



## Media Converters

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## Media Converters



# Chassis Media Converters



	TRC-190-AC TRC-190-DC	TCF-142-M-SC-RM TCF-142-M-ST-RM	TCF-142-S-SC-RM TCF-142-S-ST-RM
<b>Optical Fiber Side</b>			
Fiber Connector	---	SC or ST	SC or ST
Cables Requirements	---	50/125, 62.5/125, or 100/140 $\mu$ m	8.3/125, 8.7/125, 9/125, or 10/125 $\mu$ m
Transmission Distance	---	5 km	40 km
Wavelength	---	850 nm	1310 nm
Tx Output	---	> -5 dBm	> -5 dBm
Rx Sensitivity	---	-20 dBm	-25 dBm
Point-to-Point Transmission	---	Point-to-Point Transmission: Half-duplex or full-duplex	Point-to-Point Transmission: Half-duplex or full-duplex
<b>RS-232/422/485 Side</b>			
Connector	---	Terminal Block	
RS-232 Signals	---	TxD, RxD, SGND	
RS-422 Signals	---	TxD+, TxD-, RxD+, RxD-, SGND	
RS-485-4w Signals	---	TxD+, TxD-, RxD+, RxD-, SGND	
RS-485-2w Signals	---	Data+, Data-, SGND	
Baudrate	---	50 bps to 921.6 Kbps	
ESD Protection	---	15 KV	15 KV
<b>Physical Characteristics</b>			
Housing	SECC (1.2 mm)	SPCC	SPCC
Dimensions (mm)	440 x 260 x 77 mm	86.8 x 136.5 x 21 mm	86.8 x 136.5 x 21 mm
Weight	5.2 kg (11.4 lbs), with one power module installed	---	---
Installation	---	---	---
Number of Slots	19 slots in the front for slide-in modules, 2 slots in the back for power supply modules	---	---
<b>Environmental Limits</b>			
Operating Temperature	0 to 60°C	0 to 60°C	0 to 60°C
Operating Humidity	5 to 95% RH	5 to 95% RH	5 to 95% RH
Storage Temperature	-20 to 75°C	-20 to 75°C	-20 to 75°C
<b>Power Requirements</b>			
Input Voltage	Universal 100 to 240 VAC (47 to 63 Hz)	12 VDC	12 VDC
Power Consumption	5.4 A @ 12 V (max. output) or 12 to 48 VDC	150 mA @ 12 V	150 mA @ 12 V
<b>Regulatory Approvals</b>			
CE	Class B	Class B	
FCC	Part 15 sub part B Class A	Part 15 sub part B Class A	
EMI	EN55022 1998, Class B	---	---
EMS	EN61000-4-2 (ESD), Criteria A, Level 4 EN61000-4-3 (RS), Criteria A, Level 2 EN61000-4-4 (EFT), Criteria A, Level 3 EN61000-4-5 (Surge), Criteria A, Level 3 EN61000-4-6 (CS), Criteria A, Level 2 EN61000-4-8 (PFMF), Criteria A, Level 3 EN61000-4-11 (DIPS), Criteria A	EN61000-4-2 (ESD), Criteria A, Level 4 EN61000-4-3 (RS), Criteria A, Level 2 EN61000-4-4 (EFT), Criteria A, Level 3 EN61000-4-5 (Surge), Criteria A, Level 3 EN61000-4-6 (CS), Criteria A, Level 2 EN61000-4-8 (PFMF), Criteria A, Level 3	
Freefall	---	IEC 60068-2-32	
<b>Reliability</b>			
Warranty	5 years (see <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> )		

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# Serial-to-Fiber Media Converters



