

TCF-90

Long Range Serial Port Powered RS-232 to Fiber Optic Converter



Features

- Self-powered or selectable external power source
- Extends RS-232 transmission distance:
 - Up to 40 km with Single-mode: TCF-90-S
 - Up to 5 km with Multi-mode: TCF-90-M
- Decreases signal interference
- Protects against electronic degradation/chemical corrosion
- Serial ESD surge protection, 15 KV ESD
- Supports baudrates up to 115.2 Kbps
- Compact size



Introduction

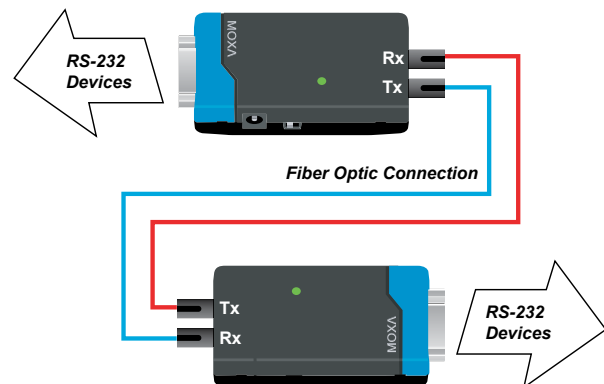
The TCF-90 is a compact, high-speed RS-232 to fiber optic converter that extends RS-232 transmission from 15 meters to 5 km (TCF-90-M, multi-mode) or 40 km (TCF-90-S, single-mode), without using external power. The TCF-90 is designed to get power from the attached serial port. A pair of TCF-90 converters can be used to connect two RS-232

serial devices to each other in full duplex transmission mode using optical fiber. Moreover, the TCF-90 isolates the devices from dangerous increases in ground potential, ground loops, and electrical EMI/RFI noise. This greatly reduces RF radiation and susceptibility to electromagnetic radiation, and enhances data security.

Self-powered RS-232 to Optical Fiber

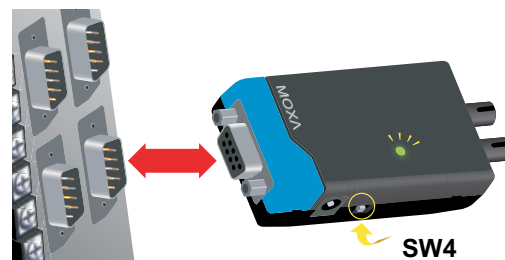
Connecting RS-232 devices to the TCF-90 is easy. The ST-type optical fiber connector is designed especially for data communication applications that transmit data between or within buildings. The TCF-90 can be used for industrial applications and for applications that require secure data transfer.

The RS-232 port of the TCF-90 is designed with a female DB9 socket to connect directly to the host PC, with power drawn from the Tx/D, RTS, and DTR lines. Although the TCF-90 is able to obtain enough power from the combination of the three data/handshake lines, regardless of whether the signal is high or low, we highly recommended setting either the RTS or DTR signal to ON.



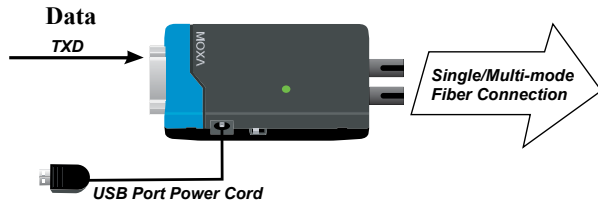
Patented LED Port Power Indicator

Although it is easy enough to use a multimeter to determine whether or not the attached serial port is able to provide enough electricity, a better method is to use the built-in "LED Port Power Indicator" designed especially for the TCF-90. To do this, connect the TCF-90 to the target RS-232 port, and then turn the SW4 switch to the right to Test mode. If the LED lights up, the TCF-90 is receiving enough power. If the LED does NOT light up, you will need to attach the external power cord to the TCF-90.

