



Industrial Port-Powered RS232 ⇔ RS422/RS485 Isolated Converter
(Part Number: CVT-485_422-3)



<http://www.CommFront.com>



■ **INTRODUCTION**

The CVT-485_422-3 is a compact, rugged, industrial-grade, optically-isolated, port-powered RS-232 to RS-485 / RS-232 to RS-422 converter, which can be used to convert any standard RS-232C port into a two-wire half-duplex RS-485 port, or a four-wire full-duplex RS485/RS422 port and vice versa. It supports multi-drop RS-485/RS-422 networks and can be used to communicate with one loop of up to 64 units of RS-485/RS-422 devices. This product features 2500V opto-isolation circuitry, which effectively protect your RS-232 devices from ground loops, noise problems, transient surges, remote lightning and spikes. The unit is efficiently powered from the RS-232 data line and it supports data direction auto-turnaround. Therefore, no external power, software drivers or flow control is required.

■ **FEATURES**

- Port-powered, no external power is required.
- 2500V optical isolation effectively protects your RS-232 devices from ground loops, noise problems, transient surges, remote lightning and spikes.
- Industrial grade enclosed in a rugged, rustless ABS housing.
- Supports 64 nodes of RS-422/RS-485 devices.
- Operates reliably from 1.2K to 38.4K baud.
- Plug and play (hot-pluggable, data format auto-sensing and self-adjusting).
- Data direction auto-turnaround, no software drivers or flow control is required.
- Operating temperature: -40°F to 185°F (-40°C to 85°C).
- Built-in 600W surge protection, 15kV static protection and circuit protection.
- Built-in selectable 120Ω terminator for system reliability and easy installation.
- Accepts external 5VDC regulated power if the port power is insufficient.
- Surface Mount Technology manufactured to RoHS and ISO-9001 standards.
- Safety: Strictly certified by TUV (Cert No. SG-CE-090012).
- 5-year manufacturer's warranty.

■ **SPECIFICATIONS**

Compatibility:	EIA/TIA RS-232C standard and RS-485/RS-422 standard
Power Source:	Port power from RS-232 data line
Current Consumption:	Less than 10mA
Optical Isolation:	2500Vrms (AC, 1 min)
Baud Rates:	1,200 to 38,400bps (auto-sensing and self-adjusting)
Distance:	RS-232 side: 16ft (5m); RS-485/RS-422 side: Depending on power from RS-232 port, will transmit up to 4000ft (1.2km) at 19,200bps
Connector:	RS-232 side: DB-9 Female; RS-485/RS-422 side: DB-9 Male; Termination Board: DB-9 Female and a 6-Way Terminal Block
Max. Number of Drops:	64
End-of-Line Terminator:	120Ω (built-in, selectable)
Surge Protection:	600W
Static Protection (ESD):	Up to 15KV
Dimensions (H x W x D):	0.63 x 1.3 x 3.5 in (16 x 32 x 90 mm) (with termination board)
Weight:	1.4 oz (40 g) (with termination board)
Operating Temperature:	-40°F to 185°F (-40°C to 85°C)
Operating Humidity:	Up to 90% RH (no condensation)

PIN ASSIGNMENT

RS-232 Side (DB-9 Female Connector):

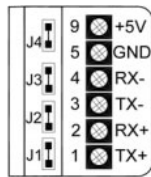
Pin:	1	4	6	7	8	2	3	5	
Signal:	DCD	DSR	DTR	CTS	RTS	TX	RX	GND	
Function:	tied together			tied together			TX	RX	GND

Note: Handshake lines are tied together to satisfy acknowledgement requirements.

RS-485/RS-422 Side (DB-9 Male Connector / Termination Board):

DB-9 Pin:	1	2	3	4	5	6	7	8	4
Jumper:	J2 (default: ON)		J3 (default: ON)			J1 (default: ON)		J4 (default: OFF)	
RS-485:	A+ (J2 ON)		B- (J3 ON)		GND	(J1 ON)		Terminate/remove Jumper J4	
RS-422:	(J2 OFF)		(J3 OFF)		GND	(J1 OFF)		to turn ON/OFF the 120Ω end-of-line terminator	
	TX+	RX+	TX-	RX-					

ALL-IN-ONE Rugged Terminal Block:



- The numbers on the left indicate the pin assignment of DB-9 male connector (RS-485/RS-422 side).
- The unit will function correctly only when the voltage on +5V pin is around +5VDC (when RS232 port is connected). Otherwise, please check the connection. External 5VDC regulated power supply is accepted.
- The unit comes with a built-in selectable 120Ω end-of-line terminator; connect it when the data rate is over 19.2kbps or the RS485/RS422's distance exceeds 660ft (200m).