	ICF-1150-M-SC/ST ICF-1150-M-SC/ST-T	ICF-1150I-M-SC/ST ICF-1150I-M-SC/ST-T	ICF-1150-S-SC/ST ICF-1150-S-SC/ST-T	ICF-1150I-S-SC/ST ICF-1150I-S-SC/ST-T	TCF-142-M-SC/ST TCF-142-M-SC/ST-T	TCF-142-S-SC/ST TCF-142-S-SC/ST-T	TCF-90-M/S
<b>Optical Fiber Side</b>							
Fiber Connector	SC or ST	SC or ST	SC or ST		SC or ST	SC or ST	ST
Cables Requirements	Single-mode: 8.3/125, 8.7/125, 9/125, or 10/125 $\mu$ m Multi-mode: 50/125, 62.5/125, or 100/140 $\mu$ m						
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						---
Multi-drop Transmission	Half-duplex, fiber ring						---
Ring Transmission	---	---	---	---	Half-duplex	---	---
<b>RS-232 Side</b>							
Connector	---	---	---	---	---	---	DB9 female
Signals	---	---	---	---	---	---	Tx, Rx, GND (Loop-back wiring: RTS to CTS, DTR to DSR and DCD)
Baudrate	---	---	---	---	---	---	300 bps to 115.2 Kbps
<b>RS-232/422/485 Side</b>							
Connector	---	---	---	---	Terminal Block	---	---
RS-232 Signals	TxD, RxD, SGND						
RS-422 Signals	TxD+, TxD-, RxD+, RxD-, SGND						
RS-485-4w Signals	TxD+, TxD-, RxD+, RxD-, SGND						
RS-485-2w Signals	Data+, Data-, SGND						
Baudrate	50 bps to 921.6 Kbps						
ESD Protection	15 KV for all signals						
Isolation	2 KV RMS isolation per I/O port for 1 minute				---	---	---
<b>Physical Characteristics</b>							
Housing	Aluminum (1 mm)						ABS + PC
Dimensions (mm)	30.3 x 70 x 115				67 x 100 x 22 mm		42 x 80 x 22 mm
<b>Environmental Limits</b>							
Operating Temperature	0 to 60°C or -40 to 85°C						0 to 60°C
Operating Humidity	5 to 95% RH						5 to 95% RH
Storage Temperature	-40 to 85°C						-20 to 75°C
<b>Power Requirements</b>							
Source of Input Power	---	---	---	---	---	---	RS-232 port (TxD signal) or power input jack
Input Voltage	12 to 48 VDC				12 to 48 VDC		12 to 48 VDC
Power Consumption	127 mA @ 12 V	163 mA @ 12 V			140 mA @ 12 V		20 mA @ 5 V (with termination disabled)
Burst Protection (EFT)	4 KV				2 KV		---
Surge Protection	2 KV				2 KV		---
Voltage Reversal Protection	Protects against V+/V- reversal				Protects against V+/V- reversal		---
Over Current Protection	1.1 A				1.1 A		---
<b>Regulatory Approvals</b>							
CE	Class B				---	---	Class B
FCC	Part 15 sub Class B				Part 15 Subclass B		Class B
Safety	UL 508				---	---	---
UL/CUL	---				UL60950-1		---
EMI	EN55022 1998, Class B				EN55022 1998, Class B		---
EMS	EN61000-4-2 (ESD), Criteria A, Level 4				EN61000-4-2 (ESD), Criteria A, Level 3		---
	EN61000-4-3 (RS), Criteria A, Level 3				EN61000-4-3 (RS), Criteria A, Level 2		
	EN61000-4-4 (EFT), Criteria A, Level 4				EN61000-4-4 (EFT), Criteria A, Level 2		
	EN61000-4-5 (Surge), Criteria A, Level 3				EN61000-4-5 (Surge), Criteria A, Level 3		
	EN61000-4-6 (CS), Criteria A, Level 3				EN61000-4-6 (CS), Criteria A, Level 2		
EN61000-4-8 (PFMF), Criteria A, Level 5				EN61000-4-8 (SFMF), Criteria A, Level 1		---	
ATEX	Class 1, Zone 2, EEx nC IIC (pending)				---	---	---
Hazardous Location	UL/cUL Class 1, Div. 2, Group A, B, C and D (Pending)				---	---	---
TÜV	EN 60950-1				EN60950-1		---
Freefall	IEC 60068-2-32				---	---	---
Water and Dust Proof	IP30				---	---	---
<b>Reliability</b>							
Warranty	5 years (see <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> )						

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# Serial Converters and Repeaters



