TRANSITION NETWORKS

User's Guide

SRS2F31xx-100

Stand-Alone Media Converter

RS-232 to Fiber

Transition Networks SRS2F31xx-100 series media converters connect copper RS-232 cable to fiber-optic cable at asynchronous data rates up to 115 kB/s.

The CRS2F31xx-100 is designed to be installed in pairs where one is the local media converter and the other is the remote.

Part Number	**Port One -** *Copper*	**Port Two -** *Fiber-Optic*
SRS2F3111-100	*RS-232* *15 m (50 ft)**	*ST, 1300 nm multimode* *2 km (1.2 miles)**
SRS2F3113-100	*RS-232* *15 m (50 ft)**	*SC, 1300 nm multimode* *2 km (1.2 miles)**
SRS2F3114-100	*RS-232* *15 m (50 ft)**	*SC, 1310 nm single mode* *20 km (12.4 miles)**
SRS2F3115-100	*RS-232* *15 m (50 ft)**	*SC, 1310 nm single mode* *40 km (24.8 miles)**

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

The **chassis version** of the media converter is CRS2F31xx-100. For more information, see the CRS2F31xx-100 user's guide on-line at: www.transition.com.

Installation

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

Set the DTE/DCE Switch

The DTE/DCE switch is located on the side of the media converter. How the DTE/DCE switch is set depends on the type of device connected to the media converter:

- **DTE** (Data Terminal Equipment).
- **DCE** (Data Communication Equipment).

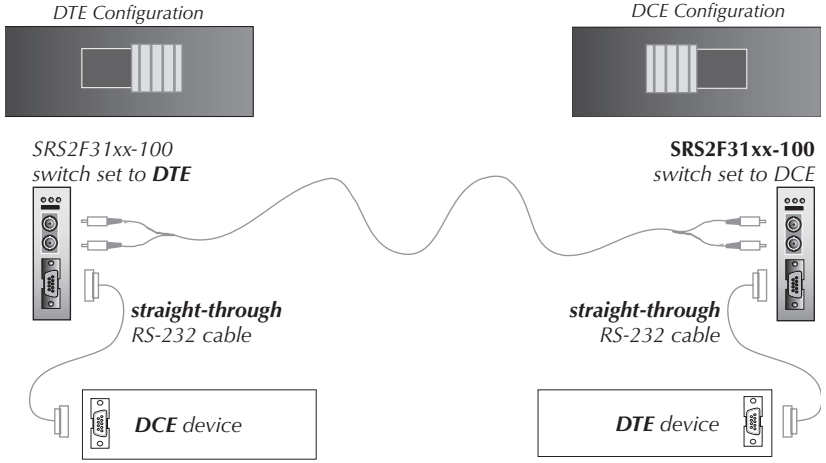
... and the type of RS-232 cable:

- **Straight-through** configuration cable.
- **Null-modem** configuration cable.

Using Straight-Through RS-232 Cable

Set the switch to **DTE configuration** if the media converter is connected to a *DCE* device via a *straight-through* RS-232 cable.

Set the switch to **DCE configuration** if the media converter is connected to a *DTE* device via a *straight-through* RS-232 cable.

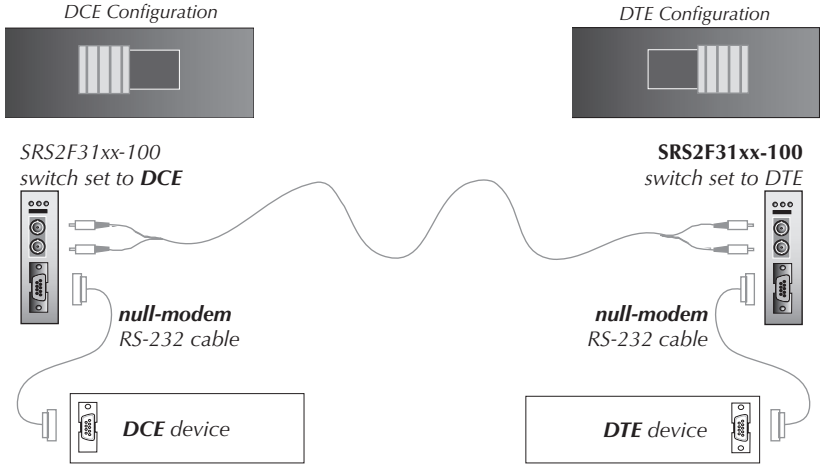


Installation -- Continued

Using Null-Modem RS-232 Cable

Set the switch to **DCE configuration** if the media converter is connected to a *DCE* device via a *null-modem* RS-232 cable.

