

User's Guide

CCSCF30xx-10x

Slide-in-Module Media Converter

- **DS3 or T3 / E3**
- **Coax (BNC) to Fiber**

Transition Networks CCSCF30xx-10x series media converters encode and decode **DS3** or **E3** coax copper signals over fiber optic cable to extend the distance and transmission reliability of high-speed **DS3** or **E3** data traffic. The CCSCF30xx-10x, which is designed to be installed in a Transition Networks *PointSystem*™ chassis, also connects remote locations via **T3/E3** cable.

Part Number	Port One - Copper	Port Two - Duplex Fiber-Optic
CCSCF3011-100	75 ohm coax (BNC)	ST, 1300 nm multimode 2 km (1.2 miles)*
CCSCF3013-100	75 ohm coax (BNC)	SC, 1300 nm multimode 2 km (1.2 miles)*
CCSCF3014-100	75 ohm coax (BNC)	SC, 1310 nm single mode 20 km (12.4 miles)*
CCSCF3015-100	75 ohm coax (BNC)	SC, 1310 nm single mode 40 km (24.8 miles)*
CCSCF3016-100	75 ohm coax (BNC)	SC, 1310 nm single mode 60 km (37.3 miles)*
CCSCF3017-100	75 ohm coax (BNC)	SC, 1550 nm single mode 80 km (49.7 miles)*
CCSCF3018-100	75 ohm coax (BNC)	MT-RJ, 1300 nm multimode 2 km (1.2 miles)*
CCSCF3019-100	75 ohm coax (BNC)	LC, 1310 nm single mode 20 km (12.4 miles)*
CCSCF3029-100 **	75 ohm coax (BNC)	SC, 1310 nm (TX)/1550 nm (RX) single mode, 20 km (12.4 miles)*

NOTE: The **SCSCF30xx-10x** model is the stand-alone version of the media converter. For more information, see the SCSCF30xx-10x user's guide on-line at www.transition.com.

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

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Part Number	Port One - Copper	Port Two - Single Fiber Optic
CCSCF3029-101 **	75 ohm coax (BNC)	SC, 1550 nm (TX)/1310 nm (RX) single mode, 20 km (12.4 miles)*
CCSCF3029-102 ***	75 ohm coax (BNC)	SC, 1310 nm (TX)/1550 nm (RX) single mode, 40 km (24.8 miles)*
CCSCF3029-103 ***	75 ohm coax (BNC)	SC, 1550 nm (TX)/1310 nm (RX) single mode, 40 km (24.8 miles)*
CCSCF3039-100	75 ohm coax (BNC)	LC, 1300 nm multimode, 2 km (1.2 miles)*

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

** CCSCF3029-100 and -101 are intended to be installed in the same network.

*** CCSCF3029-102 and -103 are intended to be installed in the same network.

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 Hardware/Software Jumper (J3)

The hardware/software jumper is located on the circuit board of the media converter. Use a small needle-nose pliers or similar device to move the jumper to the desired position.

Hardware The media converter mode is determined by the switch settings.



Hardware Mode

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



Software Mode

Set the Coax Grounding Jumpers (J11 & J12) (Optional)

NOTE: Modify the settings for J11 and J12 **only if necessary**.

Jumpers 11 and 12 (located on the circuit board near the coax ports) provide a grounding feature so that the CCSCF30xx-10x media converter complies with the G.703 specification where:

- The output coax port is connected to chassis ground.
- A provision to connect the input coax port to chassis ground is provided.

The factory settings for these two jumpers are:

Jumper 12 (jumpered) = Output coax port is connected to chassis ground.

Jumper 11 (not-jumpered) = Input coax port is **not** connected to chassis ground.



not jumpered



jumpered

Installation -- Continued

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

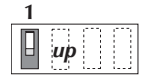
Set the Configuration Switches

The configuration switches are located on the media converter circuit board. Use a small, flat-blade screwdriver to set the recessed switches.

Switch 1 -- Select DS3 or E3

up - Supports a DS3 interface.

down - Supports a E3 interface.



DS3

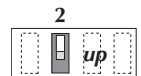


E3

Switch 2 -- Coax Line Build Out (DS3 only)

up - The DS3 line is set up to operate at distances up to 225 ft. (68.6 m).

down - The DS3 line is set up to operate at distances greater than 225 ft. (68.6 m).



< 225 ft. (68.6 m)

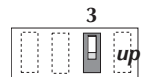


> 225 ft. (68.6 m)

Switch 3 -- Signal on Loss of Carrier

up - Transmits an alarm indication signal (AIS) on the loss of the input carrier (unframed).

down - No signal is transmitted on the loss of the input carrier (unframed).



