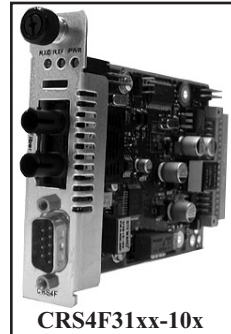


USER'S GUIDE

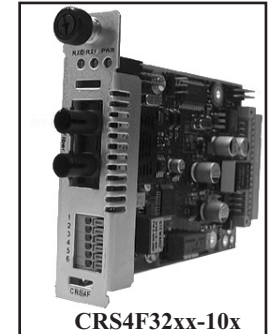
CRS4Fxxxx-10x Slide-in-Module Media Converter

RS485/422 Copper to Fiber

Transition Networks CRS4Fxxxx-10x series media converters are designed to be installed in the *PointSystem™* chassis and connect RS485/422 copper cable to fiber-optic cable at asynchronous data



CRS4F31xx-10x



CRS4F32xx-10x

rates up to 1.25 Mb/s.

Part Number	Port One - Copper DB-9 port	Port Two - Fiber-Optic
CRS4F3111-100	RS485/422 1200 m (4000 ft)*	ST, 1300 nm multimode 2 km (1.2 miles)**
CRS4F3113-100	RS485/422 1200 m (4000 ft)*	SC, 1300 nm multimode 2 km (1.2 miles)**
CRS4F3114-100	RS485/422 1200 m (4000 ft)*	SC, 1310 nm single mode 20 km (12.4 miles)**
CRS4F3115-100	RS485/422 1200 m (4000 ft)*	SC, 1310 nm single mode 40 km (24.8 miles)**

The CRS4F31xx-10x media converters use a male DB-9 port for the copper link:

The CRS4F32xx-10x media converters use a 6-position terminal block for the copper

Part Number	Port One - Copper 6-position terminal block	Port Two - Fiber-Optic
CRS4F3211-100	RS485/422 1200 m (4000 ft)*	ST, 1300 nm multimode 2 km (1.2 miles)**
CRS4F3213-100	RS485/422 1200 m (4000 ft)*	SC, 1300 nm multimode 2 km (1.2 miles)**
CRS4F3214-100	RS485/422 1200 m (4000 ft)*	SC, 1310 nm single mode 20 km (12.4 miles)**
CRS4F3215-100	RS485/422 1200 m (4000 ft)*	SC, 1310 nm single mode 40 km (24.8 miles)**

link:

* Maximum cable distance is 1200m (4000 ft) @ <90 kb/s decreasing logarithmically to 92m (300 ft) @ 500 kb/s.

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

Installation	3
Operation	8
Cable Specifications	9
Technical Specifications	12
Troubleshooting	13
Contact Us	14
Compliance Information	15

CRS4Fxxx-10x

The CRS4F3129-10x media converters use a male DB-9 port for the copper link:

Part Number	Part One - Copper DB-9 Port	Port Two - Fiber Optic
CRS4F3129-100	RS485 1200 m (4000 ft)*	SC, 1310TX/1550RX nm, single mode 20 km (12.4 miles)**
CRS4F3129-101	RS485 1200 m (4000 ft)*	SC, 1550TX/1310RX nm, single mode 20 km (12.4 miles)**
CRS4F3129-102	RS485 1200 m (4000 ft)*	SC, 1310TX/1550RX nm, single mode 40 km (24.8 miles)**
CRS4F3129-103	RS485 1200 m (4000 ft)*	SC, 1550TX/1310RX nm, single mode 40 km (24.8 miles)**

The CRS4F32xx-10x media converters use a 6-position terminal block for the copper link:

Part Number	Part One - Copper -6-position terminal block	Port Two - Fiber Optic
CRS4F3229-100	RS485 1200 m (4000 ft)*	SC, 1310TX/1550RX nm, single mode 20 km (12.4 miles)**
CRS4F3229-101	RS485 1200 m (4000 ft)*	SC, 1550TX/1310RX nm, single mode 20 km (12.4 miles)**
CRS4F3229-102	RS485 1200 m (4000 ft)*	SC, 1310TX/1550RX nm, single mode 40 km (24.8 miles)**
CRS4F3229-103	RS485 1200 m (4000 ft)*	SC, 1550TX/1310RX nm, single mode 40 km (24.8 miles)**

* Maximum cable distance is 1200m (4000 ft) @ <90 kb/s decreasing logarithmically to 92m (300 ft) @ 500 kb/s.

