

# TCF-142 Series

## RS-232/422/485 to fiber converters



### Features and Benefits

- Ring and point-to-point transmission
- Extends RS-232/422/485 transmission up to 40 km with single-mode (TCF-142-S) or 5 km with multi-mode (TCF-142-M)
- Decreases signal interference
- Protects against electrical interference and chemical corrosion
- Supports baudrates up to 921.6 kbps
- Wide-temperature models available for -40 to 75°C environments

### Certifications



## Introduction

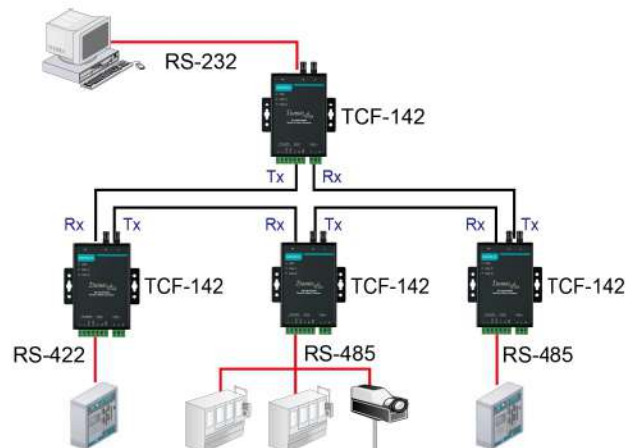
The TCF-142 media converters are equipped with a multiple interface circuit that can handle RS-232 or RS-422/485 serial interfaces and multi-mode or single-mode fiber. TCF-142 converters are used to extend serial transmission up to 5 km (TCF-142-M with multi-mode fiber) or up to 40 km (TCF-142-S with 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, which 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

Automatic Data Direction Control (ADDC) is a 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 handshaking signal.

## Specifications

### Serial Interface

No. of Ports	2
Serial Standards	RS-232 RS-422 RS-485

Baudrate	50 bps to 921.6 kbps (supports non-standard baudrates)			
Flow Control	ADDC (automatic data direction control) for RS-485			
Optical Fiber	Low-Speed Fiber Module		Multi-Mode	Single-Mode
	Fiber Cable Requirements		50/125 μm, 800 MHz	G.652
			62.5/125 μm, 500 MHz	
	Typical Distance		5 km	40 km
	Wavelength	Typical (nm)	850	1310
		TX Range (nm)	840 to 860	1290 to 1330
		RX Range (nm)	800 to 900	1100 to 1650
	Optical Power	TX Range (dBm)	0 to -5	0 to -5
		RX Range (dBm)	0 to -20	0 to -25
		Link Budget (dB)	15	20
Dispersion Penalty (dB)		1	1	
Note: When using a power meter to measure the fiber TX power, set the baudrate to 9,600 bps and send data (00, ..., 0h) to the serial converter’s serial port.				
Pull High/Low Resistor for RS-485	1 kilo-ohm, 150 kilo-ohms			
RS-485 Data Direction Control	ADDC (automatic data direction control)			
Terminator for RS-485	N/A, 120 ohms, 120 kilo-ohms			
Connector	7-pin terminal block			
Latency	300 ns			
Serial Signals				
RS-232	TxD, RxD, GND			
RS-422	Tx+, Tx-, Rx+, Rx-, GND			
RS-485-4w	Tx+, Tx-, Rx+, Rx-, GND			
RS-485-2w	Data+, Data-, GND			
Power Parameters				
No. of Power Inputs	1			
Input Current	70 to 140 mA @ 12 to 48 VDC			
Input Voltage	12 to 48 VDC			
Overload Current Protection	Supported			
Power Connector	Terminal block			
Power Consumption	70 to 140 mA @ 12 to 48 VDC			
Reverse Polarity Protection	Supported			
Physical Characteristics				
IP Rating	IP30			
Housing	Metal			

Dimensions (with ears)	90 x 100 x 22 mm (3.54 x 3.94 x 0.87 in)
Dimensions (without ears)	67 x 100 x 22 mm (2.64 x 3.94 x 0.87 in)
Weight	320 g (0.71 lb)
Installation	Wall mounting