Transmit alarm



No signal

Switch 4 -- Alarm Indication Signal (AIS)

up - AIS is defined as a pattern of alternating 1's and 0's (unframed).

down - AIS is defined as a pattern of all 1's (unframed).



Alarm = 1's and 0's



Alarm = all 1's

Installation -- Continued

Set the Loop-Back Switch

The loop-back switch is located on the front panel of the media converter and is used for installation and network debugging procedures.

To set the switch, use a small flat-blade screwdriver or a similar device (see the drawing to the right).



- CL** (Coax loop-back) Enable loop-back on the local coax interface.
- (Center Position) Normal operation.
- FL** (Fiber loop-back) Enable loop-back on the local fiber interface.

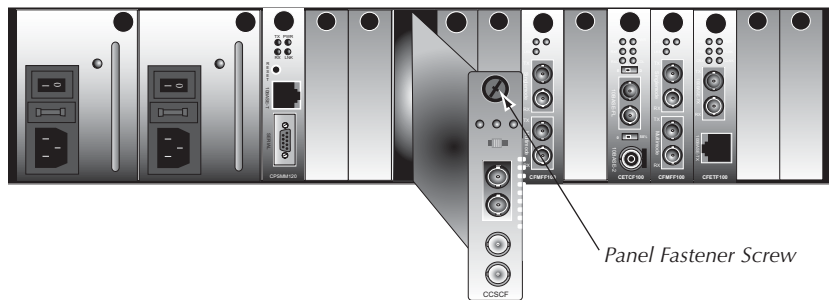
NOTE: Three loop-back test scenarios are described in detail on page 10.

Install the Slide-In-Module

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing the CCSCF30xx-10x slide-in-module media converter. **Failure to observe this caution could result in damage to, and subsequent failure of, the media converter.**

To install the CCSCF30xx-10x media converter slide-in-module into the Transition Networks *PointSystem*™ chassis:

1. Locate an empty slot on the chassis.
2. Carefully slide the slide-in-module into the installation slot, aligning the module 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 the module to the chassis front.

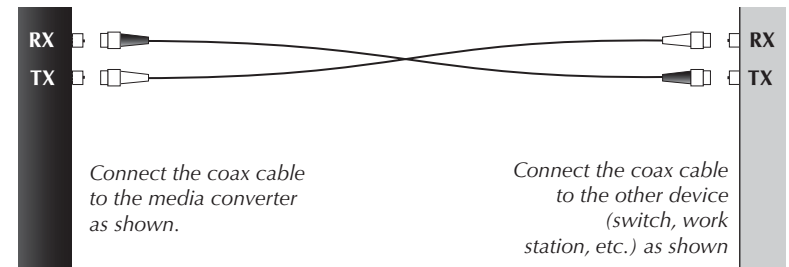


Panel Fastener Screw

Installation -- Continued

Install the Coax Cable

1. Locate or build coax cables with female connectors installed at both ends.
2. Connect the coax cables to the media converter as described:
 - Connect the female **TX** cable connector to the male **TX** port.
 - Connect the female **RX** cable connector to the male **RX** port.
3. Connect the coax cables to the other device (switch, workstation, etc.) as described:
 - Connect the female **TX** cable connector to the male **RX** port.
 - Connect the female **RX** cable connector to the male **TX** port.

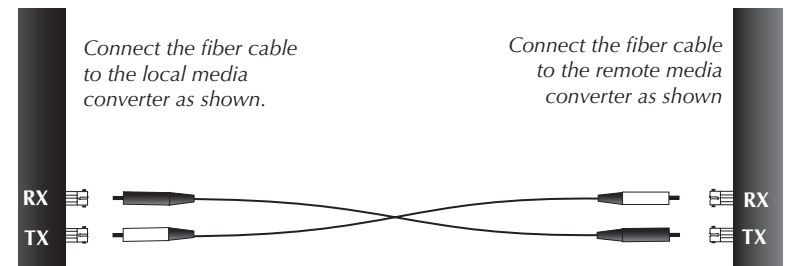


Connect the coax cable to the media converter as shown.

Connect the coax cable to the other device (switch, workstation, etc.) as shown

Install the Fiber Cable

1. Locate or build fiber cables with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the **local** CCSCF30xx-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 **remote** CCSCF30xx-10x media converter as described:
 - Connect the male **TX** cable connector to the female **RX** port.
 - Connect the male **RX** cable connector to the female **TX** port.