CONNECTIONS

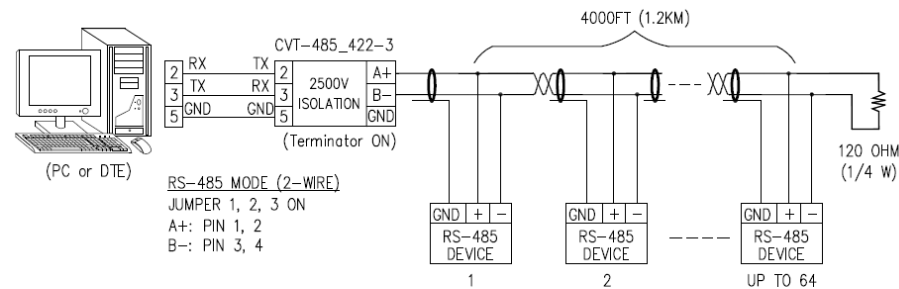


FIGURE 1: MASTER-SLAVE MULTI-DROP CONNECTIONS (RS-485)

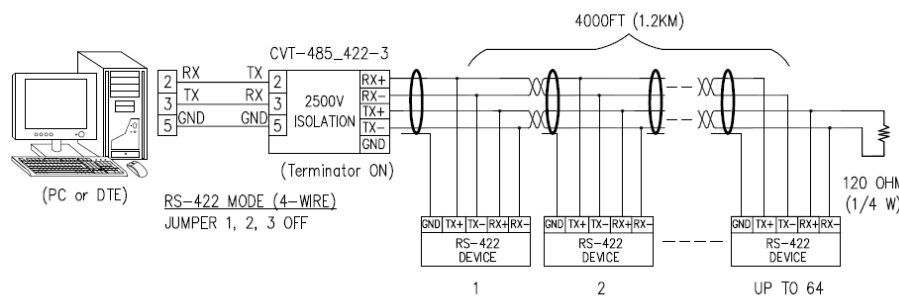
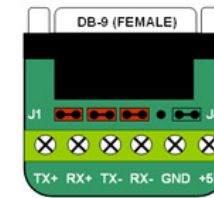
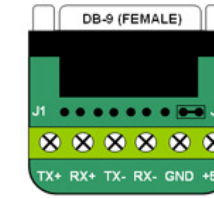


FIGURE 2: MASTER-SLAVE MULTI-DROP CONNECTIONS (RS-422)

RS-485 / RS-422 MODE SETTING

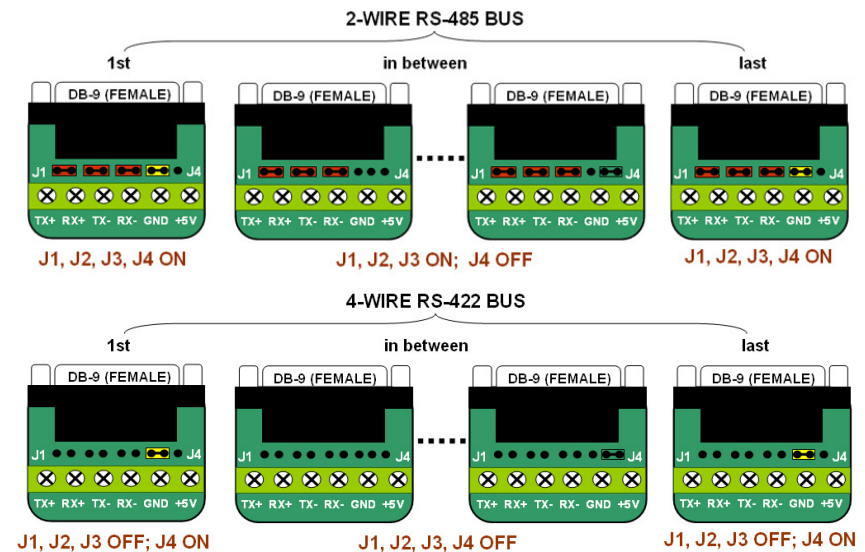


2-WIRE RS-485: J1, J2, J3 ON



4-WIRE RS-422: J1, J2, J3 OFF

120-OHM END-OF-LINE TERMINATION



Turn on the 120Ω end-of-line terminator on both ends of the RS-485/RS-422 bus when the data rate is over 19.2kbps or the RS-485/RS-422's distance exceeds 660ft (200m).

TROUBLESHOOTING

- Measure pin +5V and GND with a voltmeter, and be sure that it is around +5VDC (when RS232 port is connected). Some COM ports, such as USB-RS232 ports, come with an insufficient port power that is less than +/-5VDC; connect a regulated 5VDC power supply to the +5V input in such a case.
- Perform a loopback test by using CommFront's 232Analyzer software: Remove Jumper 1 and terminate Jumper 2 and 3 (or remove Jumper 1, 2, and 3 then connect TX+ to RX+ and TX- to RX-), then send commands from the 232Analyzer software. You should receive an echo of the commands sent. By performing a simple loopback test like this, you can test both the transmitter and receiver of the converter. This is very helpful when you are in doubt about the performance of your converter.