

TCC-80I

Isolated Port Powered RS-232 to RS-422/485 Converter



Features

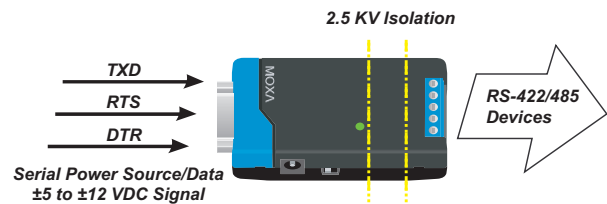
- > External power source supported but not required
- > High-speed transmission up to 115.2 Kbps
- > 2.5 KV isolation
- > Compact size
- > Converts both 2 and 4 wire RS-422/485
- > RS-485 automatic data direction control
- > 15 KV ESD surge protection
- > Built-in 120 Ω termination resistors
- > Patented LED port power indicator



Introduction

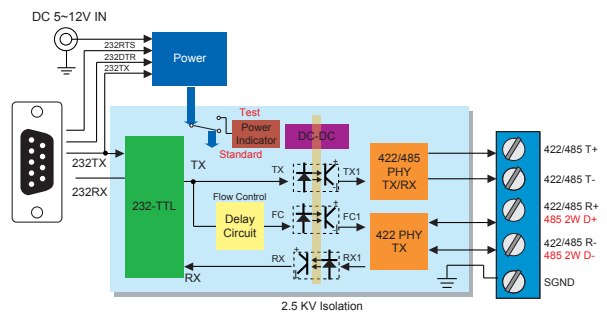
The TCC-80I is the world's first high-speed, port powered converter with 2.5 KV isolation. It draws power from the attached RS-232 device, and provides complete RS-232 to RS-422/485 interface conversion and electrical isolation protection. The TCC-80I converts between the RS-232 TxD and RxD lines and half duplex 2-wire RS-485, or full duplex 4-wire RS-422/485. Built-in 15 KV ESD surge protection provides comprehensive protection against current overload. The TCC-80I also supports RS-485 automatic data direction control, in which the RS-485 driver is enabled by circuitry when the RS-232 TxD output is sensed.

This means that no programming effort is required to control the direction of the RS-485 signal.



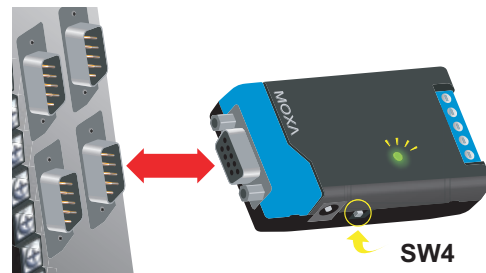
It Port Power and Optical Isolation

The RS-232 port of the TCC-80I is Built-in female DB9 socket that can connect directly to the host PC, with power drawn from the combination of TxD, RTS, and DTR lines. Electrical 2.5 KV isolation is achieved by using a photo coupler to transform an electrical signal into light, and then retransform the light back into an electrical signal on the other side. In this way, two electrical circuits are completely isolated from each other. This also protects the devices from ground loop currents, reduces damage caused by data loss, and prevents damage to the communication interfaces.



Patented LED Port Power Indicator

To verify that the serial device will provide enough power to the media converter, it's easy enough to test the device with a multimeter. However, it's even easier to let the TCC-80I test the device for you. Simply connect the TCC-80I to the device's RS-232 port and set the SW4 switch to Test mode. If the patented port power LED indicator lights up, the TCC-80I is receiving enough power. If the LED does NOT light up, you will need to attach an external power source to the TCC-80I.



RS-422/485 Transmission

Termination is considered a critical factor for port-powered devices such as the TCC-801. In most circumstances, terminal resistors are used when the RS-422/485 cable is longer than 100 m. The table to the right indicates the transmission distance of the TCC-801 when using port power.

Port Powered Transmission Distance

Baudrate (bps)	RS-422/485 Transmit Distance (m)	Embedded Terminator	Ext. Power Required
9600	1200	(ON) 120 W	NO
19200	1200	(ON) 120 W	NO
38400	600	(ON) 120 W	NO
57600	300	(ON) 120 W	NO
115200	150	(ON) 120 W	NO

Ordering Information

TCC-801: Port powered RS-232 to RS-422/485 converter w/ 15 KV ESD protection and 2.5 KV isolation

Optional Accessories

- **Power Adapter:** See Serial Device Networking catalog page 5-6 for more detailed information
- **CBL-USBAP-50:** USB power cord (50 cm)
- **CBL-F9M9-20:** DB9 (male) to DB9 (female) RS-232 cable (20 cm)

Dimensions (unit = mm)

DB9 (Female) RS-232 Port

PIN	RS-232
1	DCD
2	TxD
3	RxD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS

DIP Switch Settings

DIP Switch Settings			
RS-422 with Terminator	SW1 OFF	SW2 OFF	SW3 ON
RS-422	SW1 OFF	SW2 OFF	SW3 OFF
4-wire RS-485 with Terminator	SW1 ON	SW2 OFF	SW3 ON
4-wire RS-485	SW1 ON	SW2 OFF	SW3 OFF
2-wire RS-485 with Terminator	SW1 ON	SW2 ON	SW3 ON
2-wire RS-485	SW1 ON	SW2 ON	SW3 OFF

Specifications

Communication

Baudrate: 300 bps to 115.2 Kbps

RS-232:

Connector: DB9 (female)

Signals: TxD, RxD, and GND

Loop Back: RTS to CTS, DTR to DSR and DCD

RS-422/485:

Connector: Terminal block

Signals: TxD+, TxD-, RxD+ (Data+), RxD- (Data-), GND

Mode: 4-wire RS-422, 4-wire RS-485, 2-wire RS-485 (set by DIP switch)

RS-485 Data Direction Control: Auto

Pull High/Low: 1K/1K Ω

Optical Isolation: 2.5 KV RMS for 1 minute

Surge Protection: 15 KV ESD

Environment

Operating Temperature: 0 to 60°C (32 to 140°F)

Storage Temperature: -20 to 75°C (-4 to 167°F)

Humidity: 5 to 95% RH

Power

Input Power Source:

RS-232 port (TxD, RTS, DTR); power input jack

Input Power Voltage: 5 to 12 VDC

Power Consumption: 20 mA @ 5 VDC (termination disabled)

Mechanical

Dimensions (W x D x H): 42 x 80 x 22 mm

Case: ABS + PC

Weight: 50 ± 5 g

Regulatory Approvals

CE Class B

FCC Class B