#### 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)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

#### Standards and Certifications

EMC	EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 1 kV IEC 61000-4-5 Surge: Power: 1 kV IEC 61000-4-6 CS: 3 V IEC 61000-4-8 PFMF
Environmental Testing	IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-3
Safety	UL 60950-1
Vibration	IEC 60068-2-6

#### MTBF

Time	780,480 hrs
Standards	Telcordia (Bellcore), GB

#### Warranty

Warranty Period	5 years
Details	See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>

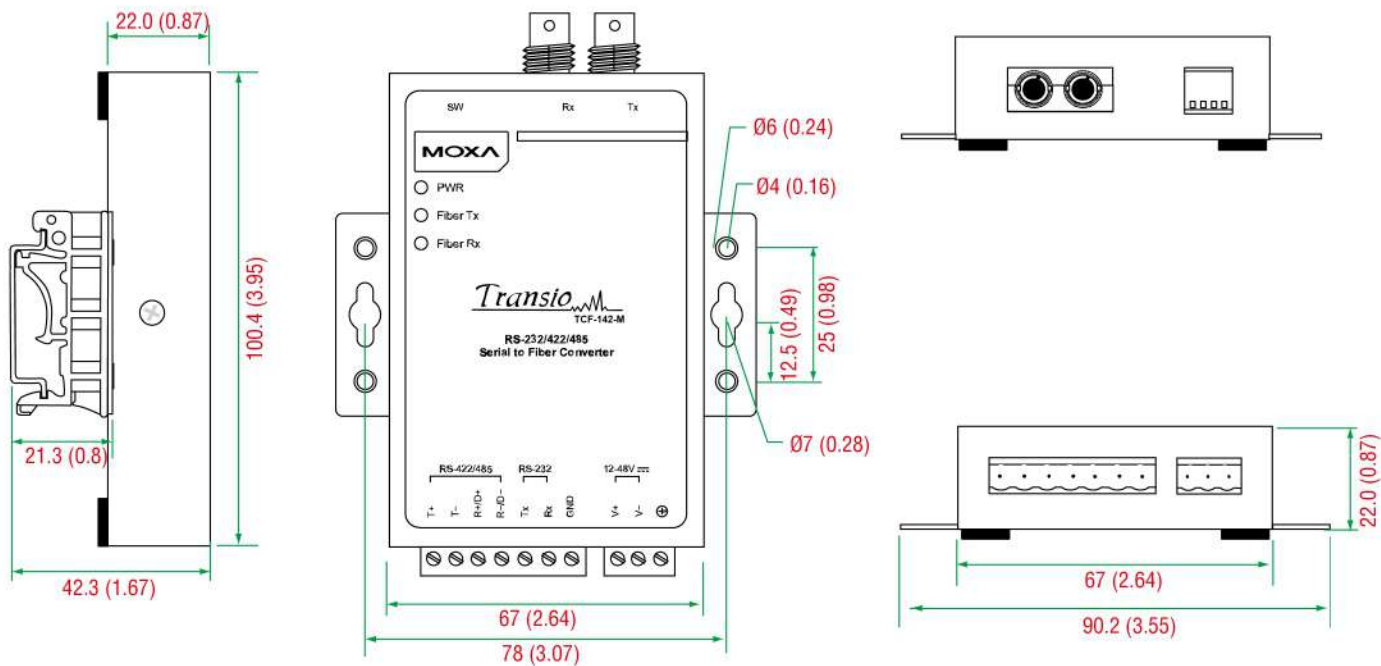
#### Package Contents

Device	1 x TCF-142 Series converter
Installation Kit	1 x rubber stand
Documentation	1 x quick installation guide 1 x warranty card

