

User Guide

CPSVT26xx-10x

Slide-in-Module Device

- High-Speed Serial
- V.35/X.21/RS449/RS530/RS232
- Copper to Fiber



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Introduction

Transition Networks CPSVT26xx-10x series high-speed serial copper-to-fiber Devices, designed to be installed in Transition Networks' PointSystem™ chassis, connect V.35, X.21, RS-449, RS530, or RS-232 signals on copper cable, at speeds up to 10 Mb/s through a universal 26-pin serial interface connector to fiber-optic cable. Transition Networks also supplies cables for connecting network equipment to the CPSVT26xx-10x series Device. The ION Adapter (IONADP) can be used to mount Point System Converter Modules in an ION Chassis.

Models Numbers

Part Number	Port One - Copper	Port Two - Duplex Fiber-Optic
CPSVT2611-100	Universal 26-pin serial interface *	ST, 1300 nm multimode 2 km (1.2 miles) **
CPSVT2613-100	Universal 26-pin serial interface *	SC, 1300 nm multimode 2 km (1.2 miles) **
CPSVT2614-100	Universal 26-pin serial interface *	SC, 1310 nm single mode 20 km (12.4 miles) **
CPSVT2615-100	Universal 26-pin serial interface *	SC, 1310 nm single mode 40 km (24.9 miles) **

* For typical maximum cable distance, see Cable Specifications section.

** Typical maximum cable distance. Actual distance depends on the physical characteristics of the network installation.

The stand-alone version of the Device is SPSVT26xx-10x. For more information, see the SPSVT26xx-10x user's guide at <https://www.transition.com/>.

Part Number	Port One - Copper	Port Two - Single Fiber-Optic
CPSVT2629-100	Universal 26-pin serial interface *	SC, single mode 1310 TX / 1550nm RX 20 km (12.4 miles) **
CPSVT2629-101	Universal 26-pin serial interface *	SC, single mode 1550 TX / 1310nm RX 20 km (12.4 miles) **
The CPSVT2629-100 and the -101 are intended to be installed in the same network where one is the local Device and the other is the remote Device.		
CPSVT2629-102	Universal 26-pin serial interface *	SC, single mode 1310 TX / 1550nm RX 40 km (24.8 miles) **
CPSVT2629-103	Universal 26-pin serial interface *	SC, single mode 1550 TX / 1310nm RX 40 km (24.8 miles) **
The CPSVT2629-100 and the -101 are intended to be installed in the same network where one is the local Device and the other is the remote Device.		

* For typical maximum cable distance, see the Cable Specifications section.

** Typical maximum cable distance. Actual distance depends on the network installation physical characteristics.

Cable Options

Supported Cable Options

The table below lists the interface standards and the cable options that are supported for the CPSVT26xx-10x Device.

Each cable (available from Transition Networks) is three meters in length and has a male universal 26-pin serial connector at one end. The connector at the other end is listed in the table.

Part Number	Function	Connector Type
35DTE-3	V.35 DTE	34-pin Rectangular Male
35DCE-3	V.35 DCE	34-pin Rectangular Female
21DTE-3	X.21 DTE	15-pin D-sub Male
21DCE-3	X.21 DCE	15-pin D-sub Female
232DTE-3	RS-232 DTE	25-pin D-sub Male
232DCE-3	RS-232 DCE 2	5-pin D-sub Female
449DTE-3	RS-449 DTE	37-pin D-sub Male
449DCE-3	RS-449 DCE	37-pin D-sub Female
530DTE-3	RS-530 DTE	25-pin D-sub Male
530DCE-3	RS-530 DCE	25-pin D-sub Female

Maximum Cable Lengths

The table below lists the recommended maximum cable lengths for each of the cable options at various data rates.

Data Rate	V.35, RS-449, or RS-530	X.21	RS232C
10 Mb/s	10 m (35 ft.)	N/A	N/A
6 Mb/s	19 m (65 ft.)	N/A	N/A
2 Mb/s	45 m (150 ft.)	15 m (50 ft.)	N/A
1 Mb/s	90 m (300 ft.)	30 m (100 ft.)	N/A
512 Kb/s	180 m (600 ft.)	60 m (200 ft.)	N/A
256 kb/s	365 m (1200 ft.)	120 m (400 ft.)	N/A
128 Kb/s	730 m (2400 ft.)	240 m (800 ft.)	N/A
56 Kb/s	910 m (3000 ft.)	480 m (1600 ft.)	3 m (10 ft.)
1.2 Kb/s	910 m (3000 ft.)	910 m (3000 ft.)	15 m (50 ft.)

N/A = Not Applicable. The rates are not specified for the interface in question.

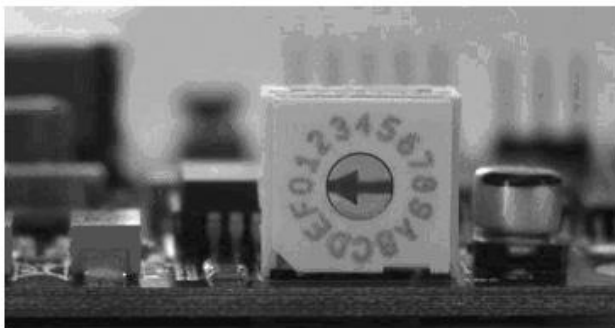
Installation

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

Set the Terminal Timing Switch

The 16-position terminal timing switch, located on the side of the Device's circuit board, allows the network administrator to configure the Device for various network conditions.

To set the terminal timing switch, insert a small, flat-blade screwdriver or a similar device into the recessed arrow on the switch. Gently rotate the switch to the position required for the site installation.



The table below lists the conditions for each setting of the terminal timing switch:

Terminal Timing Switch Settings

0 - TT = Receive CLK	8 - 768 Kb/s
1 - 56 Kb/s	9 - 1024 Kb/s
2 - 64 Kb/s	A - 1544 Kb/s
3 - 112 Kb/s	B - 2048 Kb/s
4 - 128 Kb/s	C - 3072 Kb/s
5 - 256 Kb/s	D - 4096 Kb/s
6 - 384 Kb/s	E - 6144 Kb/s
7 - 512 Kb/s	F - Asynchronous Mode *

* Setting "F" overrides the software mode and sets the Device to asynchronous mode.

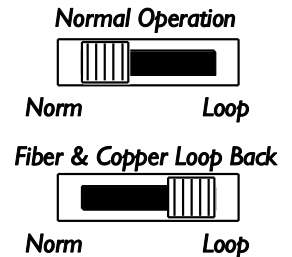
Set the Loop-Back (Norm / Loop) Switch

The loop-back switch is located on the front panel of the Device and is used to debug network faults. (See “[Troubleshooting](#)” on page 12 for examples.)

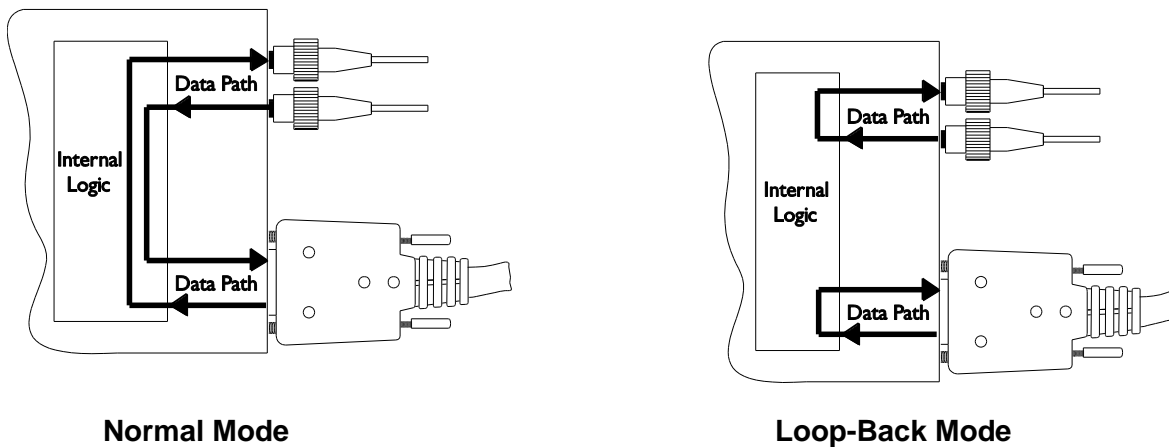
To set the switch, use a small flat-blade screwdriver or a similar device.

Normal Set the switch to “Norm” for normal operation.

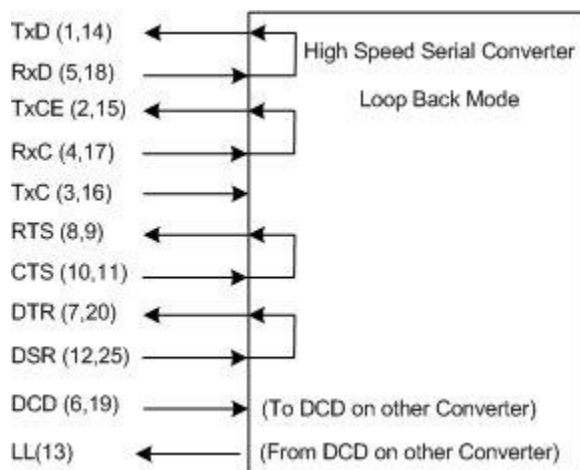
Loopback Set the switch to “Loop” to enable both fiber and copper loop-back.