	TCC-100 TCC-100-T	TCC-100I TCC-100I-T	TCC-80	TCC-80I	TCC-120	TCC-120I	TCC-82
<b>RS-232 Side</b>							
Connector	DB9 female		DB9 female		---	---	---
Signals	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND		TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND (Loop-back wiring: RTS to CTS, DTR to DSR and DCD)		---	---	---
<b>RS-422/485 Side</b>							
Connector	Terminal Block		Terminal Block or DB9 male		---	---	---
Signals	(interface selected by DIP switch) RS-422: TxD+, TxD-, RxD+, RxD-, GND RS-485-4w: TxD+, TxD-, RxD+, RxD-, GND RS-485-2w Signals: Data+, Data-, GND		(interface selected by DIP switch) RS-422: TxD+, TxD-, RxD+, RxD-, GND RS-485-4w: TxD+, TxD-, RxD+, RxD-, GND RS-485-2w Signals: Data+, Data-, GND		---	---	---
RS-485 Data Direction Control	---	---	ADDC®		---	---	---
<b>Serial Communication</b>							
Connectors	---	---	---	---	Terminal Block on both ends		DB9 male/female
Baudrate	50 bps to 921.6 Kbps		50 bps to 921.6 Kbps		50 bps to 921.6 Kbps		50 bps to 921.6 Kbps
Signals	---	---	---	---	RS-422/485-4w: TxD+, TxD-, RxD+, RxD- RS-485-2w: Data+, Data-		RS-232: TxD, RxD, RTS, CTS (Loop-back wiring: DTR to DSR and DCD)
RS-485 Data Direction Control	---	---	---	---	ADDC®		---
Pull High Resistance	150K ohm or 1K ohm (default)						
Pull Low Resistance	150K ohm or 1K ohm (default)						
ESD Protection	15 KV		15 KV		15 KV for all signals		15 KV for all signals
Optical Isolation	---	2 KV	---	2.5 KV rms for 1 minute	---	2 KV for power and signal	4 KV for 1 minute
<b>Physical Characteristics</b>							
Housing	Aluminum		ABS + PC		Aluminum		ABS
Dimensions (mm)	67 x 100.4 x 22 mm		42 x 80 x 22 mm		67 x 100.4 x 22 mm		42 x 80 x 23.6 mm
Weight	148 ± 5 g		50 ± 5 g		148 ± 5 g		60 ± 5 g
<b>Environmental Limits</b>							
Operating Temperature	-20 to 60°C, or -40 to 85°C		0 to 60°C		-20 to 60°C		0 to 60°C
Operating Humidity	5 to 95% RH		5 to 95% RH		5 to 95% RH		5 to 95% RH
Storage Temperature	-20 to 85°C		-20 to 75°C		-20 to 85°C		-20 to 75°C
<b>Power Requirements</b>							
Source of Input Power	Power input jack		RS-232 port (TxD, RTS, DTR) or power input jack		RS-232 port (TxD signal) or power input jack		RS-232 port (TxD signal) or power input jack
Input Voltage	12 to 48 VDC		5 to 12 VDC		12 to 48 VDC		5 to 12 VDC
Power Consumption	300 mA @ 12 V	400 mA @ 12 V	10 mA @ 5 V (with termination disabled)	20 mA @ 5 V (with termination disabled)	98 mA @ 12 V, 1.18 W	234 mA @ 12 V, 2.81 W	20 mA @ 5 V
Connection	---	---	---	---	---	---	---
Overload Current Protection	---	---	---	---	---	---	---
Reverse Polarity Protection	---	---	---	---	---	---	---
Burst Protection (EFT)	---	---	---	---	---	---	---
Surge Protection	---	---	---	---	---	---	---
Voltage Reversal Protection	Protects against V+/V- reversal		---	---	Protects against V+/V- reversal		---
Over Current Protection	√	√	---	---	√	√	---
<b>Regulatory Approvals</b>							
CE	Class B		Class B		Class B		Class B
FCC	Class B		Class B		Class B		Class B
<b>Reliability</b>							
Warranty	5 years (see <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> )						

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# Ethernet-to-Fiber Media Converters



