTF3329-110	1310 nm single mode
CAPTF3329-101, CAPTF3329-111	1310 nm single mode
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
CAPTF3329-102, CAPTF3329-112	1310 nm single mode
CAPTF3329-103, CAPTF3329-113	1310 nm single mode
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.

RJ-11C Connector Specification

Unit A (Telephone Emulation)

Connector:	RJ-11C
Impedance:	600 Ω
REN:	0.4 B
Loop Current:	10 to 100 mA
Insertion Loss:	0.0 \pm 1.0 dB at 1000 Hz (When both ports are terminated at 600 Ω .)

Unit B (Central Office Emulation)

Connector:	RJ-11C
Impedance:	600 Ω
Battery Source:	48 VDC +/- 5V
Ring Supply:	90 Vp-p
Ring Frequency:	15-30 Hz (Reproduces the frequency detected by Unit A.)
Ring Cadence:	Reproduces the cadence detected by Unit A.
Insertion Loss:	0.0 \pm 1.0 dB at 1000 Hz (When both ports are terminated at 600 Ω .)

Technical Specification

For use with Transition Networks Model CAPTF33xx-1xx or equivalent

Standards	FCC Part 68, TBR21
Dimensions	3.4" x 5.0" x 1.75" (86 mm x 182 mm x 43 mm)
Weight	6 oz. (0.181 g) (approximate)
Power Consumption	7.0 watts
MTBF	341,000 hours (MIL217F2 V5.0) (MIL-HDBK-217F) 888,000 hours (Bellcore7 V5.0)
Environment	Tmra*: 0° to 50°C (32° to 122° F) Storage Temp: -15° to 65°C (-4° to 122°F) Humidity: 5 to 95%, 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.

The information in this user's guide is subject to change. For the most up-to-date information on the CAPTF33xx-1xx media converter, view the user's guide on-line at: www.transition.com.

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

1. Is the PWR (power) LED illuminated?

NO

- Is the media converter slide-in-module installed properly in 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.

2. Is the SDF (signal detect fiber Link) LED illuminated?

NO

- Check the fiber cables for proper connection.
- Verify that the TX and RX cables on the first media converter are connected to the RX and TX ports, respectively, on the second media converter.
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

YES

- Proceed to step 3.

3. Is the ACT (active) LED illuminated?

NO

- Ensure that the local unit is off-hook.
- 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.

Consumer Information

ACTA Compliance

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the Administrative Council for Terminal Attachments (ACTA). On the back of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

Plug and Jack

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

Ringer Equivalence Number

The Ringer Equivalence Number (REN) (listed on the label on the front of the device) is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

Harm to the Telephone Network

If the CAPTF33xx-1xx causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

Changes to the Telephone Company's Network

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the CAPTF33xx-1xx. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

Problems with the Equipment

If trouble is experienced with the CAPTF33xx-1xx, for repair or warranty information, please contact Transition Networks at 800-260-1312 x 200 or at www.transition.com. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Repairs to the Equipment

Aside from the jumper settings (described on page 5), the CAPTF33xx-1xx is not intended to be serviced by the user. If the equipment requires repair, contact Transition Networks at 800-260-1312 x200 or at www.transition.com.

Party Lines

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

Alarm Dialing Equipment

If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of the CAPTF33xx-1xx does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

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, USA

telephone: 952-941-7600

toll free: 800-526-9267

fax: 952-941-2322

TRANSITION networks		Declaration of Conformity
Name of Mfg:	Transition Networks 6475 City West Parkway, Minneapolis MN 55344 USA	
Model:	CAPTF33xx-1xx Series Media Converters	
Part Number(s):	CAPTF3311-100, CAPTF3311-110, CAPTF3313-100, CAPTF3313-110, CAPTF3314-100, CAPTF3314-110, CAPTF3315-100, CAPTF3315-110, CAPTF3329-100, CAPTF3329-110, CAPTF3329-101, CAPTF3329-111, CAPTF3329-102, CAPTF3329-112, CAPTF3329-103, CAPTF3329-113	
Regulation:	EMC Directive 89/336/EEC	
Purpose:	To declare that the CAPTF33xx-1xx to which this declaration refers is in conformity with the following standards. CISPR 22:1997+A1:2000; EN 55022:1998+A1:2000 Class A; 55024:1998; FCC Part 15 Subpart B; TBR 21:1998; CS 03; TIA-968; 21 CFR Subpart J	
<i>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).</i>		
 Stephen Anderson, Vice-President of Engineering		February 17, 2003 Date

Compliance Information

CISPR22/EN55022 Class A; 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.

VCCI Class 1 Compliance

This equipment is in the 1st Class category (information equipment to be used in commercial/industrial areas) and conforms to standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in commercial/ industrial areas. When used in a residential area or in an adjacent area thereto, may cause interference to radio and TV receivers, etc. Read instructions for correct handling.

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