Set the switch to **DTE configuration** if the media converter is connected to a *DTE* device via a *null-modem* RS-232 cable.



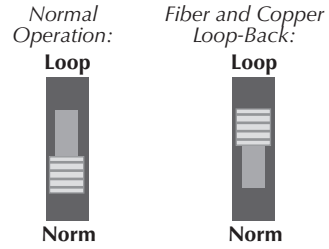
Set the Loop-Back Switch

The loop-back switch is located on the front panel of the media converter and is used to debug network faults. (See page 10 in the "Troubleshooting" section.)

To set the switch, use a small flat-blade screwdriver or a similar device.

Norm Set the switch to "Norm" for normal operation.

Loop Set the switch to "Loop" to enable both fiber and copper loop-back.



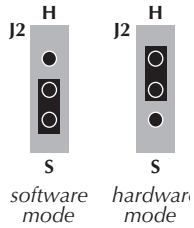
Installation -- Continued

Set the Hardware/Software Jumper

The jumper is located on the circuit board inside the media converter housing.

Hardware The media converter mode is determined by the switch settings (see pages 2-3).

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

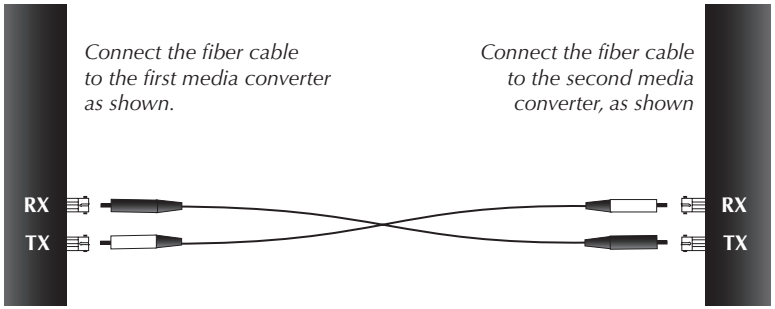


To set the jumper:

1. Using a small screwdriver, remove the four (4) screws that secure the cover and carefully remove the cover from the media converter.
2. Locate the two-position jumper on the circuit board.
3. Using small needle-nosed pliers or similar device, move the jumper to the desired position. (See the above drawing.)
4. Carefully replace the cover on the media converter and replace the four (4) screws that secure the cover to the media converter.

Install the Fiber Cable

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 SRS2F31xx-100 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 SRS2F31xx-100 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.



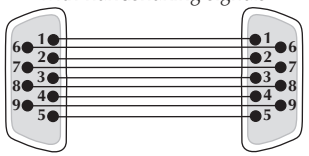
Installation -- Continued

Install the Copper Cable

NOTE: Shielded RS-232 cables are required for EMC compliance.

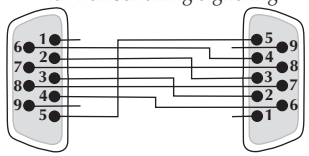
1. Locate or build RS-232 cables with a female connector for the media converter end and the correct gender connector for the DTE/DCE device at the other end. And with either straight-through or null-modem cable configuration.
2. Connect the female RS-232 connector at one end of cable to the male RS-232 port on the first SRS2F21-100 media converter.
3. Connect the RS-232 connector at the other end of the cable to the RS-232 port on the DTE/DCE device.

Straight-through configuration cable with handshaking signals



(optional configuration: no connect on pin 9.)

Null-modem configuration cable with handshaking signaling



(Requirements for different equipment may vary.)

Power the Media Converter

AC

1. Install the power adapter cord to the back of the media converter.
2. Connect the power adapter plug to AC power.
3. Verify that the media converter is powered by observing the illuminated LED power indicator light.

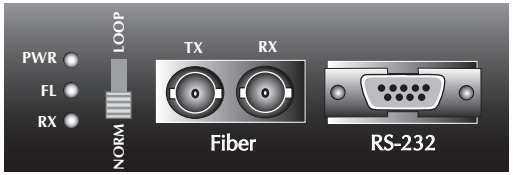
DC

Consult the user's guide for the Transition Networks SPS1872-xx DC external power supply for powering the media converter.