The two drawings below illustrate the data path for both normal mode and loop-back mode:



The data path during loop-back mode for each of the pins on the copper 26-pin connector is shown below.

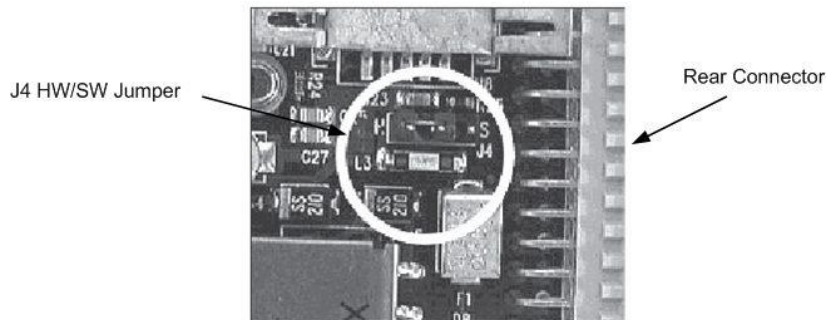


Set the Jumpers

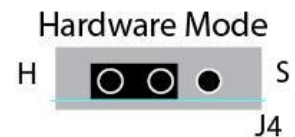
The CPSVT26xx-10x has three jumpers located on the circuit board. To set any of the three jumpers, use a small needle-nosed pliers or similar device to move the jumper(s) to the desired position(s).

Hardware/Software Jumper (J4)

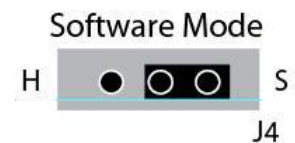
The Hardware/Software jumper (J4) is located on the circuit board and is the jumper that is nearest the rear connector of the Device (see the photo below).



Hardware mode: The terminal timing switch controls the terminal timing function. The loop-back switch controls the loop-back function.



Software mode: The terminal timing switch and the loop-back switch are disabled. These two functions are controlled by the most-recently saved, on-board microprocessor settings.



Note: Setting the terminal timing switch to “F” overrides the software mode and sets the Device to asynchronous mode.

Remote Management

The CPSVT26xx-10x can remotely manage the SPSVT26xx-10x (the stand-alone version of the Device) or another CPSVT26xx-10x installed in a Transition Networks PointSystem™ chassis.

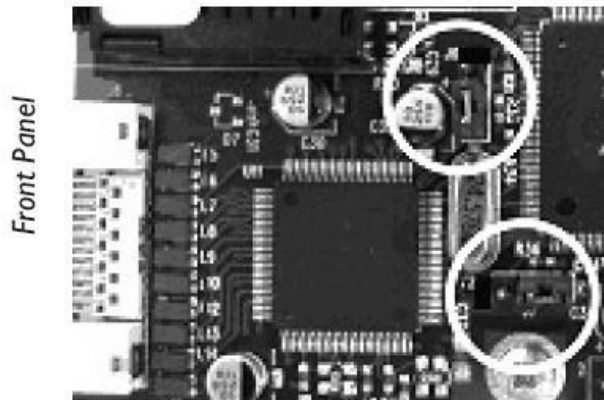
For example, a local CPSVT2611-100 Device (that is installed in a managed PointSystem™ chassis) is connected, via fiber, to a remote SPSVT2611-100 Device. An example of a managed single-fiber network has a local CPSVT2629100 Device connected, via fiber, to a remote SPSVT2629-101.

The SNMP section in this manual lists the commands that can be used to monitor and manage both the local and remote Devices.

Note: In a managed network, both the local and remote Devices must be set to “software” mode (see above).

Receive (RX) Clock Polarity Jumper (J6)

The RX Clock Polarity jumper (J6), located near the front panel of the circuit board, selects the polarity of the receive clock.



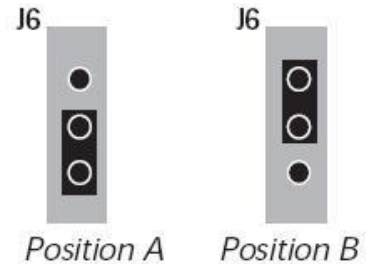
J6- RX Clock Polarity Jumper

J7- TX Clock Polarity Jumper

The RX Clock Polarity jumper (J6), located near the front panel of the circuit board, selects the polarity of the receive clock.

Position A: The receive data is sampled on the rising edge of the receive clock.

Position B: The receive data is sampled on the falling edge of the receive clock.



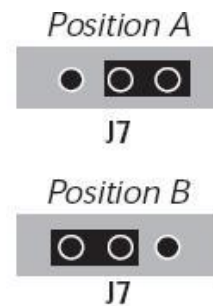
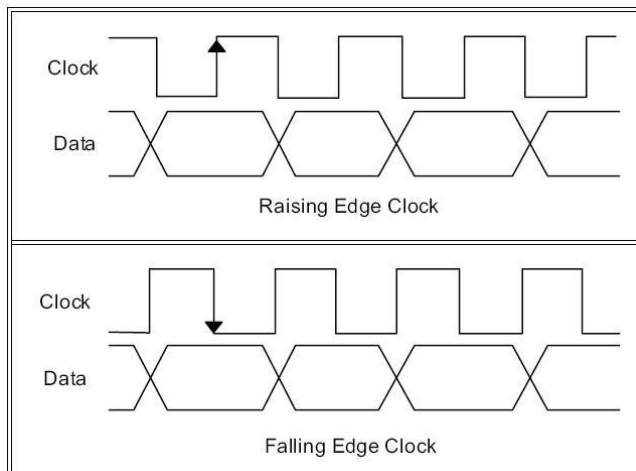
Transmit (TX) Clock Polarity Jumper (J7)

The TX Clock Polarity jumper (J7), also located near the front panel of the circuit board, selects the polarity of the transmit clock.

Position A: The transmit data is sampled on the rising edge of the receive clock.

Position B: The transmit data is sampled on the falling edge of the receive clock.

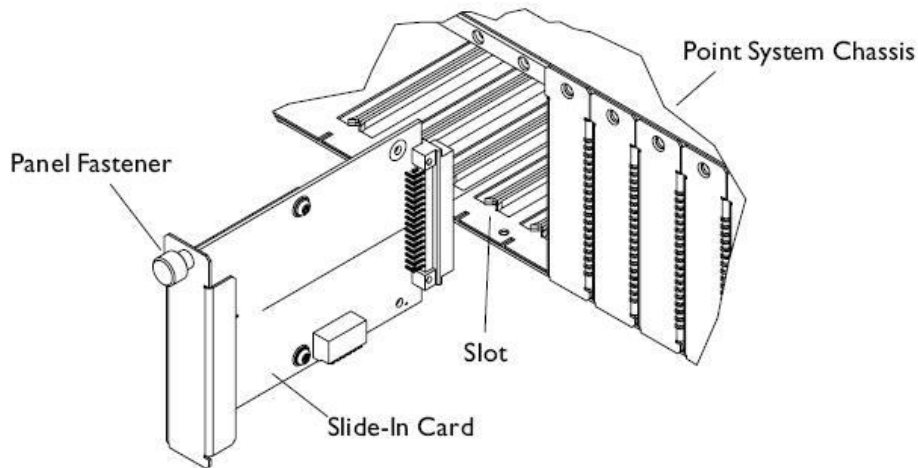
The drawing below illustrates “rising edge” and “falling edge” for clock polarity.



Install the Slide-In-Module

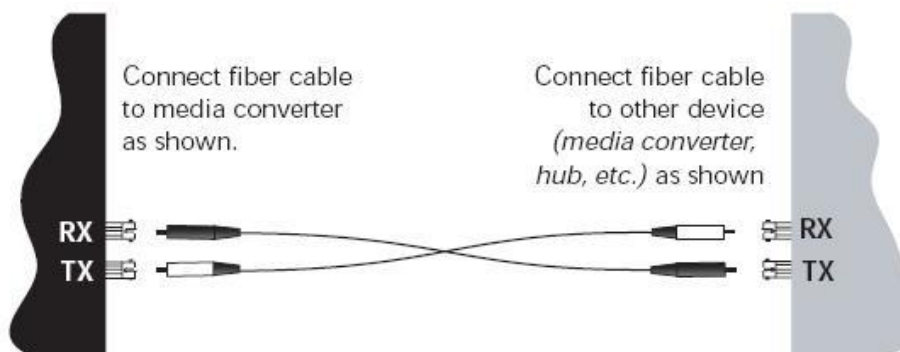
CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing the CPSVT26xx-10x slide-in-module Device. Failure to observe this caution could result in damage to, and subsequent failure of, the Device.

1. Carefully slide the slide-in-module into the installation slot, aligning the module with the installation guides.
2. Ensure that the module is firmly seated against the backplane of the chassis.
3. Push in and rotate the attached panel fastener screw clockwise to secure the module to the chassis front.



