

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

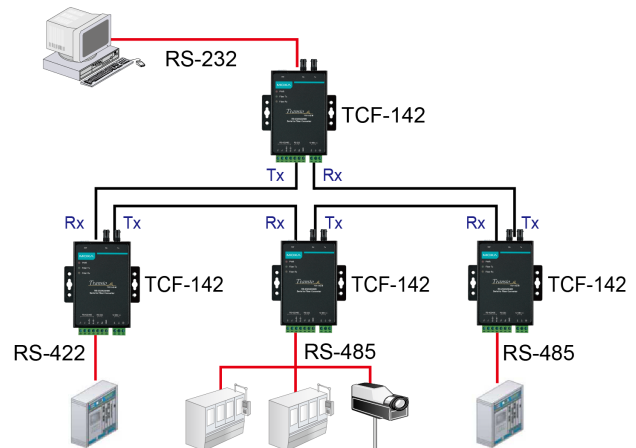
The TCF-142 media converters are equipped with a multiple interface circuit that can handle RS-232 or RS-422/485 serial interfaces and multi-mode or single-mode fiber. TCF-142 converters are used to extend serial transmission up to 5 km (TCF-142-M with multi-mode fiber) or up to 40 km (TCF-142-S with 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 (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 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	TCF-142-M-SC Series: 100BaseFX ports (multi-mode SC connector) TCF-142-M-ST Series: 100BaseFX ports (multi-mode ST connector) TCF-142-S-SC Series: 100BaseFX ports (single-mode SC connector) TCF-142-S-ST Series: 100BaseFX ports (single-mode ST connector)		
	Low-Speed Fiber Module	Multi-Mode	Single-Mode
	Fiber Cable Requirements	50/125 μ m, 800 MHz	G.652
		62.5/125 μ m, 500 MHz	
	Typical Distance		40 km
	Wavelength	Typical (nm)	1310
		TX Range (nm)	1290 to 1330
		RX Range (nm)	1100 to 1650
	Optical Power	TX Range (dBm)	0 to -5
		RX Range (dBm)	0 to -25
		Link Budget (dB)	20
		Dispersion Penalty (dB)	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		

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	140 mA @ 12 VDC
Input Voltage	12 to 48 VDC
Overload Current Protection	Supported
Power Connector	Terminal block
Power Consumption	140 mA @ 12 VDC

Physical Characteristics

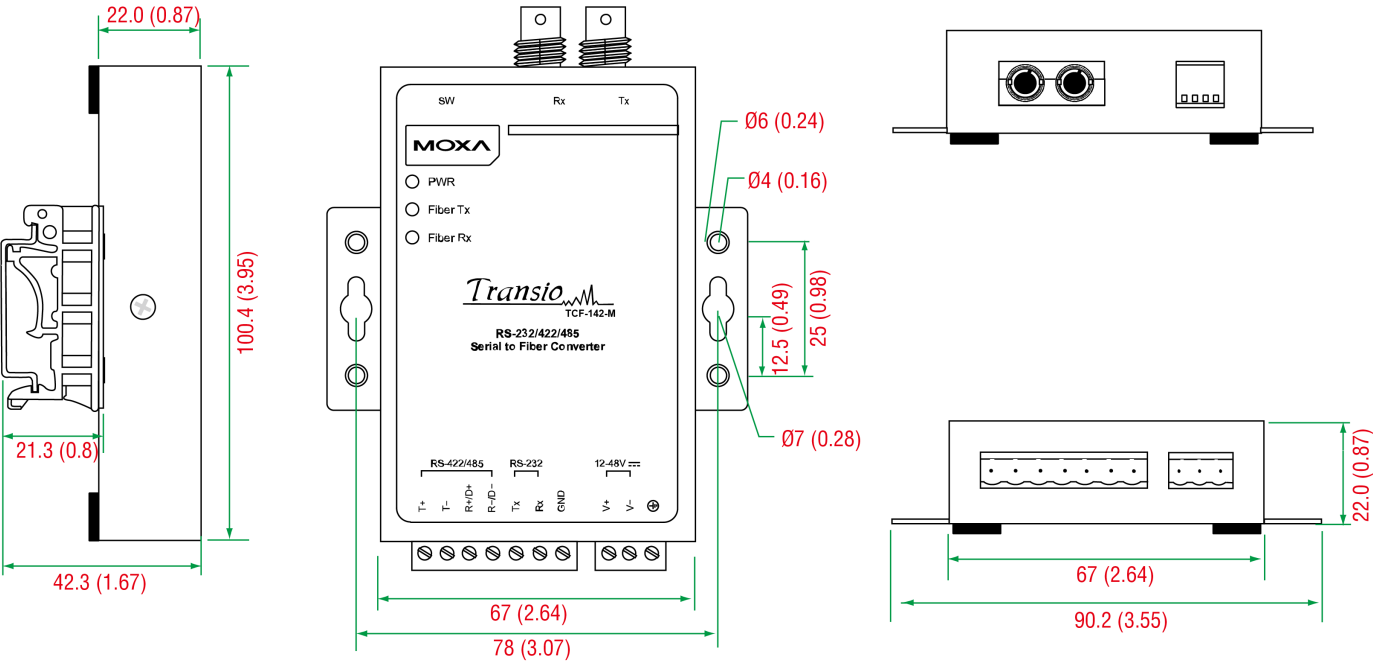
IP Rating	IP30
Housing	Metal
Dimensions (with ears)	90 x 100 x 22 mm (3.54 x 3.94 x 0.87 in)
Dimensions (without ears)	67 x 100 x 22 mm (2.64 x 3.94 x 0.87 in)

