TCF-142 Series

RS-232/422/485 to Fiber Converters

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 baudrate up to 921.6 Kbps**

> **Extended operating temperature from -40 to 75°C**

RoHS | Fiber Ring | Ext. Power | 15 KV ESD | CE | FC | c UL us LISTED | TÜV Rheinland Product Safety | BAUART GEPRÜFT TYPE APPROVED

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 a single TCF-142 at the same time to convert to fiber.

Auto Baudrate Detection

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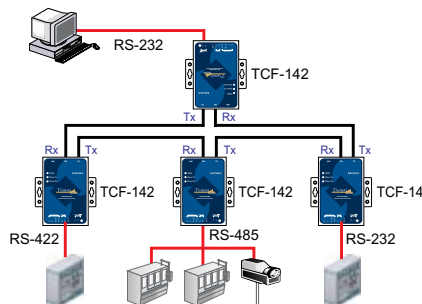
Ordering Information

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 and User's Manual

Optional Accessories

DK35A: DIN-Rail Mounting Kit (35 mm)

Automatic Data Direction Control (ADDC™)

ADDC™ is a leading MOXA 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 sense and control data direction automatically, making the hand shaking signal method unnecessary.

Dimensions

DIP Switch Setting

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

Built-in 120 Terminator	SW3
Enable	ON
Disable	OFF

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
Baudrate: 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 µm
TCF-142-M: 50/125, 62.5/125, or 100/140 µm
Wavelength:
TCF-142-S: 1310 nm
TCF-142-M: 820 nm
TX Output:
TCF-142-S: -9 dBm to -6 dBm
TCF-142-M: -16 dBm to -7 dBm
Rx Sensitivity:
TCF-142-S: -25.4 dBm to -9.2 dBm
TCF-142-M: -34 dBm to -30 dBm
Point-to-Point Transmission: half or full-duplex
Ring Transmission: half duplex, fiber ring

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, Level2
Warranty: 5 years