Install the Fiber Cable

1. Locate or build fiber optic cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the CPSVT26xx-10x Device as described:
 1. Connect the male TX cable connector to the female TX port.
 2. Connect the male RX cable connector to the female RX port.
3. Connect the fiber cables to the other device (*another Device, hub, etc.*) as described:
 - Connect the male TX cable connector to the female RX port.
 - Connect the male RX cable connector to the female TX port.



Install the Copper Cable

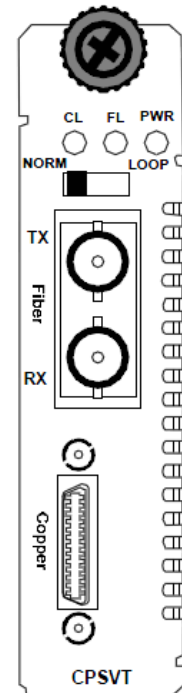
1. Connect the high-speed serial cable to the Device by connecting the cable's copper connector to the Device's copper port.
2. Ensure that the cable screwlocks are tightened securely. Failure to observe this caution could cause data transfer to fail.
3. Connect the other end of the high-speed serial cable to the other network device (*cable router, CSU, etc.*).

Operation

Status LEDs

Use the status LEDs to monitor the CPSVT26xx-10x Device operation in the network.

LED	State	Meaning
PWR	On	The device is connected to external power.
FL	On Flashing	The fiber link is up. The fiber link is in loop-back mode.
CL	On Flashing	The copper link is up. The copper link is in loop-back mode. (<i>In asynchronous mode, the CL LED may flash if the data rates fall below 300 cycles per second.</i>)



SNMP

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

Use SNMP at an attached or remote terminal to monitor:

- Device Power
- Fiber lock status (local only)
- Hardware / software mode (local / remote)
- Copper speed (local / remote)
- Loop-back status (local / remote)
- Clock polarity setting (local / remote)
- Cable type (local / remote)

Also, use SNMP to enter network commands that:

- Bootload the firmware (local only)
- Enable/disable loop-back (local / remote)
- Copper speed (local / remote)
- Power-down the Device

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	
CPSVT2611-100		
Fiber Optic Transmitter Power:	1300 nm multimode 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	
CPSVT2613-100		
Fiber Optic Transmitter Power:	1300 nm multimode 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	
CPSVT2614-100		
Fiber-optic Transmitter Power:	1310 nm single mode 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	
CPSVT2615-100		
Fiber Optic Transmitter Power:	1310 nm single mode 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	
CPSVT2629-100		
Fiber-optic Transmitter Power:	1310 nm (TX) / 1550 nm (RX) simplex 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	
CPSVT2629-101		
Fiber-optic Transmitter Power:	1550 nm (TX) / 1310 nm (RX) simplex 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	
CPSVT2629-102		
Fiber-optic Transmitter Power:	1310 nm (TX) / 1550 nm (RX) simplex 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	
CPSVT2629-103		
Fiber-optic Transmitter Power:	1550 nm (TX) / 1310 nm (RX) simplex 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 meet Class I Laser safety requirements per IEC-825/CDRH standards and comply with 21 CFR1040.10 and 21CFR1040.11.

Copper Cable

- Copper twisted-pair, 28 AWG, 120 Ohm, 12 pf/foot capacitance (*max*)
- Nominal DC resistance: 65.0 ohms per 1000 feet (*each conductor*)
- Shield type: Aluminum Foil-Polyester Tape/Braid Shield with drain wire
- Standard Cable length: 3 m (*10 ft.*)

The five high-speed serial cables (*available from Transition Networks*) that are compatible with the 26-pin copper port on the CPSVT26xx-10x Device are listed below:

- RS-232
- RS-449
- V.35
- X.21
- RS-530

Note: For the cable specification, see “[High Speed Serial Converter \(CPSVT26xx\) Cable Pin-out Specifications](#)” on page 16.

Technical Specifications

For use with Transition Networks Model CPSVT26xx-10x or equivalent.

Data Rate:	1.2 Kb/s to 10 Mb/s
Dimensions:	3.4" x 5.0" x 0.87" (86 mm x 182 mm x 22 mm)
Weight:	3 oz. (91 g) approximately
Power Consumption:	5.0 Watts
MTBF	250,000 hours (<i>MIL-HDBK-217F</i>) 687,500 hours (<i>Bellcore7 V5.0</i>)
Environment:	Tmra*: 0 to 50°C (32 to 122°F)
Storage Temperature:	-20 to 65°C (-4 to 149°F)
Humidity:	10 to 90%, 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.

For the most up-to-date information on the CPSVT26xx-10x Device, see 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

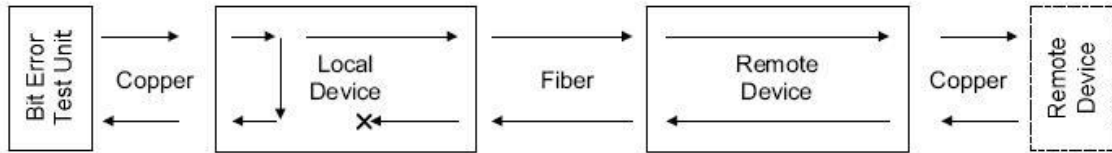
If the Device fails, isolate and correct the fault by determining the answers to the following questions and then taking the indicated action:

1. Is the PWR LED on the Device lit?
NO
 - Is the Device installed properly in the chassis?
 - Is the power cord properly installed in the chassis and in the external power source and does the external power source supply power?
 - Contact Tech Support; see [Contact Us](#) on page 14.YES
 - Proceed to step 2.
2. Is the CL LED on the Device lit?
NO
 - Are the copper cables connected properly?
 - Is the device attached to the Device via the copper cable working properly?
 - Contact Tech Support; see [Contact Us](#) on page 14.YES
 - Proceed to step 3.
3. Is the FL LED on the Device lit?
NO
 - Check the fiber cables for proper connection.
 - Verify that the TX and RX cables on the Device are connected to the RX and TX ports, respectively, on the other device.
 - Are both Devices (connected via the fiber cables) in the same mode (synchronous or asynchronous)?
 - Contact Tech Support; see [Contact Us](#) on page 14.YES
 - Proceed to step 4.
4. Are the CL and FL LEDs on the Device flashing (indicating loop-back mode)?
NO
 - Disable the loop-back function. In hardware mode, set the loop-back switch to NORM (normal). In software mode, click “disable” in the loop-back function.
 - Contact Tech Support; see [Contact Us](#) on page 14.YES
 - Proceed to step 5.
5. Is data transfer failing?
YES
 - Are the clock input and output polarity correct?
 - Are the correct copper cables installed for the data format?
 - Is the mode on the other device correct (synchronous/asynchronous)?
 - Contact Tech Support; see [Contact Us](#) on page 14.No
 - Proceed to step 6.

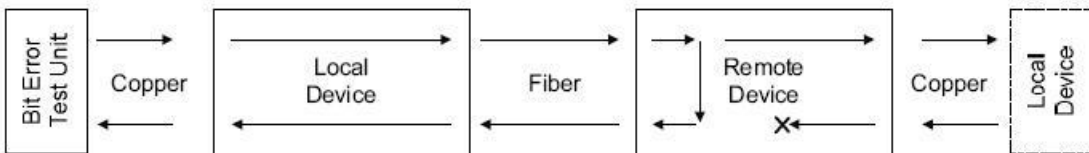
6. Is data transfer failing?

YES

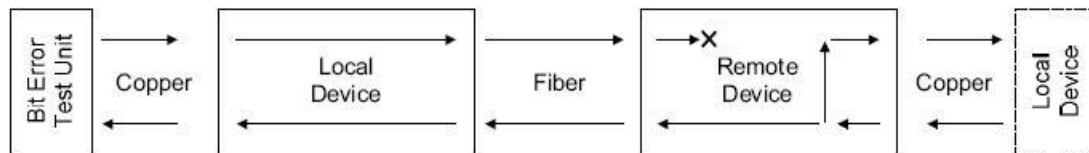
- Verify the local copper connection by starting a local copper loop-back (**hardware** mode: set the loop-back switch on the local Device to “loop”; **software** mode: enter the local copper loop-back command) and then use a bit error test unit to run a bit error test.



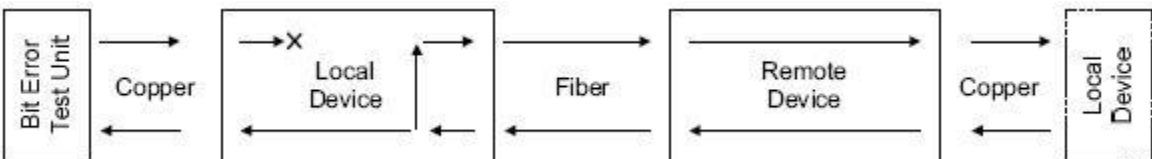
- Verify the local fiber connection by starting a remote fiber loop-back (**hardware** mode: set the loop-back switch on the remote Device to “loop”; **software** mode: enter the remote fiber loop-back command) and then use a bit error test unit to run a bit error test.



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



- Contact Tech Support; see [Contact Us](#) on page 14.