Operation

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

PWR	*On*	The media converter is connected to external power.
FL	*On*	A link has been established with the fiber connector.
	Flashing	The media converter is in loop-back mode.
RX	*Flashing*	The RS-232 connector is receiving data.



Remote Management

The **CRS2F31xx-100** (the chassis version of the media converter) can remotely manage the SRS2F31xx-100. For example, a local CRS2F3111-100 converter (that is installed in a managed Transition Networks *PointSystem*™ chassis) is connected, via fiber, to a remote SRS2F3111-100 converter.

The SNMP section (below) lists the commands that can be used to monitor and manage both the local and remote media converter.

NOTE: In a managed network, both the local and remote media converters must be set to "software" mode (see page 4).

SNMP

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

- Local/remote fiber link status
- Local/remote Hardware/software mode
- Local/remote loop-back

Also, use SNMP to enter network commands for::

- local/remote loop-back

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

Cable Specifications

Fiber Cable

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

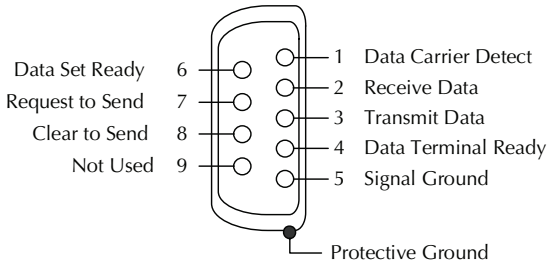
SRS2F3111-100	1300 nm multimode	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Link Budget:	11.0 dB	
SRS2F3113-100	1300 nm multimode	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Link Budget:	11.0 dB	
SRS2F3114-100	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	
SRS2F3115-100	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	

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.

RS-232 Copper Cable

Gauge:	24 to 22 AWG
Maximum Data Rate (asynchronous)	115 kB/s
Maximum Cable Distance:	15 m (50 ft.)

RS-232 Signals:



Technical Specifications

For use with Transition Networks Model SRS2F31xx-100 or equivalent

Data Rate	115 Kb/s (asynchronous)	
Dimensions	3.25" x 4.7" x 1.0" (83mm x 119mm x 25mm)	
Weight	10 oz. (283 g) (approximately)	
Power Consumption	5 Watts	
Power Supply	12VDC, 0.8 Amp (North. Am., EU, Japan, South Am.) 12VDC, 1.25 Amp (UK, Australia, N.Z., South Africa)	
MTBF	54,399 hours (MIL217F2 V5.0) (MIL-HDBD-217F) 130,681 hours (Bellcore7 V5.0)	
Environment	Tmra*:	0 to 50°C (32° to 122° F)
	Storage Temp:	-15° to 65°C (5° to 149°F)
	Humidity:	5 to 95%, non condensing
	Altitude:	0 to 10,000 feet
Warranty	Lifetime	

*Manufacturer's rated ambient temperature.

The information in this user's guide is subject to change. For the most up-to-date information on the CRS2F31xx-100 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.

Optional Accessories *(sold separately)*

Part Number	Description
SPS-1872-SA	*Optional External Power Supply; 18-72VDC Stand-Alone-- Output: 12.6VDC, 1.0 A*
SPS-1872-PS	*Optional External Power Supply; 18-72VDC Piggy-back; Output: 12.6VDC, 1.0 A*
E-MCR-04	*12-Slot Media Converter Rack (includes universal internal power supply) 17 x 15 x 5 in. (432 x 381 x 127 mm)*
WMBL	*Optional Wall Mount Brackets Length: 4.0 in. (102 mm), Fits converter length: 4.7 in. (119 mm)*
WMBV	*Optional Vertical Mount Bracket; Length: 5.0 in. (127 mm)*
WMBD	*Optional DIN Rail Mount Bracket; Length: 5.0 in. (127 mm)*
WMBD-F	*Optional DIN Rail Mount Bracket (flat); Length: 3.3in. (84 mm)*

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

- Is the power adapter the proper type of voltage and cycle frequency for the AC outlet? (See "Technical Specifications" on page 8.)
- Is the power adapter properly installed in the media converter and in the outlet?
- Does the grounded AC outlet provide power?
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Proceed to step 2.

2. Is the *RX* (copper) LED flashing?

NO

- Disconnect and reconnect the RS-232 copper cable to restart the initialization process.
- Restart the attached device on the other end of the RS-232 cable to restart the initialization process.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Proceed to step 3.