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 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 1 kV IEC 61000-4-5 Surge: Power: 1 kV IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m IEC 61000-4-8 PFMF
Environmental Testing	IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-3
Safety	EN 60950-1, IEC 60950-1
Vibration	IEC 60068-2-6
MTBF	
Time	780,480 hrs
Standards	Telcordia (Bellcore), GB
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/warranty
Package Contents	
Device	1 x TCF-142 Series converter
Installation Kit	1 x DIN-rail kit 1 x rubber stand
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

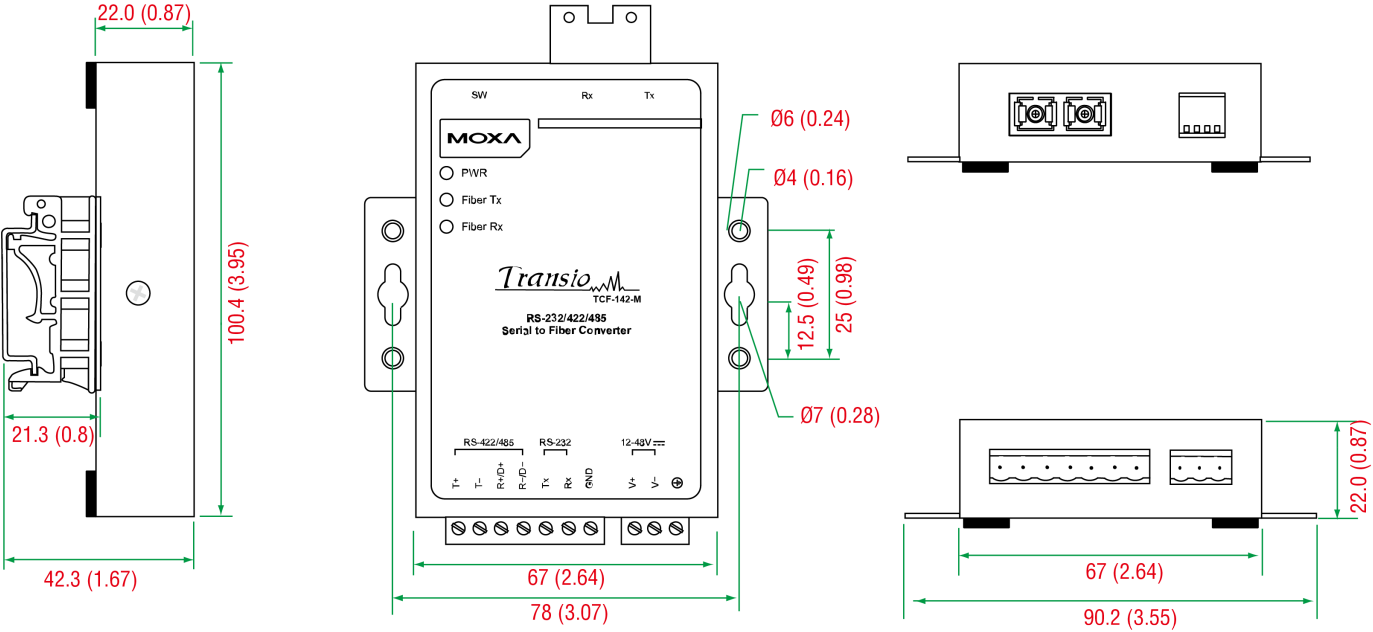
TCF-142-M/S-ST

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-SC	0 to 60°C	Single-mode ST
TCF-142-S-ST	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-SC-T	-40 to 75°C	Single-mode ST
TCF-142-S-ST-T	-40 to 75°C	Single-mode SC

Accessories (sold separately)

Power Adapters

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

Power Cords

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

© Moxa Inc. All rights reserved. Updated Nov 12, 2018.

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.