## Dimensions

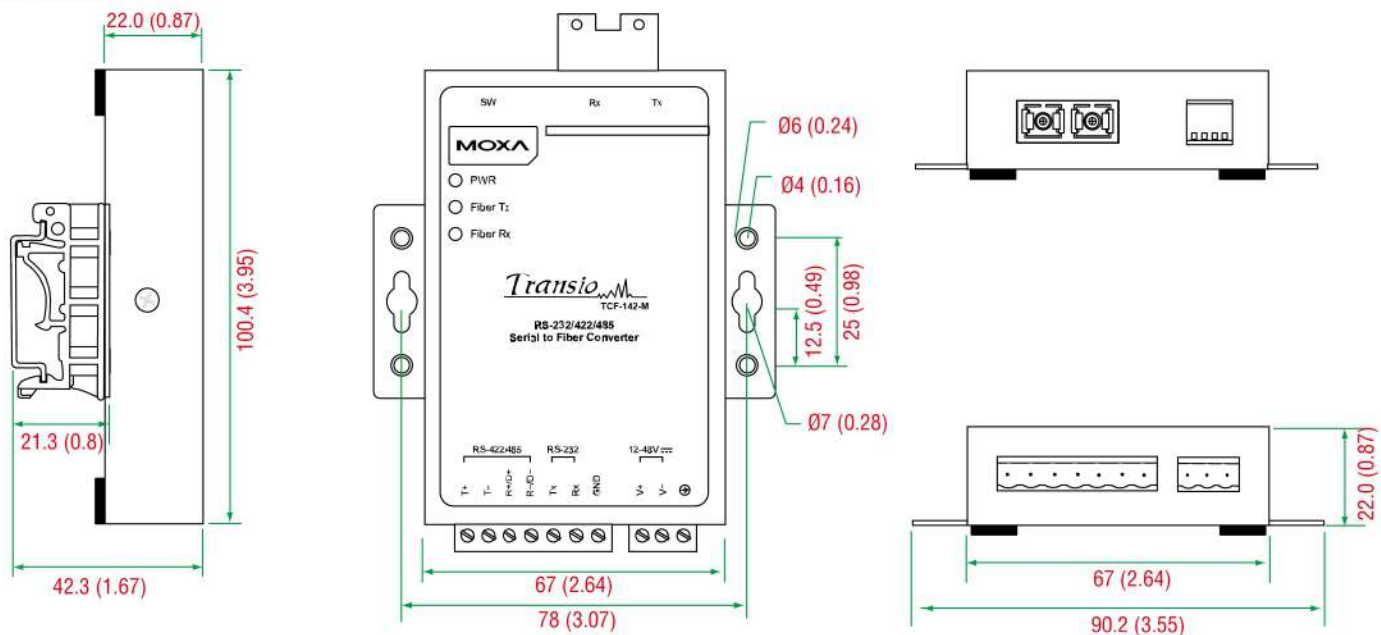
### TCF-142-M/S-ST

Unit: mm (inch)



### TCF-142-M/S-SC

Unit: mm (inch)



## Ordering Information

Model Name	Operating Temp.	Fiber Module Type
TCF-142-M-ST	0 to 60°C	Multi-mode ST
TCF-142-M-SC	0 to 60°C	Multi-mode SC
TCF-142-S-ST	0 to 60°C	Single-mode ST
TCF-142-S-SC	0 to 60°C	Single-mode SC



Model Name	Operating Temp.	Fiber Module Type
TCF-142-M-ST-T	-40 to 75°C	Multi-mode ST
TCF-142-M-SC-T	-40 to 75°C	Multi-mode SC
TCF-142-S-ST-T	-40 to 75°C	Single-mode ST
TCF-142-S-SC-T	-40 to 75°C	Single-mode SC

## Accessories (sold separately)

### DIN-Rail Mounting Kits

DK35A	DIN-rail mounting kit, 35 mm
-------	------------------------------

### Power Adapters

PWR-12125-USJP-S1	Non-locking barrel plug, 12 VDC, 1.25 A, 100 to 240 VAC, United States/Japan (US/JP) plug, 0 to 40°C operating temperature
PWR-12150-AU-S2	Non-locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, Australia (AU) plug, 0 to 40°C operating temperature
PWR-12150-EU-S2	Non-locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, Continental Europe (EU) Plug, 0 to 40°C operating temperature
PWR-12150-UK-S2	Non-locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, United Kingdom (UK) plug, 0 to 40°C operating temperature
PWR-12150-CN-S1	Non-locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, China (CN) plug, 0 to 40°C

### Power Cords

CBL-PJTB-10	Non-locking barrel plug to bare-wire cable
-------------	--

© Moxa Inc. All rights reserved. Updated Jan 04, 2023.

This document and any portion thereof may not be reproduced or used in any manner whatsoever without the express written permission of Moxa Inc. Product specifications subject to change without notice. Visit our website for the most up-to-date product information.