

# TCF-142 Series

## RS-232/422/485 to Fiber Converter

### Features

- “Ring” or “Point to Point” transmission
- Extends RS-232/422/485 transmission distance:
  - \* Up to 20 km with Single mode—TCF-142-S
  - \* Up to 2 km with Multi mode—TCF-142-M
- Converts RS-232/422/485 signal:
  - \* To ST Single-mode fiber with TCF-142-S
  - \* To ST Multi-mode fiber with TCF-142-M
- Compact size
- Decreases signal interference
- Protects against electronic degradation/chemical corrosion
- Supports baud rate up to 921.6 Kbps
- Extended operating temperature from -40 to 75°C



### Introduction

The TCF-142 Series converter is 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 distance

up to 2 km (TCF-142-M multi-mode fiber) or up to 20 km (TCF-142-S single-mode fiber). Note that the RS-232 and RS-422/485 interfaces cannot be used on the same TCF-142 at the same time to convert to fiber.

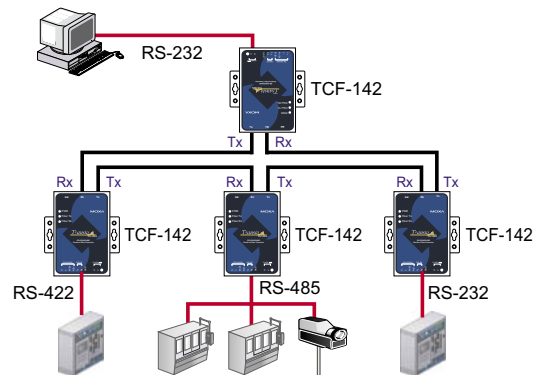
### Auto Baud Rate Detection

TCF-142 Series incorporates a method for automatically detecting the serial signal baud rate by hardware. This is an extremely convenient feature for the user. Even if a device's

baud rate is changed, the signal will still be transmitted through the RS-232 or RS-422/485 to fiber converter without any problem.

### Ring Operation

To allow one serial device to communicate with multiple devices connected to a fiber ring, you should configure TCF-142 for “ring mode” by setting DIP switch “SW4” to the “On” position. The Tx port of a particular TCF-142 unit connects to the neighboring converter's Rx port to form the ring. Note that 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. Users should ensure that the total fiber ring length is less than 100 km.



### Automatic Data Direction Control (ADDC™)

ADDC™ is a MOXA leading technology that uses a clever hardware solution to take care of the RS-485 data direction control problem. The TCF-142 Series converter uses embedded ADDC™

technology, a hardware data flow solution, to automatically sense and control data direction, making the hand shaking signal method unnecessary.

## Ordering Information

**TCF-142-M:** RS-232/422/485 to Multi-mode Fiber Optical Converter, fiber ring

**TCF-142-S:** RS-232/422/485 to Single-mode Fiber Optical Converter, fiber ring

**TCF-142-M-T:** RS-232/422/485 to Multi-mode Fiber Optical Converter, fiber ring, -40 to 75°C

**TCF-142-S-T:** RS-232/422/485 to Single-mode Fiber Optical Converter, fiber ring, -40 to 75°C

**All items include:** TCF-142 Series Converter, Manual

### Optional Accessories:

DK35A: DIN-Rail Mounting Kit (35 mm)

Serial Connection	SW1	SW2	Built-in 120 $\Omega$ Terminator	SW3
RS-232	ON	OFF	Enable	ON
RS-422	OFF	OFF	Disable	OFF
RS-485 4 wire	OFF	OFF		
RS-485 2 wire	OFF	ON		

Fiber mode	SW4
Ring mode	ON
Point to Point mode	OFF

## Specifications

### Serial Communications

**RS-232 Signals:** Tx, Rx, GND

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

**4-wire RS-485 Signals:** TxD+, TxD-, RxD+, RxD-, GND

**2-wire RS-485 Signals:** Data+, Data-, GND

**Baud Rate:** 300 bps to 921.6 Kbps

**Surge Protection:** 15 KV ESD

### Fiber Communication

**Connector Type:** ST

**Distance:**

TCF-142-S: Single mode fiber for 20 km

TCF-142-M: Multi mode fiber for 2 km

**Support Cable:**

TCF-142-S: 8.3/125, 8.7/125, 9/125 or 10/125  $\mu$ m

TCF-142-M: 50/125, 62.5/125, or 100/140  $\mu$ m

**Wavelength:**

TCF-142-S: 1310 nm

TCF-142-M: 820 nm

**Min. TX Output:**

TCF-142-S: -9 dBm

TCF-142-M: -16 dBm

**Max. TX Output:**

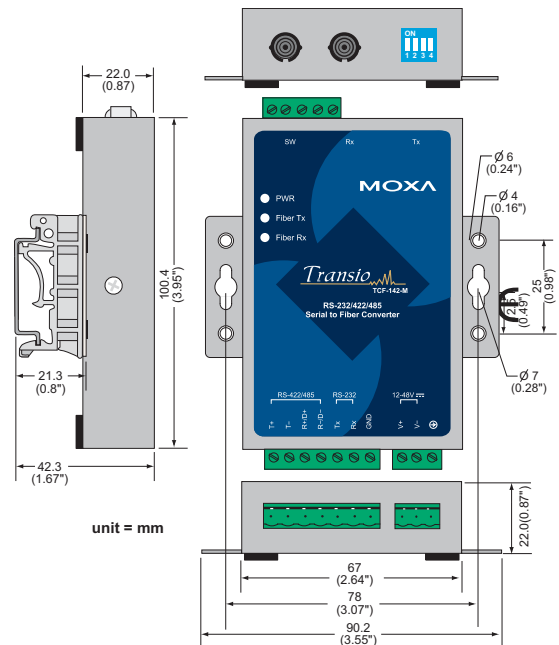
TCF-142-S: -6 dBm

TCF-142-M: -7 dBm

**Point-to-Point Transmission:** half or full-duplex

**Ring Transmission:** half duplex, fiber ring

## Dimensions



### Environmental

#### Operating Temperature:

0 to 60°C (32 to 142°F)

-40 to 75°C (-40 to 167°F), for -T models

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Humidity:** 5 to 95% RH

### Power

**Input Power Voltage:** 12 to 48 VDC

**Power Consumption:** TCF-142-S: 145 mA@12V

TCF-142-M: 70 mA@12V

#### Reverse Power Protection:

Protects against V+ and V- reverse protection

#### Over Current Protection:

Protects against 2 signals shorted together: 1.1A

### Mechanical

**Dimensions (W x D x H):** 67 x 100 x 22 mm

90 x 100 x 22 mm (including ears)

**Material:** Aluminum (1 mm)

### Regulatory Approvals

**UL/CUL:** UL60950-1

**TÜV:** EN60950-1

**FCC:** Part 15 sub Class B

**EMI:** EN55022 1998, Class B

**EMS:** EN61000-4-2 (ESD), Criteria A, Level 2

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

EN61000-4-11(DIPS), Criteria A, Level 2