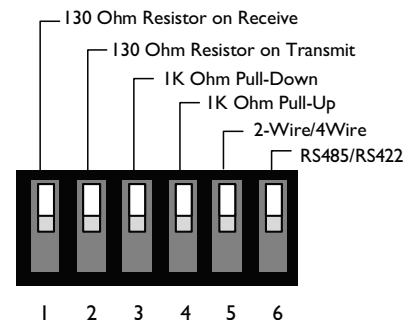
**Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network installation.

Installation

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

Set the 6-Position Switch

The 6-position switch is located on the side of the media converter. Use a small flat-blade screwdriver or a similar device to set the recessed switches. Refer to the drawing for the locations of the six individual switches.



Switch 1 - 130 ohm resistor on “receive”

up = Disable
down = Enable (Switch 5 must also be set to “4-wire” (down))

When enabled, switch 1 inserts a 130 ohm resistor on the wire pair:

- Receive (-) (B) RS485 4-wire, receive (-) RS422
- Receive (+) (A) RS485 4-wire, receive (+) RS422

Switch 2 - 130 ohm resistor on “transmit”

up = Disable
down = Enable. (Switch 5 must also be set to “2-wire” (up))

When enabled, switch 2 inserts a 130 ohm resistor on the wire pair:

- Transmit/Receive (-) (B) RS485 2-wire, transmit (-) RS422
- Transmit/Receive (+) (A) RS485 2-wire, transmit (+) RS422

Switch 3 - 1K ohm “pull-down”

up = Disable
down = Enable. (Switch 5 must also be set to “2-wire” (up))

When enabled, switch 3 enables a 1K ohm pull-down on the wire:

- Transmit/Receive (-) (B) RS485 2-wire, transmit (+) RS422

Installation -- Continued

Switch 4 - 1K ohm “pull-up”

up = Disable

down = Enable (*Switch 5 must also be set to “2-wire” (up)*)

When enabled, switch 4 enables a 1K ohm pull-up on the wire:

- Transmit/Receive (+) (A) RS485 2-wire, transmit (+) RS422

Switch 5 - 2-wire/4-wire

up = 2-wire

down = 4-wire

Set switch 5 to 2-wire (up) to enable the wire pair:

- Transmit/Receive (-) (B) RS485 2-wire, transmit (-) RS422
- Transmit/Receive (+) (A) RS485 2-wire, transmit (+) RS422 for RS422 2-wire, half-duplex operation

Set switch 5 to 4-wire (down) to enable the wire pair:

- Receive (-) (B) RS485 4-wire, transmit (-) RS422
- Receive (+) (A) RS485 4-wire, transmit (+) RS422 for RS422 4-wire, full-duplex operation

Switch 6 - RS485 / RS422

up = RS485

down = RS422

Set switch 6 to RS485 (up) to prevent echo in the 2-wire mode.

Set switch 6 to RS422 (down) to allow “transmit only” for the wire pair:

- Transmit/Receive (-) (B) RS485 2-wire, transmit (-) RS422
- Transmit/Receive (+) (A) RS485 2-wire, transmit (+) RS422

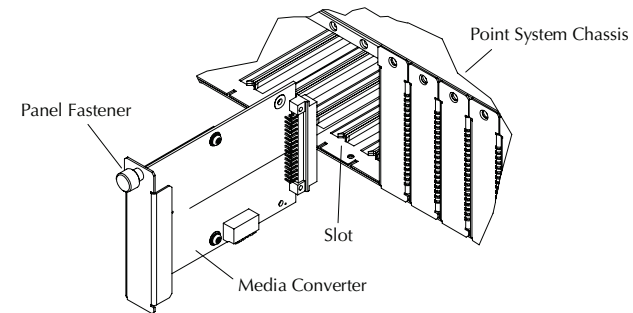
Installation -- Continued

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 CRS4Fxxx-10x 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 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 to secure the module to the chassis front.

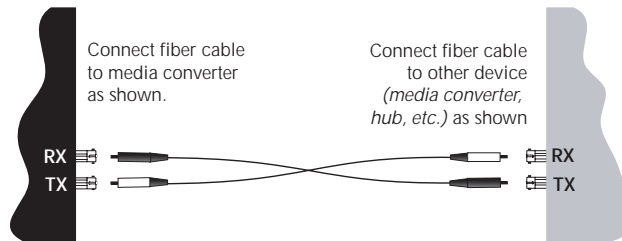


Install the Fiber Cable

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 CRS4Fxxx-10x media converter as described:
 - Connect the male TX cable connector 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 the female RX port.
 - Connect the male RX cable connector to the female TX port.

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 CRS4Fxxx-100 media converter as described:
 - Connect the male TX cable connector 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 the female RX port.
 - Connect the male RX cable connector to the female TX port.