NO

- Contact Tech Support; see [Contact Us](#) on page 14.

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

Main Office

tel: +1.952.941.7600 | toll free: 1.800.526.9267 | fax: 952.941.2322

sales@transition.com | techsupport@transition.com | customerservice@transition.com

Address

Transition Networks



10900 Red Circle Drive

Minnetonka, MN 55343, U.S.A.

Web: <https://www.transition.com>

Compliance Information

Declaration of Conformity

		Declaration of Conformity	
Name of Mfg:	Transition Networks 10900 Red Circle Drive, Minnetonka MN 55343 U.S.A.		
Model Number(s):	CPSVT2611-100, CPSVT2613-100, CPSVT2614-100, CPSVT2615-100, CPSVT2629-100, CPSVT2629-101, CPSVT2629-102, CPSVT2629-103		
Directive(s) and standard(s):	EMC Directive 2004/108/EC; EN 55022:2006+A1:2007 Class A; EN55024:1998+A1:2001+A2:2003; EN6100-2-3; EN6100-3-3; CFR Title 47 Part 15 Subpart B Class A. Low Voltage Directive: 2006/95/EC; IEC 60950-1:2005; CFR Title 21 Section 1040.10 Class I.		
I, the undersigned, hereby declare that the model numbers listed in this declaration of conformity conform to the Directive(s) and Standard(s) herein.			
 Stephen Anderson, Vice-President of Engineering		January 2012 Date	

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.



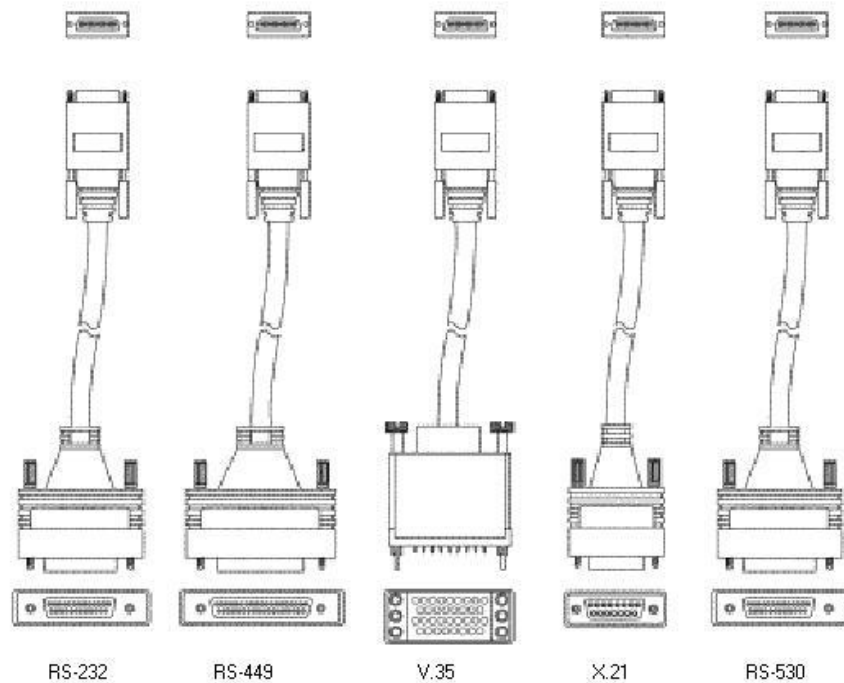
In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.



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 EGMitgliedstaaten 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.

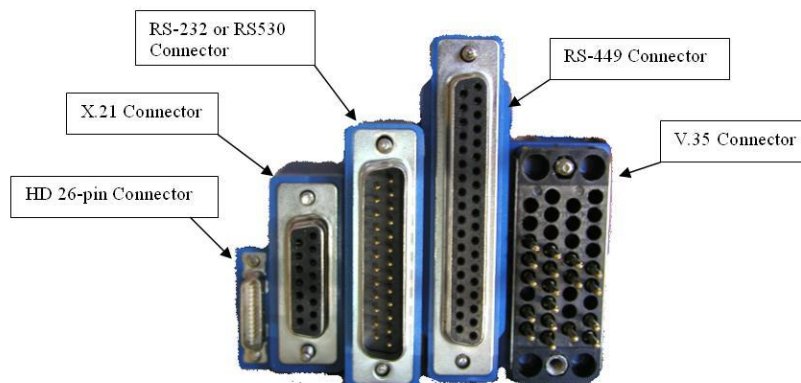
High Speed Serial Converter (CPSVT26xx) Cable Pin-out Specifications



High Speed Serial Connectors

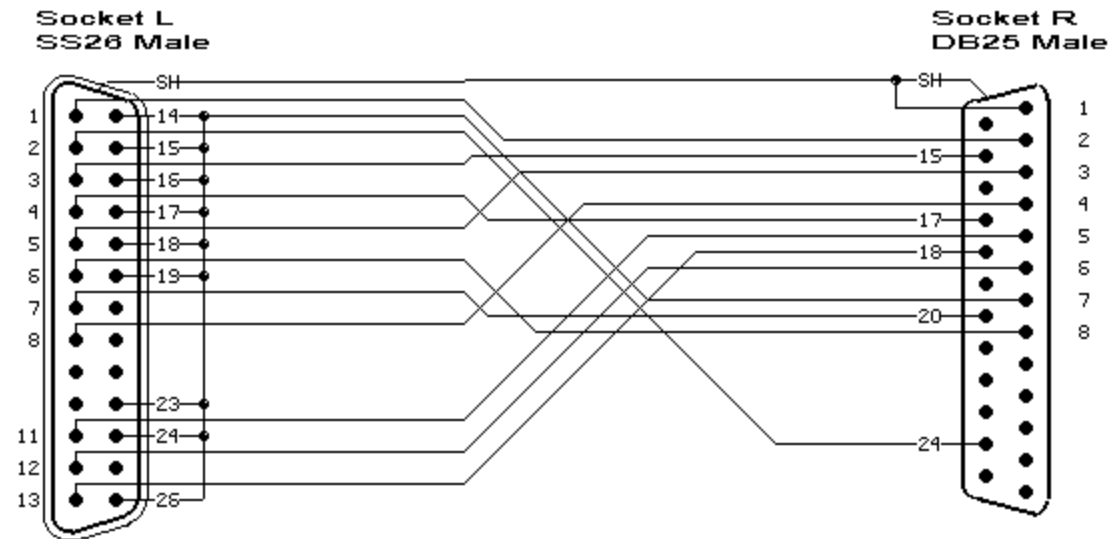
Serial Cable Requirements (RS-232, V.35, RS-530, RS-449, X.21)

- 28 AWG, 120 Ohm, copper twisted pair cable with maximum capacitance of 12 pf/foot
- Nominal DC resistance (each conductor): 65.0 ohms per 1000 feet.
- Shield type: Aluminum Foil-Polyester Tape/Braid Shield with drain wire.
- Standard Cable length three meters (10 Ft).
- Approval: Underwriters Laboratories (UL).
- Cables are to be labeled with Transition Networks Part number.



Transition Part Number 232DTE-3

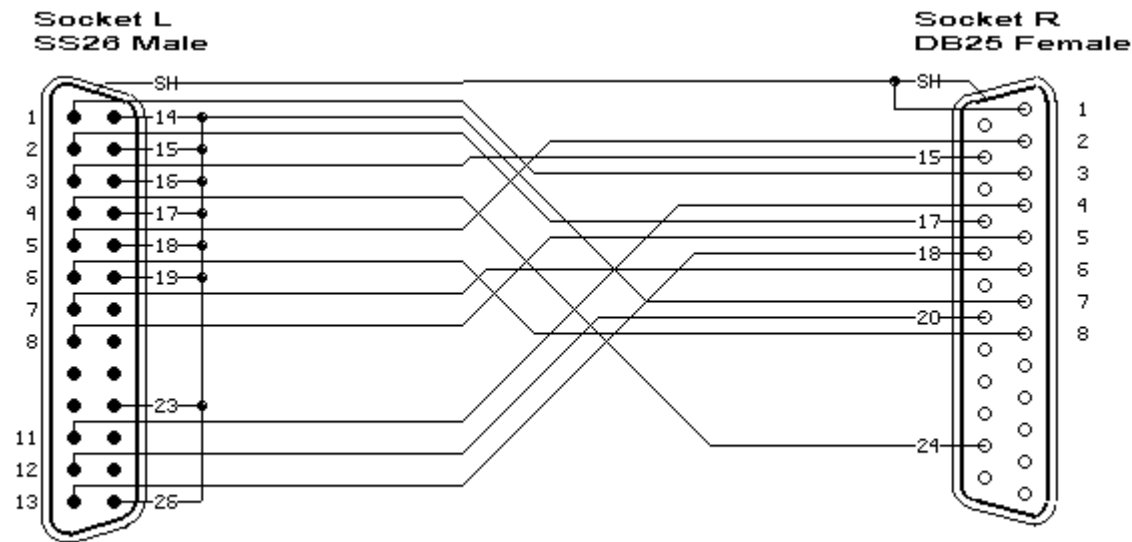
Transition Part Number 232DTE-3					
RS-232 DTE High Speed Serial Cable Pin-out (CAB-SS-232MT)					
26-Pin	Signal Name	Note	Direction	DB-25 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-01	Shield_GND
J1-23 J1-24 J1-18 J1-14 J1-19 J1-16 J1-15 J1-17 J1-26	MODE_0 MODE_DCE GND GND GND GND GND GND	All Pins listed connect to J1-26 GND		J2-07	GND
J1-05	RXD/TXD+		←	J2-03	RXD
J1-01	TXD/RXD+		→	J2-02	TXD
J1-11 J1-12	CTS/RTS+ DSR/DTR+		← ←	J2-05 J2-06	CTS DSR
J1-08 J1-07	RTS/CTS DTR/DSR+		→ →	J2-04 J2-20	RTS DTR
J1-06	DCD/DCD+		←	J2-08	DCD
J1-03	TXC/TXC+		←	J2-15	TXC
J1-02	TXCE/RXC+		→	J2-24	TXCE
J1-13	LL/LL+		→	J2-18	LTST
J1-04	RXC/TXCE+		←	J2-17	RXC