Connect the fiber cable to the local media converter as shown.

Connect the fiber cable to the remote media converter as shown

Installation -- Continued

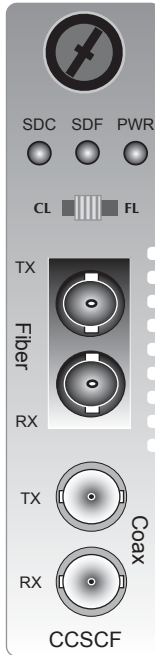
Power the Media Converter

The media converter is powered through the Transition Network's *PointSystem™* chassis.

Operation

After installation, the media converter should function without operator intervention. Use the status LEDs to monitor the media converter operation in the network.

SDC	<i>Green on</i>	The coax link is up.
	<i>Green flashing</i>	The coax link is in loop-back mode.
	<i>Yellow on</i>	AIS (Alarm Indication Signal) on the coax link.
SDF	<i>Green on</i>	The fiber link is up.
	<i>Green flashing</i>	The fiber link is in loop-back mode.
	<i>Yellow on</i>	AIS (Alarm Indication Signal) on the fiber link.
PWR	<i>Green on</i>	The media converter is connected to external power.



SNMP

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

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

- Media converter power
- Line build-out
- DS3 / T3 / E3 mode
- Coax link and fiber link status (local and/or remote)
- Coax loop-back and fiber loop-back status (local only)
- AIS detected on coax link and fiber link (local and/or remote)
- Hardware/software mode

Also, use SNMP to enter network commands that:

- Enable/disable loop-back on the copper link (local only)
- Enable/disable loop-back on the fiber link (local only)

Cable Specifications

Coax Cable

DS3 / E3: 75 ohm coax cable with BNC connectors

Fiber Cable

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
CCSCF3011-100	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
CCSCF3013-100	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
CCSCF3014-100	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
CCSCF3015-100	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
CCSCF3016-100	1310 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
CCSCF3017-100	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
CCSCF3018-100	1300 nm multimode
Fiber-optic Transmitter Power:	min: -19.0 dBm max: -14.0 dBm
Fiber-optic Receiver Sensitivity:	min: -33.5 dBm max: -14.0 dBm
Link Budget:	14.5 dB
CCSCF3019-100	1310 nm single mode
Fiber-optic Transmitter Power:	min: -15.2 dBm max: -8.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.5 dBm max: -3.0 dBm
Link Budget:	17.3 dB
CCSCF3029-100	1310 nm (TX) / 1550 nm (RX) simplex
CCSCF3029-101	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
CCSCF3029-102	1310 nm (TX) / 1550 nm (RX) simplex
CCSCF3029-103	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

Cable Specifications -- Continued

CCSCF3039-100	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	

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.

Technical Specifications

For use with Transition Networks Model CCSCF30xx-10x or equivalent

Standards	FCC Class A; EN 55022 Class A; EN 55024; ANSI T1.102-1993; ETSI TBR-24; ITU-T G.703 G.823 for jitter tolerance; G.775 for loss of signal; Telecordia GR-499CORE & GR-253-CORE	
Data Rate	DS3 / T3 = 44.7 Mb/s E3 = 34.4 Mb/s	
Dimensions	3.4" x 5" x 0.87" (86 mm x 182 mm x 22 mm)	
Weight	3 oz. (91 g) (approximately)	
Power Consumption	6.0 Watts	
MTBF	478,000 (MIL217F2 V5.0) (MIL-HDBD-217F) 1,333,000 (Bellcore7 V5.0)	
Environment	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
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 CCSCF30xx-10x 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 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.

Troubleshooting

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

1. Is the PWR (Power) LED illuminated?

NO

- Ensure the media converter slide-in-module is installed properly in the chassis.
- Ensure the power cord is properly installed in the chassis and at the external power source.
- Ensure the external power source provides power.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Proceed to step 2.

2. Is the SDC (Signal Detect / Coax) LED illuminated green?

NO

- Check the coax cables for the proper connection.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Proceed to step 3.

3. Is the SDF (Signal Detect / Fiber) LED illuminated green?

NO

- Check the fiber cables for proper connection.
- Verify that the TX and RX cables on the local media converter are connected to the RX and TX ports, respectively, on the remote media converter.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Proceed to step 4.

4. Is the SDC (Signal Detect / Coax) LED flashing green?

YES

- The coax link is in loop-back mode. For normal operation, set the loop-back switch to the center (normal) position.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

NO

- Proceed to step 5.