	IMC-101G INC-101G-T	IMC-101-M-SC/ST IMC-101-M-SC/ST-T	IMC-101-S-SC IMC-101-S-SC-T	IMC-101-S-SC-80 IMC-101-S-SC-80-T	IMC-21-M-SC/ST	IMC-21-S-SC
<b>IEEE Standards</b>						
IEEE 802.3	√	√	√	√	√	√
IEEE 802.3u	√	√	√	√	√	√
IEEE 802.3ab	√	---	---	---	---	---
IEEE 802.3z	√	---	---	---	---	---
IEEE 802.3x	---	---	---	---	√	√
<b>Interface</b>						
RJ45 Ports	10/100/1000BaseT(X)		10/100BaseT(X)		10/100BaseT(X)	
Fiber Ports	Optional 1000BaseSX/LX/LHX/ZX (LC connector)		100BaseFX (SC or ST connectors)		100BaseFX (SC or ST)	
LED Indicators	PWR1, PWR2, FAULT, 10/100M (TP port), 1000M (TP and Fiber port)		PWR1, PWR2, FAULT, 10/100M (TP port), 100M (Fiber port), FDX/COL (Fiber port)		Power, 10/100M (TP port), 100M (fiber port), FDX/COL (fiber port)	
DIP Switches	Port break alarm mask Fault Pass-Through Fiber AN/Force		100BaseFX Full/Half duplex selection, port break alarm mask		TP port's 10/100M, Half/Full modes, and Force/Auto modes, fiber connection's Full/Half mode, Link Fault Pass-Through (LFP)	
Alarm Contact	One relay output with current carrying capacity of 1 A @ 24 VDC		One relay output with current carrying capacity of 1A @ 24 VDC		---	
<b>Multi-mode Transmission Distance</b>						
1000BaseSX	• 0 to 500 m, 850 nm (50/125 μm, 400 MHz*km) • 0 to 275 m, 850 nm (62.5/125 μm, 200 MHz*km)		---		---	
1000BaseLX	• 0 to 1100 m, 1310 nm (50/125 μm, 800 MHz*km) • 0 to 550 m, 1310 nm (62.5/125 μm, 500 MHz*km)		---		---	
<b>Single-mode Transmission Distance</b>						
1000BaseLX	0 to 10 km, 1310 nm (9/125 μm, 3.5 PS/(nm*km))		---		---	
1000BaseLHX	0 to 40 km, 1310 nm (9/125 μm, 3.5 PS/(nm*km))		---		---	
1000BaseZX	0 to 80 km, 1550 nm (9/125 μm, 19 PS/(nm*km))		---		---	
<b>Physical Characteristics</b>						
Housing	Metal (IP30)		Metal (IP30)		Plastic (IP30)	
Dimensions (mm)	53.6 x 135 x 105 mm		53.6 x 135 x 105 mm		25 x 109 x 97 mm	
Weight	630 g		630 g		125 g	
Installation	DIN-Rail mounting, wall mounting (with optional kit)		---		DIN-Rail mounting	
<b>Environmental Limits</b>						
Operating Temperature	0 to 60°C or -40 to 75°C		---		0 to 60°C	
Operating Humidity	5 to 95% RH		---		5 to 95% RH	
Storage Temperature	-40 to 85°C		---		-40 to 70°C	
<b>Power Requirements</b>						
Input Voltage	24 VDC (12 to 45 VDC), redundant inputs		---		12 to 45 VDC, 18 to 30 VAC (47-63 Hz)	
Input Current	0.11A (@ 24 V)		0.16A (@ 24 V)		0.15 A (@ 24 V)	
Connection	Removable terminal block		---		Removable 3-contact terminal block	
Overload Current Protection	1.1 A		---		1.1 A	
Reverse Polarity Protection	√	√	√	√	√	√
<b>Regulatory Approvals</b>						
Safety	UL508		UL508 UL60950-1 CSA C22.2 No. 60950-1 EN60950-1		UL508 UL60950-1 CSA C22.2 No. 60950-1 EN60950-1	
EMI	FCC Part 15, CISPR (EN55022) class A		---		FCC Part 15, CISPR (EN55022) class A	
EMS	EN61000-4-2 (ESD), level 3 EN61000-4-3 (RS), level 3 EN61000-4-4 (EFT), level 3 EN61000-4-5 (Surge), level 3 EN61000-4-6 (CS), level 3 EN61000-4-8 EN61000-4-11		---		EN61000-4-2 (ESD) EN61000-4-3 (RS) EN61000-4-4 (EFT) EN61000-4-5 (Surge) EN61000-4-6 (CS)	
Hazardous Location	---		UL/cUL Class1, Division 2, Groups A, B, C, and D, ATEX Class1, Zone 2, Ex nC IIC (IMC-101-M-ST, IMC-101-S-SC-80 pending)		---	
Freefall	IEC60068-2-32		---		IEC60068-2-32	
Shock	IEC60068-2-27		---		IEC60068-2-27	
Vibration	IEC60068-2-6		---		IEC60068-2-6	
Maritime	---		DNV, GL		---	
MTBF	500,000 hrs		401,000 hrs		353,000 hrs	
<b>Reliability</b>						
Warranty	5 years (see <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> )					

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Media Converters > Product Selection Guides

# Introduction to the NRack System™

## Rackmount chassis converter solutions

Fiber converters have been widely used in FTTH, FTTP, and even transportation automation, power system automation, as well as many other automation systems. The main reason is because fiber optic communication has ESD immunity, wide bandwidth, zero data loss, and can transmit data over a much longer distance compared to wire cabling.

Media converters are generally used in a pair connection. That is, two media converters are used in tandem, with one converter located at the control center, and the other converter located at a remote site. This is the ideal setup from a central management point of view, in which all data is transmitted back to the control center for processing in a central computing system. For systems that require many media converters at the central site, system integrators must determine how and where to mount the converters and how to arrange power supplies.

Chassis-type media converters are a perfect choice for systems that require installing several converters in a confined space. Moxa's NRack System™ is designed to help customers who are faced with the challenge of installing a high density media converter system. The NRack System™ saves time since less mounting is required, and the power input wiring problem is much easier to handle.



