

TCF-142 Series

RS-232/422/485 to optical fiber media converters



- > “Ring” and “Point-to-Point” transmission
- > Extends RS-232/422/485 transmission up to:
 - 40 km with single-mode—TCF-142-S
 - 5 km with multi-mode—TCF-142-M
- > Compact size
- > Decreases signal interference
- > Protects against electrical interference and chemical corrosion
- > Supports baudrates of 50 bps to 921.6 Kbps
- > Wide temperature models available (-40 to 75°C)

The certification logos shown here apply to some or all of the products in this section. For details, see “Regulatory Approvals” under “Specifications” below.



Introduction

The TCF-142 media converters are equipped with a multiple interface circuit that can handle RS-232 or RS-422/485 serial interfaces and multi-mode or single-mode fiber. TCF-142 converters are used to extend serial transmission up to 5 km (TCF-142-M with multi-mode

fiber) or up to 40 km (TCF-142-S with single-mode fiber). The TCF-142 converters can be configured to convert either RS-232 signals, or RS-422/485 signals, but not both at the same time.

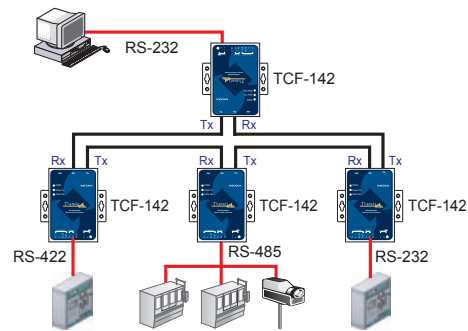
Automatic Baudrate Detection

The TCF-142 converters can automatically detect the serial baudrate. This is an extremely convenient feature. Even if a device's baudrate

is changed, the signal will still be transmitted through the media converter without any data loss.

Ring Operation

The TCF-142 converters can be used to connect serial devices to a fiber ring. To form the ring, connect the Tx port of one TCF-142 to the Rx port of a neighboring converter. Once the ring is set up, simply use the DIP switches to configure the TCF-142 converters for “ring mode.” When one node transmits a signal, the signal travels around the ring until it returns back to the transmitting unit, which then blocks the signal. With the TCF-142, you can set up fiber rings that have a total circumference of up to 100 km.



Automatic Data Direction Control (ADDCC®)

ADDCC® is a patented hardware data flow solution developed by Moxa to handle RS-485 data direction control. ADDCC® senses and controls

RS-485 data direction automatically, making it unnecessary to use the hand shaking signal.

Specifications

Optical Fiber Side

Fiber Connector: SC or ST

Cable Requirements:

Single-mode: 8.3/125, 8.7/125, 9/125, or 10/125 μm
 Multi-mode: 50/125, 62.5/125, or 100/140 μm

Transmission Distance:

Single-mode: 40 km
 Multi-mode: 5 km

Wavelength:

Single-mode: 1310 nm
 Multi-mode: 850 nm

Tx Output:

Single-mode: > -5 dBm
 Multi-mode: > -5 dBm

Rx Sensitivity:

Single-mode: -25 dBm
 Multi-mode: -20 dBm

Point-to-Point Transmission: Half-duplex or full-duplex

Ring Transmission: Half-duplex

RS-232/422/485 Side

Connector: Terminal Block

RS-232 Signals: Tx, Rx, GND

RS-422 Signals: TxD+, TxD-, RxD+, RxD-, GND

RS-485-4w Signals: TxD+, TxD-, RxD+, RxD-, GND

RS-485-2w Signals: Data+, Data-, GND

Baudrate: 50 bps to 921.6 Kbps

ESD Protection: 15 KV for all signals

Physical Characteristics

Housing: Aluminum (1 mm)

Dimensions:

Without ears: 67 x 100 x 22 mm (2.64 x 3.94 x 0.87 in)
 With ears: 90 x 100 x 22 mm (3.54 x 3.94 x 0.87 in)

Environmental Limits

Operating Temperature:

Standard Models: 0 to 60°C (32 to 140°F)
 Wide Temp. Models: -40 to 75°C (-40 to 167°F)

Operating Humidity: 5 to 95% RH

Storage Temperature: -20 to 70°C (-4 to 167°F)

Power Requirements

Input Voltage: 12 to 48 VDC

Power Consumption: 140 mA @ 12 V

Power Line Protection:

2 KV Burst (EFT), EN61000-4-4
 2 KV Surge, EN61000-4-5

Voltage Reversal Protection: Protects against V+/V- reversal

Over Current Protection: 1.1 A (protects against two signals shorted together)

Regulatory Approvals

FCC: Part 15 Subclass B

UL/CUL: UL60950-1

EMI: EN55022 1998, Class B

EMS:

EN61000-4-2 (ESD), Criteria A, Level 3
 EN61000-4-3 (RS), Criteria A, Level 2
 EN61000-4-4 (EFT), Criteria A, Level 2
 EN61000-4-5 (Surge), Criteria A, Level 3
 EN61000-4-6 (CS), Criteria A, Level 2
 EN61000-4-8 (SFMF), Criteria A, Level 1