Connector
Rear View

Transition Part Number 232DCE-3

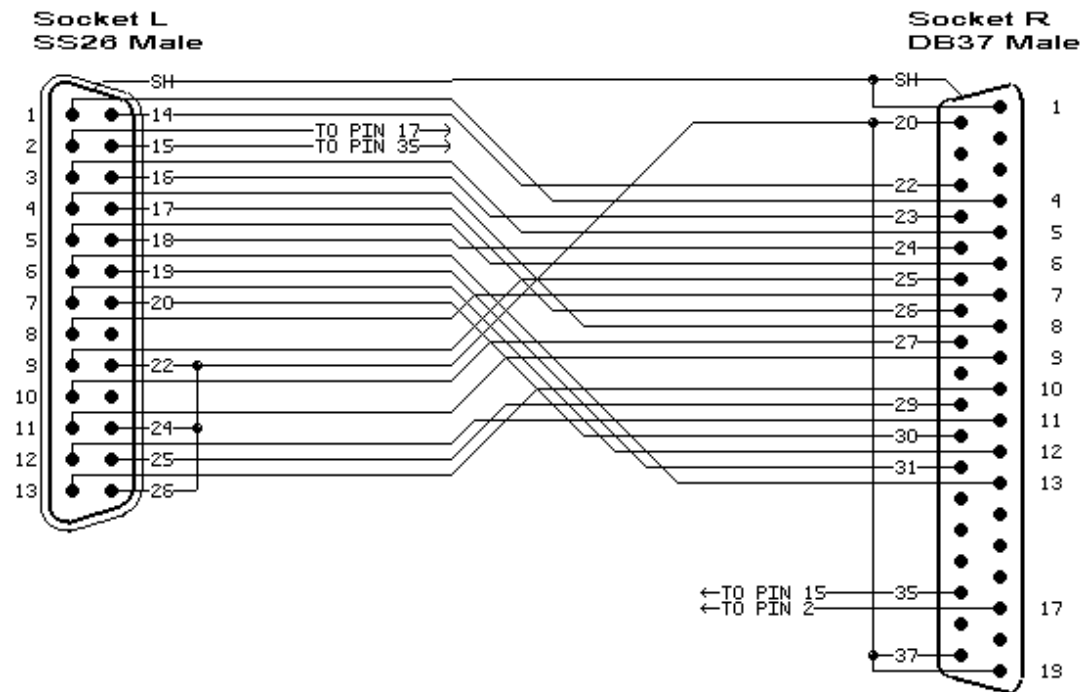
Transition Part Number 232DCE-3					
RS-232 DCE High Speed Serial Cable Pin-out (CAB-SS-232FC)					
26-Pin	Signal Name	Note	Direction	DB-25 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-01	Shield_GND
J1-23 J1-18 J1-14 J1-19 J1-16 J1-15 J1-17 J1-26	MODE_0 GND GND GND GND GND GND GND	All Pins listed connect to J1-26 GND		J2-07	GND
J1-05	RXD/TXD+		<—	J2-02	TXD
J1-01	TXD/RXD+		—>	J2-03	RXD
J1-11 J1-12	CTS/RTS+ DSR/DTR+		<— <—	J2-04 J2-20	RTS DTR
J1-08 J1-07	RTS/CTS DTR/DSR+		—> —>	J2-05 J2-06	CTS DSR
J1-06	DCD/DCD+		—>	J2-08	DCD
J1-03	TXC/TXC+		—>	J2-15	TXC
J1-02	TXCE/RXC+		—>	J2-17	RXC
J1-13	LL/LL+	<—	J2-18	LTST	
J1-04	RXC/TXCE+	<—	J2-24	TXCE	



Connector
Rear View

Transition Part Number 449DTE-3

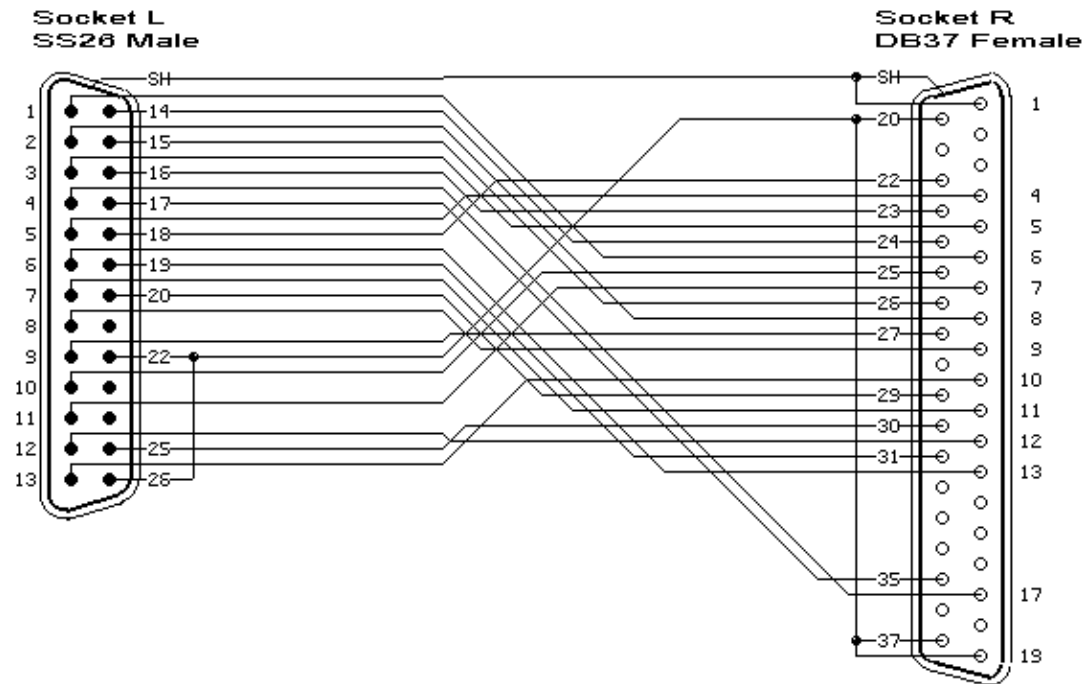
Transition Part Number 449DTE-3					
RS-449 DTE High Speed Serial Cable Pin-out (CAB-SS-449MT)					
26-Pin	Signal Name	Note	Direction	DB-37 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-01	Shield_GND
J1-22 J1-24 J1-26	MODE_I MODE_DCE GND	All Pins listed connect to J1-26 GND	— —	J2-19 J2-20 J2-37	SG RC SC
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	→ →	J2-04 J2-22	SD+ SD-
J1-03 J1-16	TXC/TXC+ TXC/TXC-	Twisted pair	← ←	J2-05 J2-23	ST+ ST-
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	← ←	J2-06 J2-24	RD+ RD-
J1-08 J1-09	RTS/CTS RTS/CTS-	Twisted pair	→ →	J2-07 J2-25	RS+ RS-
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	← ←	J2-08 J2-26	RT+ RT-
J1-11 J1-10	CTS/RTS+ CTS/RTS-	Twisted pair	← ←	J2-09 J2-27	CS+ CS-
J1-13	LL/LL+		→	J2-10	LL
J1-12 J1-25	DTR/DSR+ DTR/DSR-	Twisted pair	← ←	J2-11 J2-29	DM+ DM-
J1-07 J1-20	DTR/DSR+ DTR/DSR-	Twisted pair	→ →	J2-12 J2-30	TR+ TR-
J1-02 J1-15	TXCE/RXC+ TXCE/RXC-	Twisted pair	→ →	J2-17 J2-35	TT+ TT-
J1-06 J1-19	DCD/DCD+ DCD/DCD-	Twisted pair	← ←	J2-13 J2-31	RR+ RR-