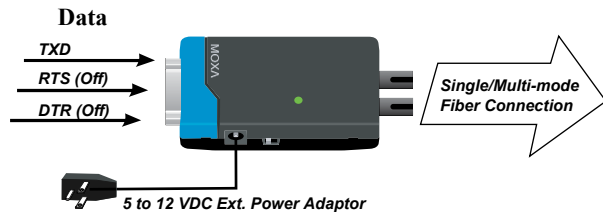


Optional External Power Source

In most circumstances, the TCF-90 should be able to operate without using an external power source. However, an external USB power cord or DC power supply should be used with



applications for which the handshake lines are not available, both the RTS/DTR signals are set to OFF, or the interface chip of the attached serial port provides less power than required.



Ordering Information

TCF-90-M: Serial Port Powered RS-232 to Multi-mode ST Fiber Optic Converter, up to 5 km

TCF-90-S: Serial Port Powered RS-232 to Single-mode ST Fiber Optic Converter, up to 40 km

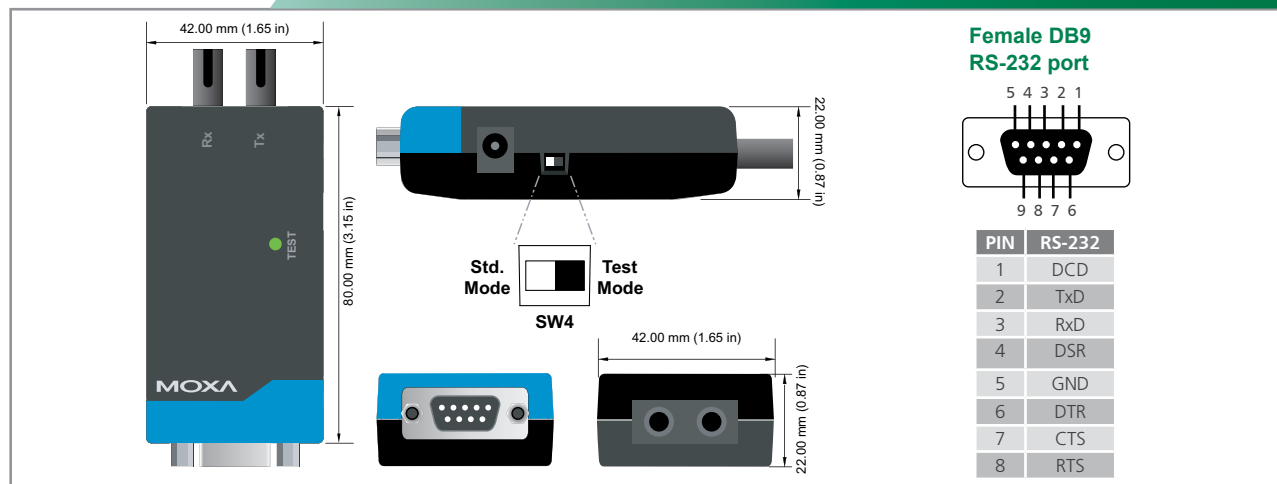
* SC/FC connector, and 60 km models (Single-mode) are available by request.

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:** M9-F9 RS-232 Cable (20 cm)

Dimensions



Specifications

Serial Communications

RS-232 Signals: Tx, Rx, and GND

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

Baudrate: Up to 115.2 Kbps

Surge Protection: 15 KV ESD

Fiber Communication

Connector Type: ST

Distance: TCF-90-S: Single-mode fiber for 40 km
TCF-90-M: Multi-mode fiber for 5 km

Support Cable:

TCF-90-S: 8.3/125, 8.7/125, 9/125 or 10/125 μ m

TCF-90-M: 50/125, 62.5/125, or 100/140 μ m

Wavelength: TCF-90-S: 1310 nm, TCF-90-M: 850 nm

TX Output: > -5 dBm

Rx Sensitivity: TCF-90-S: -24 dBm, TCF-90-M: -20 dBm

Environmental

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:

Serial RS-232 Port: TxD, RTS, DTR; Ext 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 $\pm$ 5 g

Regulatory Approvals CE Class B, FCC Class B

Warranty: 2 years