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)

TCF-142-S-ST   **TCF-142-S-SC**

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.
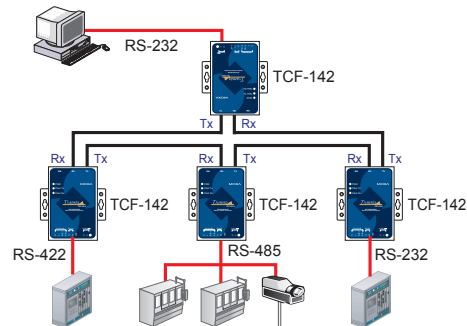
Automatic Data Direction Control (ADDC®)

ADDC® is a patented hardware data flow solution developed by Moxa to handle RS-485 data direction control. ADDC® senses and controls RS-485 data direction automatically, making it unnecessary to use the hand shaking signal.

MOXA®

> www.moxa.com > info@moxa.com

: 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: -40 to 75°C (-40 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

Warranty
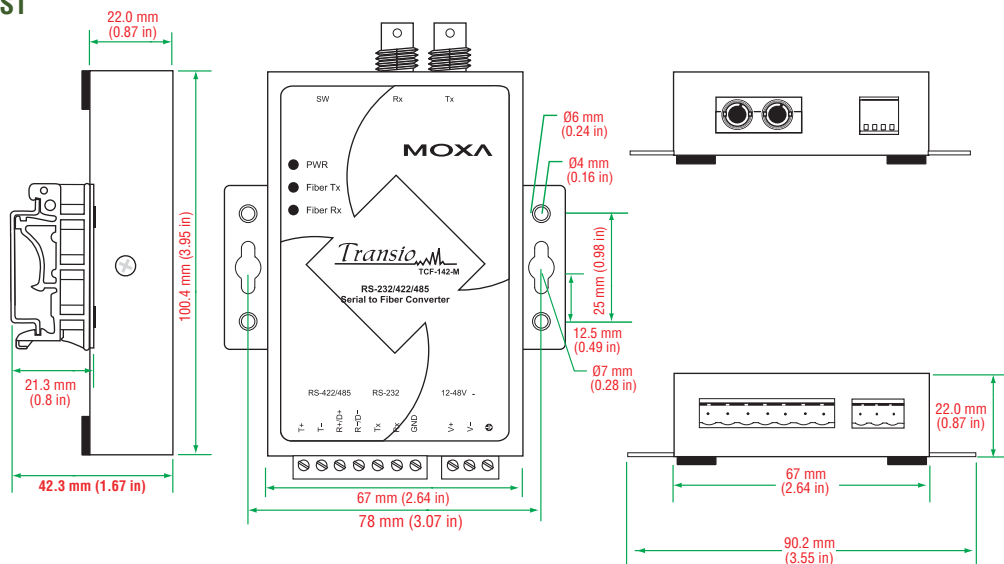**Warranty Period:** 5 years
Details: See www.moxa.com/warranty

Dimensions

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-ST

Dimensions

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
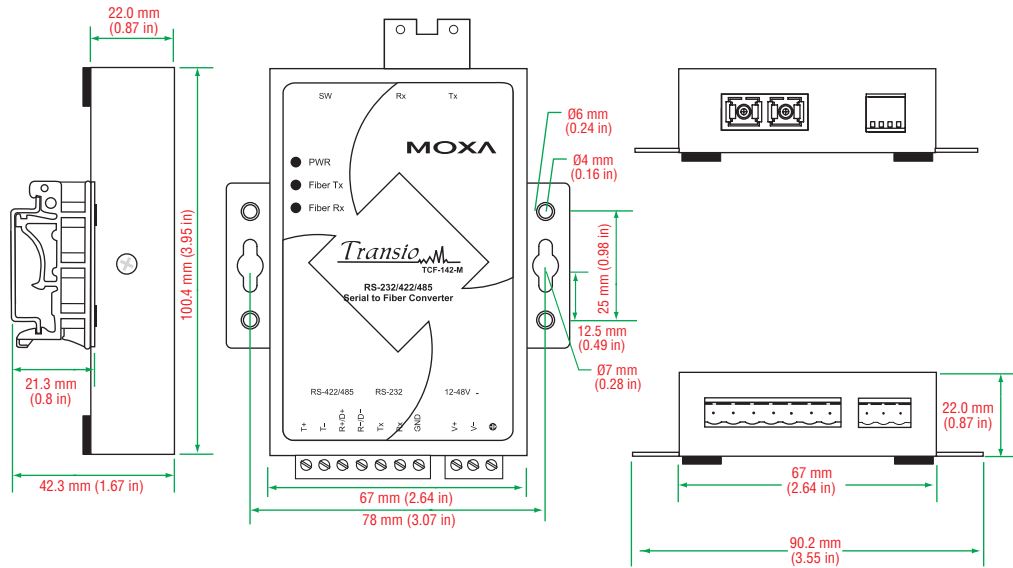
Ordering Information

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