Connector Rear View

Transition Part Number 449DCE-3

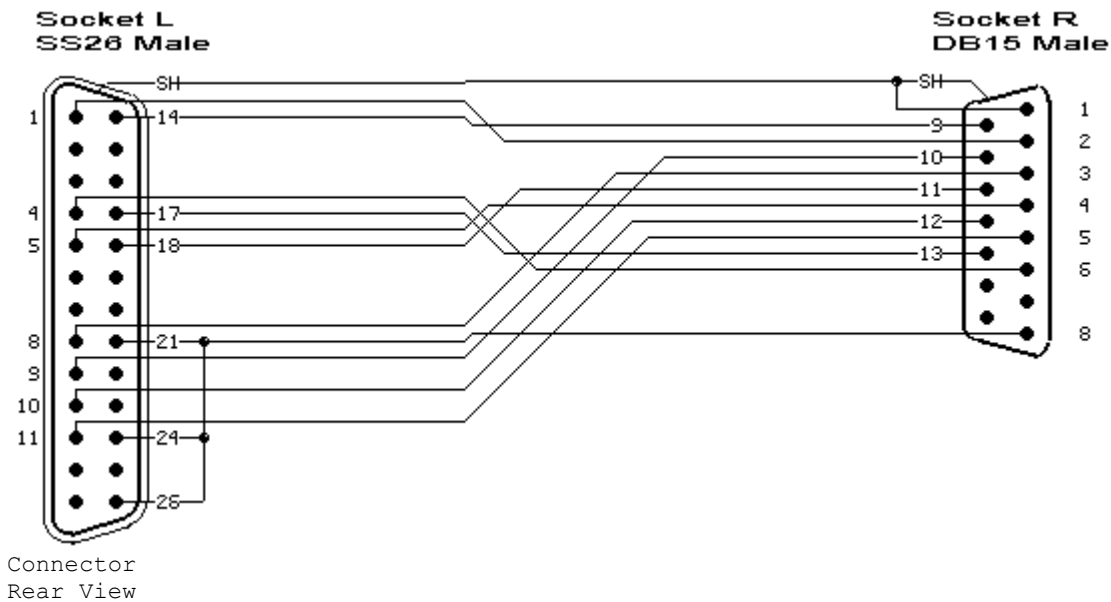
Transition Part Number 449DCE-3					
RS-449 DCE High Speed Serial Cable Pin-out (CAB-SS-449FC)					
26-Pin	Signal Name	Note	Direction	DB-37 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-01	Shield_GND
J1-22 J1-26	MODE_I GND	All Pins listed connect to J1-26 GND	— —	J2-19 J2-20 J2-37	SG RC SC
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	← ←	J2-04 J2-22	SD+ SD-
J1-03 J1-16	TXC/TXC+ TXC/TXC-	Twisted pair	→ →	J2-05 J2-23	ST+ ST-
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	→ →	J2-06 J2-24	RD+ RD-
J1-11 J1-10	CTS/RTS+ CTS/RTS-	Twisted pair	← ←	J2-07 J2-25	RS+ RS-
J1-02 J1-15	TXCE/RXC+ TXCE/RXC-	Twisted pair	→ →	J2-08 J2-26	RT+ RT-
J1-08 J1-09	RTS/CTS RTS/CTS-	Twisted pair	→ →	J2-09 J2-27	CS+ CS-
J1-06 J1-19	DCD/DCD+ DCD/DCD-	Twisted pair	→ →	J2-13 J2-31	RR+ RR-
J1-07 J1-20	DTR/DSR+ DTR/DSR-	Twisted pair	→ →	J2-11 J2-29	DM+ DM-
J1-12 J1-25	DTR/DSR+ DTR/DSR-	Twisted pair	← ←	J2-12 J2-30	TR+ TR-
J1-13	LL/LL+		→	J2-10	LL
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	← ←	J2-17 J2-35	TT+ TT-



Connector Rear View

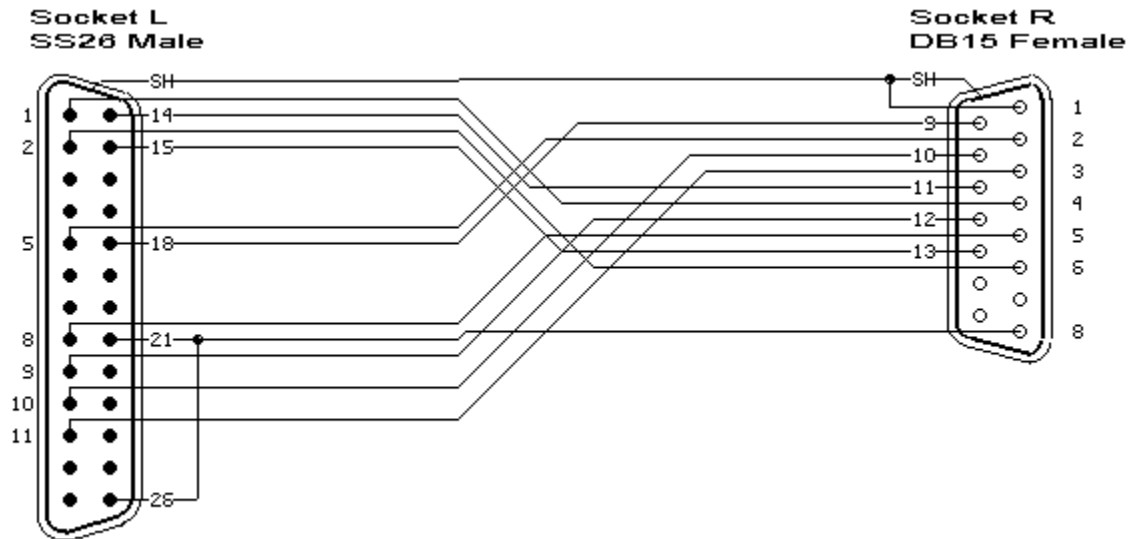
Transition Part Number 21DTE-3

Transition Part Number 21DTE-3					
X.21 DTE High Speed Serial Cable Pin-out (CAB-SS-21MT)					
26-Pin	Signal Name	Note	Direction	DB-15 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-01	Shield_GND
J1-21 J1-24 J1-26	MODE_2 MODE_DCE GND	All Pins listed connect to J1-26 GND	—	J2-08	CCT GND
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	← ←	J2-04 J2-11	RECEIVE+ RECEIVE-
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	→ →	J2-02 J2-09	TRANSMIT+ TRANSMIT-
J1-11 J1-10	CTS/RTS+ DSR/DTR+	Twisted pair	← ←	J2-05 J2-12	INDICATION+ INDICATION-
J1-08 J1-09	RTS/CTS DTR/DSR+	Twisted pair	→ →	J2-03 J2-10	CONTROL+ CONTROL-
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	← ←	J2-06 J2-13	TIMING+ TIMING-



Transition Part Number 21DCE-3

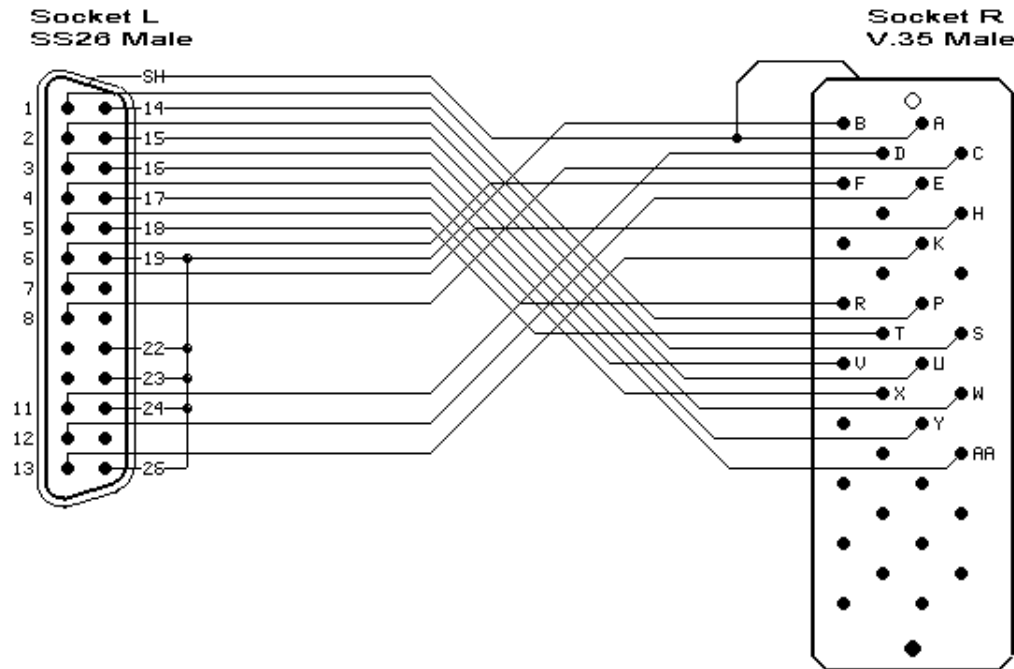
Transition Part Number 21DCE-3					
X.21 DCE High Speed Serial Cable Pin-out (CAB-SS-21FC)					
26-Pin	Signal Name	Note	Direction	DB-15 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-01	Shield_GND
J1-21 J1-26	MODE_2 GND	All Pins listed connect to J1-26 GND		J2-08	CCT GND
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	← ←	J2-02 J2-09	TRANSMIT+ TRANSMIT-
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	→ →	J2-04 J2-11	RECEIVE+ RECEIVE-
J1-11 J1-10	CTS/RTS+ DSR/DTR+	Twisted pair	← ←	J2-03 J2-10	CONTROL+ CONTROL-
J1-08 J1-09	RTS/CTS DTR/DSR+	Twisted pair	→ →	J2-05 J2-12	INDICATION+ INDICATION-
J1-02 J1-15	TXCE/RXC+ TXCE/RXC+	Twisted pair	→ →	J2-06 J2-13	TIMING+ TIMING-



