



Industrial Port-Powered RS232 ⇔ RS485 Isolated Converter

(Part Number: CVT-485-3)



<http://www.CommFront.com>



■ INTRODUCTION

The CVT-485-3 is a compact, rugged, industrial-grade, optically-isolated, port-powered RS-232 to RS-485 converter, which can be used to convert any standard RS-232C port into a two-wire half-duplex RS-485 port and vice versa. It supports multi-drop RS-485 networks and can be used to communicate with one loop of up to 64 units of RS-485 devices. This product features 2500V opto-isolation circuitry, which effectively protect your RS-232 devices from ground loops, 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, it requires no external power, software drivers, or flow control.

■ 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.
- Operates reliably from 1.2K to 57.6K baud.
- Supports 64 nodes of RS-485 devices.
- Industrial grade enclosed in a rugged, rustless ABS housing.
- 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.

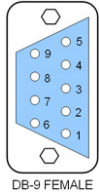
■ SPECIFICATIONS

Compatibility:	EIA/TIA RS-232C standard and RS-485 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 57,600bps (auto-sensing and self-adjusting)
Distance:	RS-232 side: 16ft (5m); RS-485 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 side: DB-9 Male; Termination Board: DB-9 Female and a 4-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):	0.6 x 1.3 x 3.5 in (16 x 32 x 88 mm) (with termination board)
Weight:	1.36 oz (39 g) (with termination board)
Operating Temperature:	-40°F to 185°F (-40°C to 85°C)

■ PIN ASSIGNMENT

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

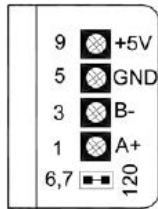
Pin:	1	4	6	7	8	2	3	5
Signal:	DCD	DSR	DTR	CTS	RTS	TX	RX	GND
Function:	tied together			tied together		TX	RX	GND



Note: Some software requires handshake line acknowledgements. To satisfy the requirements, the CVT-485-3's handshake lines (RS232 side) are tied together (DCD, DSR, and DTR tied together, CTS and RTS tied together). Therefore, you don't have to modify your existing software.

RS-485 Side (DB-9 Male Connector / Terminal Block):

DB-9 Pin:	1	3	5	9	6,7
Terminal Block:	A+	B-	GND	+5V	Jumper (120)
Function:	RS485+	RS485-	GND	Optional +5V DC input	Terminate/remove Jumper 120 to turn ON/OFF the 120Ω end-of-line terminator



- The numbers on the left indicate the pin assignment of DB-9 male connector (RS-485 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 RS-485's distance exceeds 660ft (200m).

■ CONNECTIONS

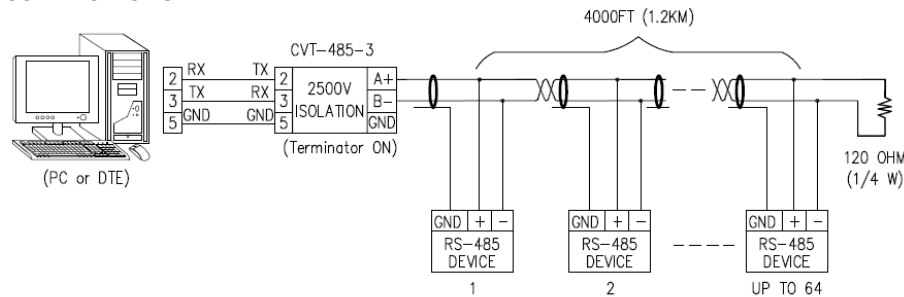


FIGURE 1: MASTER-SLAVE MULTI-DROP CONNECTIONS

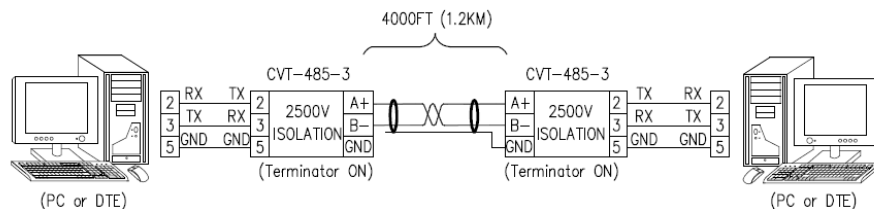
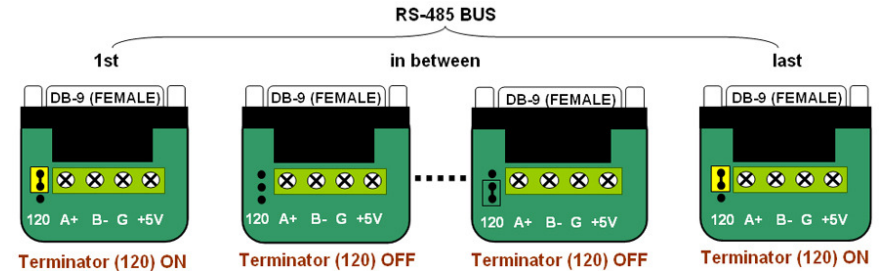


FIGURE 2: EXTENDING HALF-DUPLEX RS-232 DISTANCE WITH OPTO-ISOLATION (DATA ONLY)

■ 120-OHM END-OF-LINE TERMINATION



Turn on the 120Ω end-of-line terminator on both ends of the RS-485 bus when the data rate is over 19.2kbps or the RS-485'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: Connect two numbers of CVT-485-3 to your PC's COM ports and run two instances of the 232Analyzer software, then send commands from one COM port, you should receive an echo of the commands sent on the other COM port. 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.