5. Is the SDF (Signal Detect / Fiber) LED flashing green?

YES

- The fiber link is in loop-back mode. For normal operation, set the loop-back switch to the center (normal) position.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

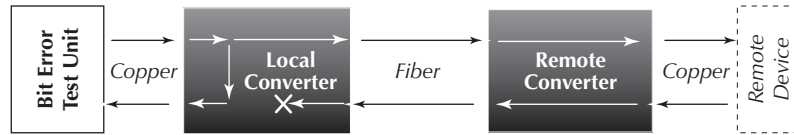
NO

- Proceed to step 6.

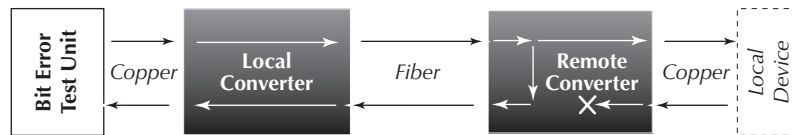
6. Is Data Transfer Failing?

YES

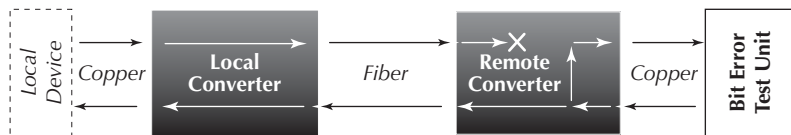
- Verify the local copper connection by starting a local copper loop-back (set the loop-back switch on the **local** media converter to “CL”) and then use a bit error test unit **at the local location** to run a bit error test.



- Verify the local fiber connection by starting a local fiber loop-back **at the remote location** (set the loop-back switch on the **remote** media converter to “FL”) and then use a bit error test unit **at the local location** to run a bit error test.



- Verify the remote copper connection by starting a local copper loop-back **at the remote location** (set the loop-back switch on the **remote** media converter to “CL”) and then use a bit error test unit **at the remote location** to run a bit error test.



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

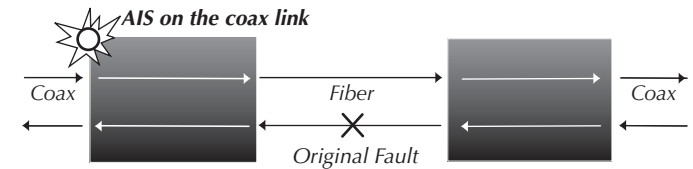
NO

- Proceed to step 7.

7. Is the SDC (Signal Detect / Coax) LED illuminated yellow?

YES

- A failure of the remote unit connected to the coax interface has caused an Alarm Indication Signal (AIS) on the coax interface. Correct the remote unit failure.



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

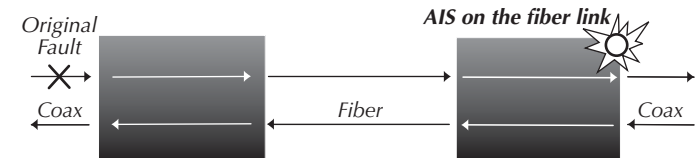
NO

- Proceed to step 8.

8. Is the SDF (Signal Detect / Fiber) LED illuminated yellow?

YES



- A broken coax link has caused an Alarm Indication Signal (AIS) on the fiber interface. Correct the coax link failure.



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

NO

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

 Declaration of Conformity	
Name of Mfg:	Transition Networks 6475 City West Parkway, Minneapolis MN 55344 USA
Model:	CCSCF30xx-10x Series Media Converter
Part Number:	CCSCF3011-100, CCSCF3013-100, CCSCF3014-100, CCSCF3015-100, CCSCF3016-100, CCSCF3017-100, CCSCF3018-100, CCSCF3019-100, CCSCF3029-100, CCSCF3029-101, CCSCF3029-102, CCSCF3029-103, CCSCF3039-100
Regulation:	EMC Directive 89/336/EEC
Purpose: To declare that the CCSCF30xx-10x to which this declaration refers is in conformity with the following standards. CISPR 22:1993; EN 55022:1998 Class A; EN 55024:1998; FCC Part 15 Subpart B; 61000-3-2:1995+A14:2000; 61000-3-3:1995; CFR 21 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	September 19, 2005 Date

Compliance Information

CISPR22/EN55022 Class A + EN55024

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.

Contact Us

Technical support is available 24 hours a day.

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

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

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

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

Transition Networks, 6475 City West Pkwy, Minneapolis, MN 55344, USA
telephone: 952-941-7600, toll free: 800-526-9267, fax: 952-941-2322

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