Connector
Rear View

Transition Part Number 35DTE-3

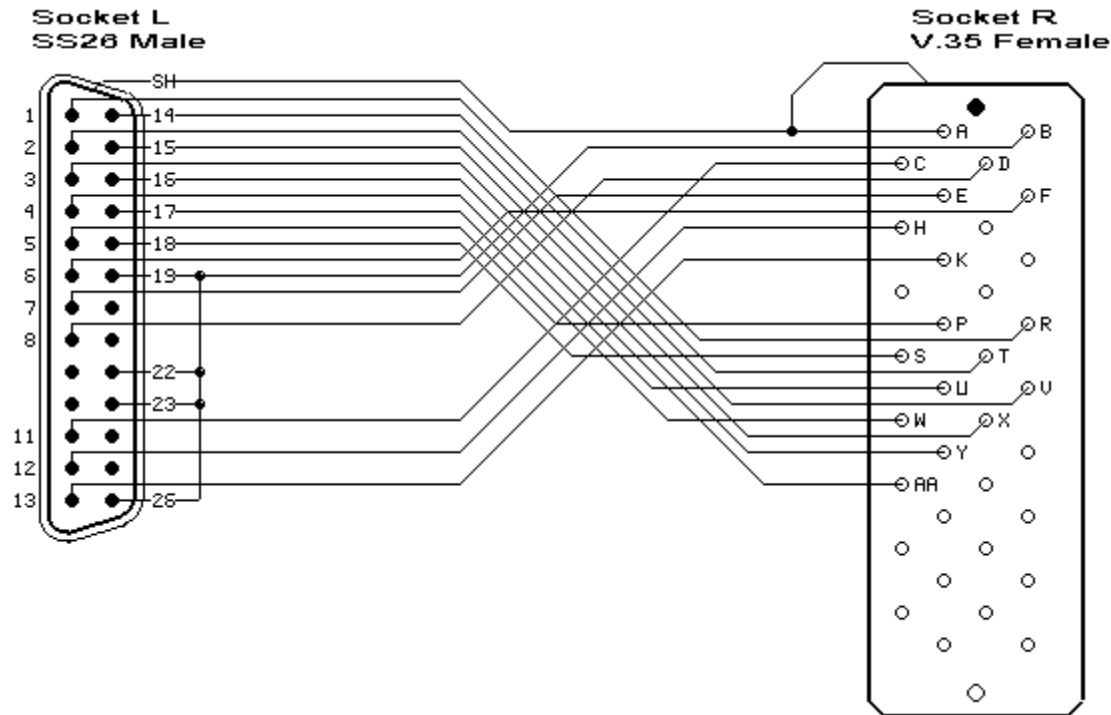
Transition Part Number 35DTE-3					
V.35 DTE High Speed Serial Cable Pin-out (CAB-SS-35MT)					
26-Pin	Signal Name	Note	Direction	V.35 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-A	Shield_GND
J1-22 J1-23 J1-24 J1-19 J1-26	MODE_1 MODE_0 MODE_DCE GND GND	All Pins listed connect to J1-26 GND	—	J2-B	GND
J1-06	DCD/DCD+		<—	J2-F	RLSD
J1-13	LL/LL+		—>	J2-K	LT
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	<— <—	J2-R J2-T	RD+ RD-
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	—> —>	J2-P J2-S	SD+ SD-
J1-11	CTS/RTS+		<—	J2-D	CTS
J1-12	DSR/DTR+		<—	J2-E	DSR
J1-08	RTS/CTS		—>	J2-C	RTS
J1-07	DTR/DSR+		—>	J2-H	DTR
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	<— <—	J2-V J2-X	SCR+ SCR-
J1-02 J1-15	TXCE/RXE+ TXCE/RXC-	Twisted pair	—> —>	J2-U J2-W	SCTE+ SCTE-
J1-03 J1-16	TXC/TXC+ TXC/TXC-	Twisted pair	<— <—	J2-Y J2-AA	SCT+ SCT-



Connector Rear View

Transition Part Number 35DCE-3

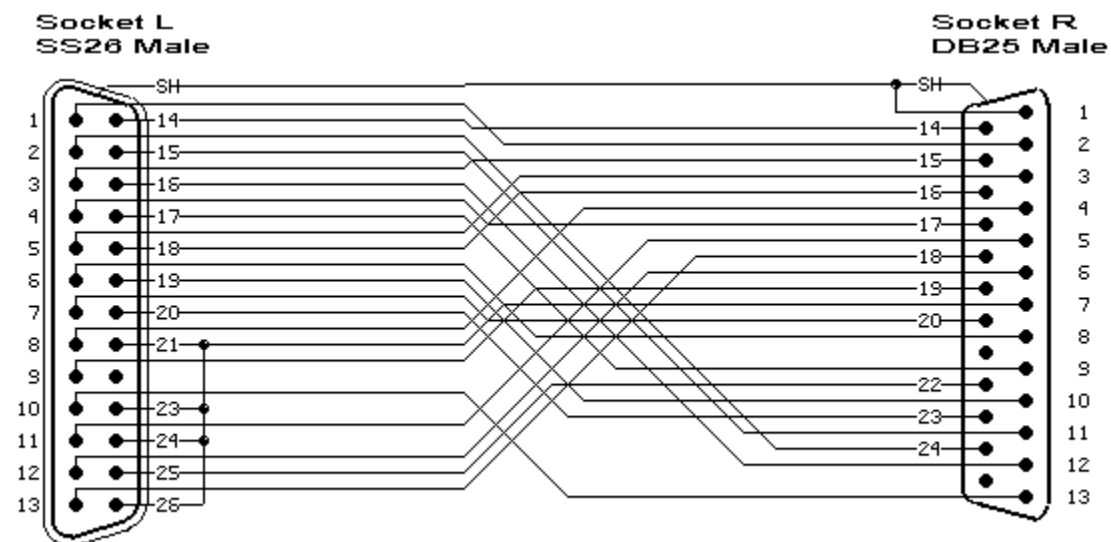
Transition Part Number 35DCE-3					
V.35 DCE High Speed Serial Cable Pin-out (CAB-SS-35FC)					
26-Pin	Signal Name	Note	Direction	V.35 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-A	Shield_GND
J1-22 J1-23 J1-19 J1-26	MODE_1 MODE_0 GND GND	All Pins listed connect to J1-26 GND	—	J2-B	GND
J1-06	DCD/DCD+		—>	J2-F	RLSD
J1-13	LL/LL+		—>	J2-K	LT
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	<— <—	J2-P J2-S	SD+ SD-
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	—> —>	J2-R J2-T	RD+ RD-
J1-11	CTS/RTS+		<—	J2-C	RTS
J1-12	DSR/DTR+		<—	J2-H	DSR
J1-07	DTR/DSR+		—>	J2-E	DSR
J1-08	RTS/CTS		—>	J2-D	CTS
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	<— <—	J2-U J2-W	SCTE+ SCTE-
J1-02 J1-15	TXCE/RXE+ TXCE/RXC-	Twisted pair	—> —>	J2-V J2-X	SCR+ SCR-
J1-03 J1-16	TXC/TXC+ TXC/TXC-	Twisted pair	—> —>	J2-Y J2-AA	SCT+ SCT-