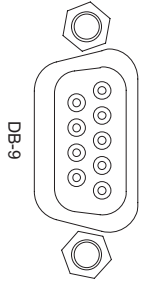
Installation -- Continued

Install the Copper Cable (DB-9 port)

Install the copper cable as instructed if the media converter has a DB-9 copper port (*CRS4F31xx-10x models*).

Note: Shielded RS485/422 cables are required for EMC compliance.

1. Locate or build RS485/422 cables with a female DB-9 connector on one end and a DB-9 connector that is compatible with the other device on the other end of the cable.
2. Connect the female DB-9 connector at one end of cable to the male DB-9 port on the CRS4F31xx-10x media converter.
3. Connect the DB-9 connector at the other end of the cable to the DB-9 port on the other device.

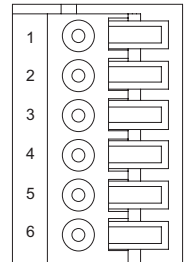


Install the Copper Cable (6-position terminal block)

Install the copper cable as instructed if the media converter has a 6-position terminal block (*CRS4F32xx-100 models*).

NOTE: Shielded RS485/422 cables are required for EMC compliance.

1. Locate or build RS485/422 cables with the six individual wires stripped at both ends.
2. Insert the individual wires at one end of cable into the six terminal block ports on the CRS4F32xx-10x media converter.
3. Insert the individual wires at the other end of the cable into the six terminal block ports on the other device, matching the same color of cable with the number of the port.



Power the Media Converter

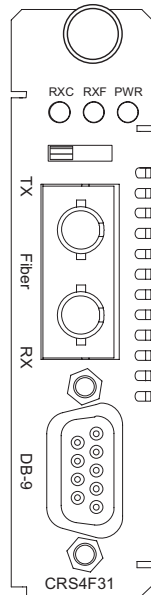
The media converter is powered through the *PointSystem*™ chassis.

Operation

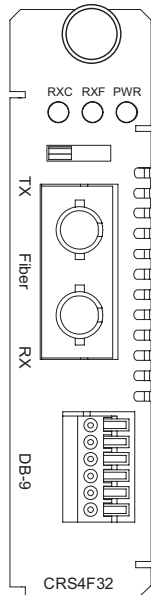
After installation, the media converter should function without operator intervention. Use the status LEDs to monitor the media converter operation in the network.

PWR	On	The media converter is connected to external power.
RXF	On	A link has been established with the fiber link.
RXC	On	Data has been received on the copper link.
	Flashing	Data is transferring on the copper link.

CRS4F31xx-100



CRS4F32xx-100



SNMP

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

- Local fiber link status
- Receive data activity on the copper link
- Local switch settings

(Network commands cannot be entered via SNMP.)

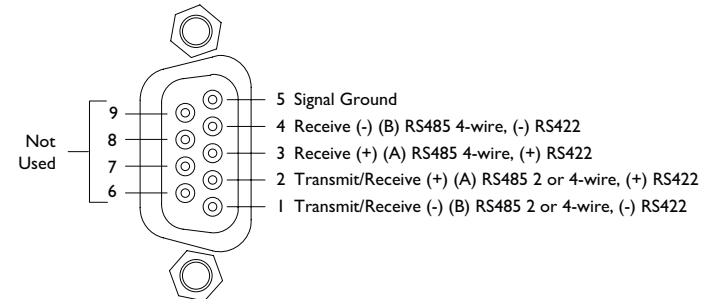
See the on-line documentation that comes with Transition Networks *FocalPoint™* software for applicable commands and usage on-line at: www.transition.com

Cable Specifications

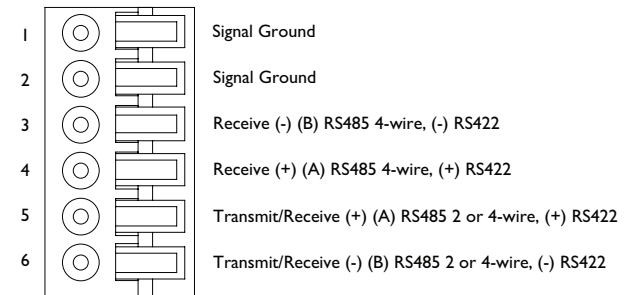
RS485/422 Copper Cable

Maximum Data Rate:	1.25 Mb/s
Gauge:	24 to 22 AWG
Maximum Cable Distance:	1200m (4000 ft) @ <90 kb/s decreasing logarithmically to: 92m (300 ft) @ 500 kb/s

DB-9 Port:



6-Position Terminal Block:



Cable Specifications -- Continued

Fiber Cable

Bit Error Rate:	<10 ⁻⁹
Single mode fiber (<i>recommended</i>):	9 μm
Multimode fiber (<i>recommended</i>):	62.5/125 μm
Multimode fiber (<i>optional</i>):	100/140, 85/140, 50/125 μm
CRS4F3111-100	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
CRS4F3113-100	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
CRS4F3114-100	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
CRS4F3115-100	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
CRS4F3211-100	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
CRS4F3213-100	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
CRS4F3214-100	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
CRS4F3215-100	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.