3. Is the *FL* (fiber) 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 media converter.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Proceed to step 4.

4. Is the *FL (fiber)* LED flashing?

YES

- The media converter is in loop-back mode. To disable the loop-back function in "Hardware" mode, set the loop-back switch to the "Norm" position. In "Software" mode, at the SNMP interface, select "disable loop-back" option.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

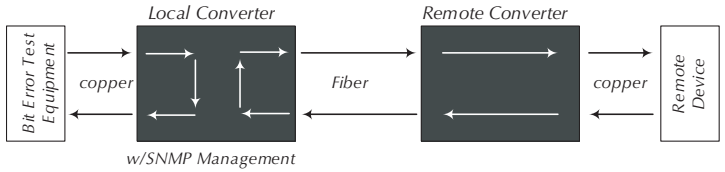
NO

- Proceed to step 5.

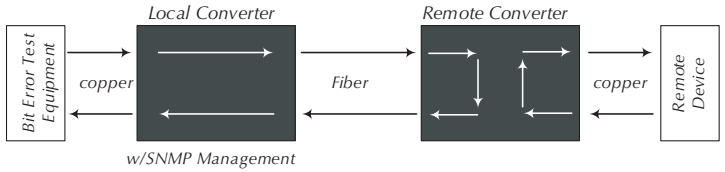
5. Is Data Transfer Failing?

YES

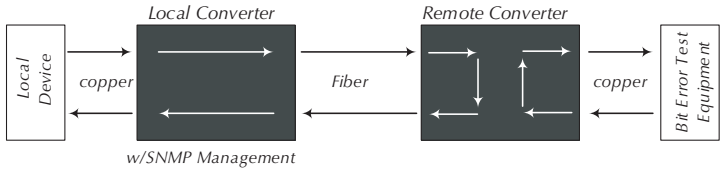
- Verify the local copper connection by starting a local copper loop-back (hardware mode: set the loop-back switch on the **local** media converter to "loop", software mode: enter the **local copper** loop-back command) and then use a bit error test unit to run a bit error test.



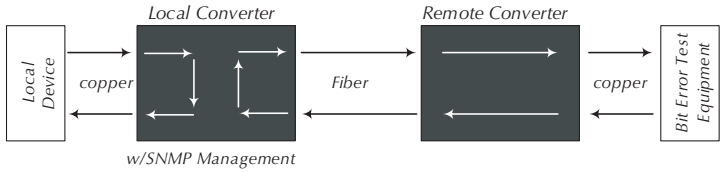
- Verify the local fiber connection by starting a remote fiber loop-back (hardware mode: set the loop-back switch on the **remote** media converter to "loop", software mode: enter the **remote fiber** loop-back command) and then use a bit error test unit to run a bit error test.



- Verify the remote copper connection by starting a remote copper loop-back (hardware mode: set the loop-back switch on the **remote** media converter to "loop", software mode: enter the **remote copper** loop-back command) and then use a bit error test unit on the remote end to run a bit error test.



- Verify remote fiber connection by starting a local copper loop-back (hardware mode: setting the loop-back switch on the **local** media converter to "loop", software mode: enter the **local fiber** loop-back command) and then use a bit error test unit on the remote end to run a bit error test.



NO

- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

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, U.S.A.
telephone: 952-941-7600
toll free: 800-526-9267
fax: 952-941-2322

Declaration of Conformity

Name of Mfg: **Transition Networks**
6475 City West Parkway, Minneapolis MN 55344 U.S.A.
Model: **SRS2F31xx-100 Series Media Converter**
Part Number: **SRS2F3111-100, SRS2F3113-100, SRS2F3114-100, SRS2F3115-100**
Regulation: **EMC Directive 89/336/EEC**

Purpose: To declare that the ***SRS2F31xx-100*** to which this declaration refers is in conformity with the following standards.

CISPR 22: 1993; EN 55022:1998 Class A; FCC Part 15 Subpart B; EN 55024: 1998; 21 CFR subpart J

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Stephen Anderson, Vice-President of Engineering — Sept, 2007 Date

Compliance Information

CISPR22/EN55022 Class A + EN55024
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 Fäll ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention !

Ceci est un produit de Classe A. Dans un environment domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilsateur de prende les measures spécifiques appropriées.

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