Connector Rear View

Transition Part Number 530DTE-3

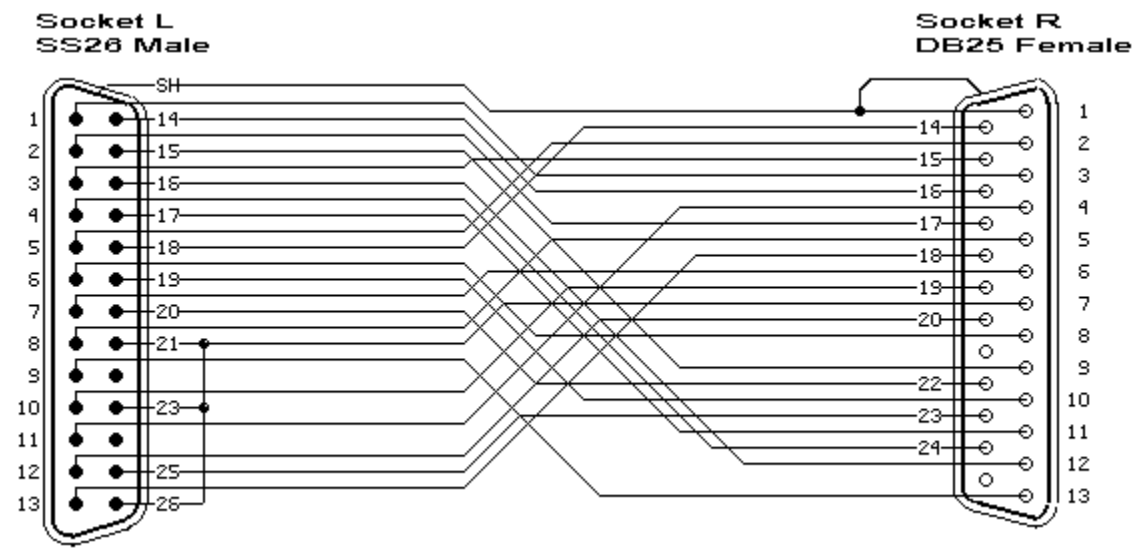
Transition Part Number 530DTE-3					
RS-530 DTE High Speed Serial Cable Pin-out (CAB-SS-530MT)					
26-Pin	Signal Name	Note	Direction	DB-25 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-01	Shield_GND
J1-21 J1-23 J1-24 J1-26	MODE_2 MODE_0 MODE_DCE GND	All Pins listed connect to J1-26 GND	—	J2-07	GND
J1-06 J1-19	DCD/DCD+ DCD/DCD-	Twisted pair	← ←	J2-08 j2-10	CF(A); DCD+ CF(B); DCD-
J1-13	LL/LL+		→	J2-18	LL
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	← ←	J2-03 J2-16	BB(A); RXD+ BB(B); RXD-
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	→ →	J2-02 J2-14	BA(A); TXD+ BA(B); TXD-
J1-11 J1-10	CTS/RTS+ DSR/RTS-	Twisted pair	← ←	J2-05 J2-13	CB(A); CTS+ CB(B); CTS-
J1-03 J1-16	TXC/TXC+ TXC/TXC-	Twisted pair	← ←	J2-15 J2-12	DB(A); TXC+ DB(B); TXC-
J1-12 J1-25	DSR/DTR+ DSR/DTR-	Twisted pair	← ←	J2-06 J2-22	CC(A); DSR+ CC(B); DSR-
J1-08 J1-09	RTS/CTS RTS/CTS-	Twisted pair	→ →	J2-04 J2-19	CA(A); RTS+ CA(B); RTS-
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	← ←	J2-17 J2-09	DD(A); RXC+ DD(B); RXC-
J1-02 J1-15	TXCE/RXE+ TXCE/RXC-	Twisted pair	→ →	J2-24 J2-11	DB(A); TXCE+ DB(B); TXCE-
J1-07 J1-20	DTR/DSR+ DTR/DSR-	Twisted pair	→ →	J2-20 J2-23	CD(A); DTR+ CD(B); DTR-



Connector Rear View

Transition Part Number 530DCE-3

Transition Part Number 530DCE-3					
RS-530 DCE High Speed Serial Cable Pin-out (CAB-SS-530FC)					
26-Pin	Signal Name	Note	Direction	DB-25 Pin	Signal Name
Drain wire Shell	Shield		—	Shell/cover J2-01	Shield_GND
J1-21 J1-23 J1-26	MODE_2 MODE_0 GND	All Pins listed connect to J1-26 GND	—	J2-07	GND
J1-06 J1-19	DCD/DCD+ DCD/DCD-	Twisted pair	→ →	J2-08 j2-10	CF(A); DCD+ CF(B); DCD-
J1-13	LL/LL+		←	J2-18	LL
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	← ←	J2-02 J2-14	BA(A); TXD+ BA(B); TXD-
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	→ →	J2-03 J2-16	BB(A); RXD+ BB(B); RXD-
J1-11 J1-10	CTS/RTS+ CTS/RTS-	Twisted pair	← ←	J2-04 J2-19	CA(A); RTS+ CA(B); RTS-
J1-03 J1-16	TXC/TXC+ TXC/TXC-	Twisted pair	→ →	J2-15 J2-12	DB(A); TXC+ DB(B); TXC-
J1-12 J1-25	DSR/DTR+ DSR/DTR-	Twisted pair	← ←	J2-20 J2-23	CD(A); DTR+ CD(B); DTR-
J1-08 J1-09	RTS/CTS RTS/CTS-	Twisted pair	→ →	J2-05 J2-13	CB(A); CTS+ CB(B); CTS-
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	← ←	J2-24 J2-11	DB(A); TXCE+ DB(B); TXCE-
J1-02 J1-15	TXCE/RXE+ TXCE/RXC-	Twisted pair	→ →	J2-17 J2-09	DD(A); RXC+ DD(B); RXC-
J1-07 J1-20	DTR/DSR+ DTR/DSR-	Twisted pair	→ →	J2-06 J2-22	CC(A); DSR+ CC(B); DSR-



Connector Rear View

Transition Part Number HSHS-3

Transition Part Number HSHS-3						
Back-to-Back High Speed Serial Cable Pin-out						
Reports V.35 MT				Reports V.35 FC		
26-Pin	Signal Name	Note	Direction	26-Pin	Signal Name	
Drain wire Shell	Shield		—	Shell/cover Shield	Shield	
J1-22 J1-23 J1-24 J1-19 J1-26	MODE_1 MODE_0 MODE_DCE GND GND	All Pins listed connect to J1-26 and J2-26 GND	—	J2-22 J2-23 J2-19 J2-26	MODE_1 MODE_0 GND GND	
J1-06	DCD/DCD+		<—	J2-06	DCD/DCD+	
J1-13	LL/LL+		—>	J2-13	LL/LL+	
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	<— <—	J2-01 J2-14	TXD/RXD+ TXD/RXD-	
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	—> —>	J2-05 J2-18	RXD/TXD+ RXD/TXD-	
J1-11 J1-12	CTS/RTS+ DSR/DTR+	Twisted pair	<— <—	J2-08 J2-07	RTS/CTS DTR/DSR+	
J1-08 J1-07	RTS/CTS DTR/DSR+	Twisted pair	—> —>	J2-11 J2-12	CTS/RTS+ DSR/DTR+	
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	<— <—	J2-02 J2-15	TXCE/RXE+ TXCE/RXC-	
J1-02 J1-15	TXCE/RXE+ TXCE/RXC-	Twisted pair	—> —>	J2-04 J2-17	RXC/TXCE+ RXC/TXCE-	
J1-03 J1-16	TXC/TXC+ TXC/TXC-	Twisted pair	<— <—	J2-03 J2-16	TXC/TXC+ TXC/TXC-	

Transition Part Number HSCO-3

Transition Part Number HSCO-3					
60 Pin Cisco High Speed Serial Cable Pin-out					
Reports V.35 MT					
26-Pin	Signal Name	Note	Direction	60-Pin	Signal Name
Drain wire	Shield		—	Shell/cover	Shield
J1-22 J1-23 J1-24 J1-19 J1-26	MODE_1 MODE_0 MODE_DCE GND GND	All Pins listed connect to J1-26 GND	—	J2-51 J2-50 J2-49 J2-48 J2-45	GND
J1-06	DCD/DCD+		<—	J2-44	DCD
J1-13	LL/LL+		—>	J2-33	LL
J1-05 J1-18	RXD/TXD+ RXD/TXD-	Twisted pair	<— <—	J2-18 J2-17	RD+ RD-
J1-01 J1-14	TXD/RXD+ TXD/RXD-	Twisted pair	—> —>	J2-28 J2-27	SD+ SD-
J1-11	CTS/RTS+		<—	J2-42	CTS
J1-12	DSR/DTR+		<—	J2-43	DSR
J1-08	RTS/CTS		—>	J2-35	RTS
J1-07	DTR/DSR+		—>	J2-34	DTR
J1-04 J1-17	RXC/TXCE+ RXC/TXCE-	Twisted pair	<— <—	J2-22 J2-21	RXC+ RXC-
J1-02 J1-15	TXCE/RXE+ TXCE/RXC-	Twisted pair	—> —>	J2-26 J2-25	TXCE+ TXCE-
J1-03 J1-16	TXC/TXC+ TXC/TXC-	Twisted pair	<— <—	J2-20 J2-19	TXC+ TXC-

Record of Revisions

Rev.	Date	Notes
A	02/07/03	Added a caption to figure on p. 9. For CPSVT2611-100, changed "SC" to "ST" and "singlemode" to "multi-mode".
B	11/18/03	New format; Updated the "Installing Cable" section with new drawings. Removed the "<device name> in the Network" section on p. 2. Added text for UL certification. Added MTBF. Added the 1029's; added SPSVT2615-100, SPSVT2616-100, SPSVT 2617-100; removed SPSVT2612-100; added drawings of the five different serial connectors.
B	4/12/04	Corrected the standards in the "declaration of conformity".
C	1/10/05	Removed "UL listed" and "C-UL listed". Added remote management.
D	2/23/05	Revised the PDF file.
E	2/10/07	Fix the copper 26 pin drawing change pin 2, 14 to 1,14 Sent to ECN
F	7/21/07	Removed the words "media converter" thru out the manual
G	2/5/10	Update the Loop-back drawing and the text in the Declaration of Conformity.
H	1/18/12	Fixed pin numbering on the 26 pin connector
I	1/5/18	Fix typo: change "TCXE/RXE+" to "TXCE/RXE+" change format, and update storage temp spec.

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