Cable Specifications -- Continued

Fiber Cable

CRS4F3129-100	1310TX/1550TR nm single mode
CRS4F3129-101	1550TX/1310TR 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
CRS4F3129-102	1310TX/1550TR nm single mode
CRS4F3129-103	1550TX/1310TR 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
CRS4F3229-100	1310TX/1550TR nm single mode
CRS4F3229-101	1550TX/1310TR 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
CRS4F3229-102	1310TX/1550TR nm single mode
CRS4F3229-103	1550TX/1310TR 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

Technical Specifications

For use with Transition Networks Model CRS4Fxxxx-10x or equivalent

Data Rate	0 to 1.25 Mb/s
Dimensions	3.4" x 5.0" x 0.86" (86 mm x 127 mm x 22 mm)
Shipping Weight	3 oz. (91 g) approximately
Power Consumption	5 Watts
MTBF	250,000 hours (MIL-HDBK-217F) 687,500 hours (Bellcore7 V5.0)
Environment	
Operating Temp:	0 to 50°C (32° to 122° F)
Storage Temp:	-40° to 85°C (-40° to 185° F)
Humidity:	5 to 95%, non condensing
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 CRS4Fxxxx-10x media converter, view the user's guide on-line at: www.transition.com

Note: The stand-alone version of the media converter is SRS4Fxxxx-10x. For more information, see the SRS4Fxxxx-10x user guide on-line at: www.transition.com.

WARNING: Visible and invisible laser radiation when open. Do not stare into the beam or view the beam directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

WARNING: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION: Copper based media ports, e.g., Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are intended to be connected to intra-building (inside plant) link segments that are not subject to lightening transients or power faults. Copper based media ports, e.g., Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are NOT to be connected to inter-building (outside plant) link segments that are subject to lightening transients or power faults. Failure to observe this caution could result in damage to equipment.

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:

- Is the PWR (*Power*) 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 in the grounded AC outlet?
 - Does the grounded AC outlet provide power?
 - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
 YES
 - Proceed to step 2.
- Is the RXC LED illuminated when data is sent across the RS485/422 copper link?
NO
 - Check the RS485/422 copper cable for proper connection.
 - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
 YES
 - Proceed to step 3.
- Is the RXF (*fiber link*) LED illuminated?
NO
 - Disconnect and reconnect the fiber cables to restart the initialization process.
 - 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 Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
 YES
 - Proceed to step 4.
- Does the data fail to move across the link, even though both RXC and RXF LEDs are illuminated?
YES
 - Check switches 5 and 6 for proper configuration and check the RS485/422 cables for proper connection.
 - Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.
 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

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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

10900 Red Circle Drive

Minnetonka, MN 55343, U.S.A.

telephone: 952-941-7600

toll free: 800-526-9267

fax: 952-941-2322



Declaration of Conformity

Name of Mfg: Transition Networks
10900 Red Circle Drive, Minnetonka MN 55343 U.S.A.

Model: CRS4Fxxx-10x Series Media Converter


Part Number: CRS4F3111-100, CRS4F3113-100, CRS4F3114-100,
CRS4F3115-100, CRS4F3211-100, CRS4F3213-100,
CRS4F3214-100, CRS4F3215-100, CRS4F3129-100,
CRS4F3129-101, CRS4F3129-102, CRS4F3129-103,
CRS4F3229-100, CRS4F3229-101, CRS4F3229-102,
CRS4F3229-103

Regulation: EMC Directive 89/336/EEC

Purpose: To declare that the CRS4Fxxx-10x to which this declaration refers is in conformity with the following standards.

EMC Directive 2004/108/EC; EN 55022:2006+A1:2007 Class A;
EN55024:1998+A1:2001+A2:2003; EN61000-3-2; EN61000-3-3; CFR Title 47 Part 15
Subpart B Class A; Low Voltage Directive: 2006/95/EC; CFR Title 21 Section 1040.10
Class I

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

August 2010
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 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.



In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.

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