TÜV: EN60950-1

Warranty

Warranty Period: 5 years

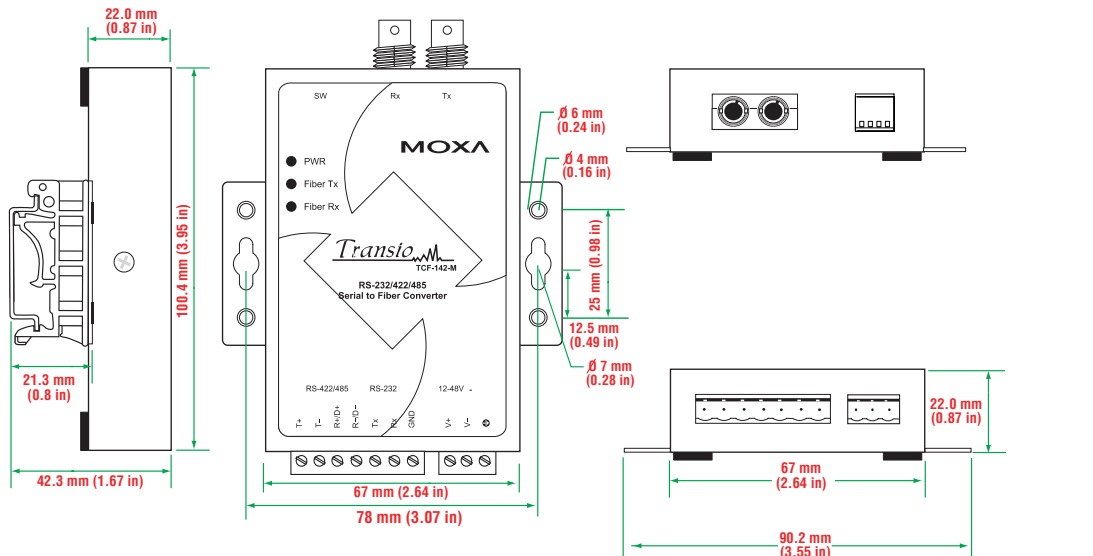
Details: See www.moxa.com/warranty

Dimensions

DIP Switch Settings

Serial Connection	SW1	SW2	Built-in 120-ohm Terminator	SW3	Fiber Mode	SW4
RS-232	ON	OFF	Enable	ON	Ring mode	ON
RS-422	OFF	OFF	Disable	OFF	Point-to-Point mode	OFF
RS-485-4w	OFF	OFF				
RS-485-2w	OFF	ON				

TCF-142-M/S-ST



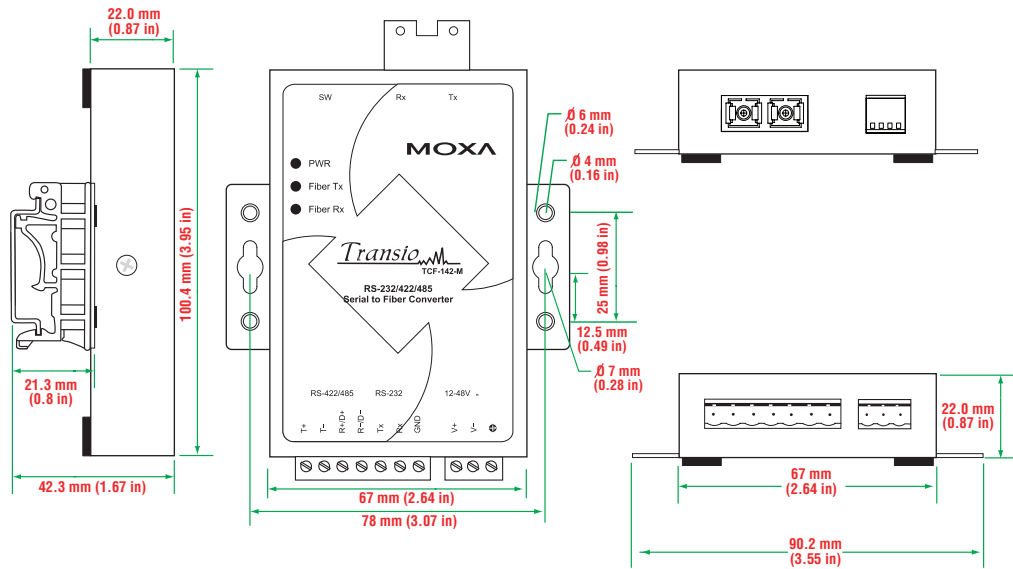
DIP Switch Settings

Serial Connection	SW1	SW2
RS-232	ON	OFF
RS-422	OFF	OFF
RS-485-4w	OFF	OFF
RS-485-2w	OFF	ON

Built-in 120-ohm Terminator	SW3
Enable	ON
Disable	OFF

Fiber Mode	SW4
Ring mode	ON
Point-to-Point mode	OFF

TCF-142-M/S-SC



Ordering Information

Available Models

TCF-142-M-SC: RS-232/422/485 to multi-mode optical fiber media converter with fiber ring support and SC connector, 0 to 60°C operating temperature

TCF-142-M-ST: RS-232/422/485 to multi-mode optical fiber media converter with fiber ring support and ST connector, 0 to 60°C operating temperature

TCF-142-S-SC: RS-232/422/485 to single-mode optical fiber media converter with fiber ring support and SC connector, 0 to 60°C operating temperature

TCF-142-S-ST: RS-232/422/485 to single-mode optical fiber media converter with fiber ring support and ST connector, 0 to 60°C operating temperature

TCF-142-M-SC-T: RS-232/422/485 to multi-mode optical fiber media converter with fiber ring support and SC connector, -40 to 75°C operating temperature

TCF-142-M-ST-T: RS-232/422/485 to multi-mode optical fiber media converter with fiber ring support and ST connector, -40 to 75°C operating temperature

TCF-142-S-SC-T: RS-232/422/485 to single-mode optical fiber media converter with fiber ring support and SC connector, -40 to 75°C operating temperature

TCF-142-S-ST-T: RS-232/422/485 to single-mode optical fiber media converter with fiber ring support and ST connector, -40 to 75°C operating temperature

Package Checklist

- TCF-142 media converter
- Power jack to 3-pin terminal block adaptor
- Quick Installation Guide (printed)
- Warranty Card