An NRack System™ consists of 3 major components: Rackmount Chassis, Slide-in Modules, and Power Supply Modules. Installing the power supply module in the chassis can save quite a bit of space since you do not need to deal with numerous power adaptors connecting to the various converters installed in your control center. Two main types of slide-in modules are available. One type handles data transmission only, whereas the other type is used to manage the entire chassis system.

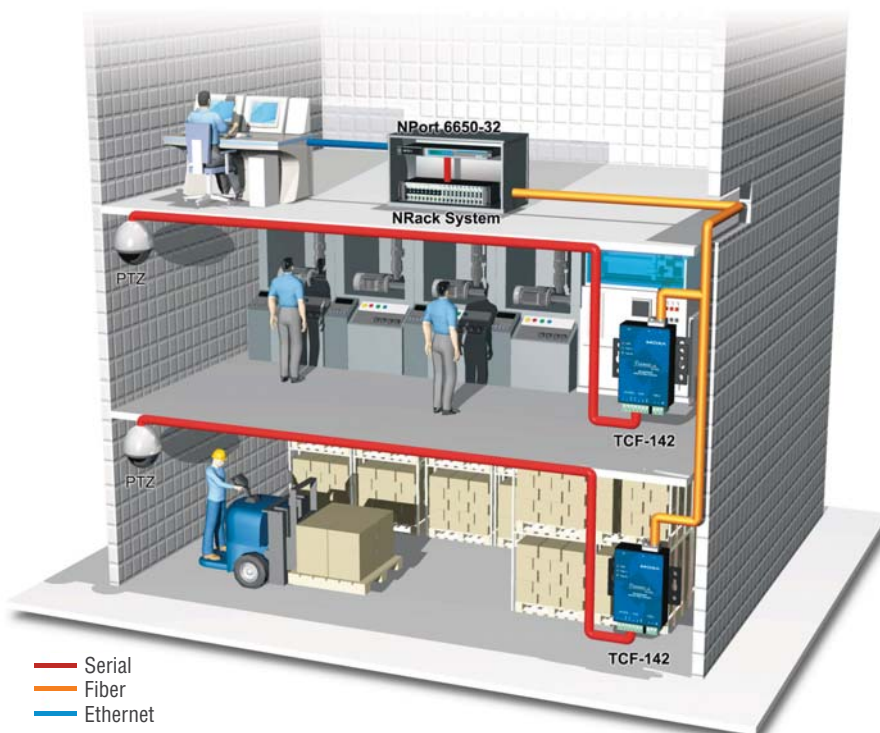
### : Applications

#### Serial-to-Fiber Converter for Surveillance Systems in Factories

Thanks to optical fiber's capability for super fast, secure data transmission, Moxa's NRack System™ can be used to control a PTZ camera's zoom-in/zoom-out motion. Take complete control of your building's security system by monitoring and manipulating all of your video cameras, from a distance.

Benefits:

- Extended distance between computers and remote PTZ cameras
- Zero data loss from electromagnetic interference
- Simple wiring
- High density solution saves space and wiring costs



— Serial  
— Fiber  
— Ethernet

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Media Converters > Introduction to the NRack System™

# TRC-190 Series

## Rackmount chassis for the N Rack System™



- > 19-inch chassis for rackmount use
- > 19 slots for high density applications
- > Supports hot-swap and dual power input with redundancy
- > Fan-less chassis design reduces repair time

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



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Media Converters > TRC-190 Series

### Introduction

The TRC-190 series provides 19 slots for media converter modules such as the TCF-142-RM series. A TRC-190 chassis comes with one AC or DC power input, with an optional redundant power expansion

module available for greater reliability. The TRC-190 series' power input module supports the hot-swap feature.

### Specifications

#### Physical Characteristics

- Housing:** SECC (1.2 mm)
- Dimensions:** 440 x 260 x 77 mm (18.6 x 11 x 3.3 in)
- Weight:** 5.2 kg (11.4 lbs), with one power module installed
- Number of Slots:** 19 slots in the front for slide-in modules, 2 slots in the back for power supply modules

#### Environmental Limits

- Operating Temperature:** 0 to 60°C (32 to 140°F)
- Operating Humidity:** 5 to 95% RH
- Storage Temperature:** -20 to 75°C (-4 to 158°F)

#### Power Requirements

- Input Voltage:** Universal 100 to 240 VAC (47 to 63 Hz) or 12 to 48 VDC
- Power Consumption:**  
Max. Output: 5.4 A @ 12 V

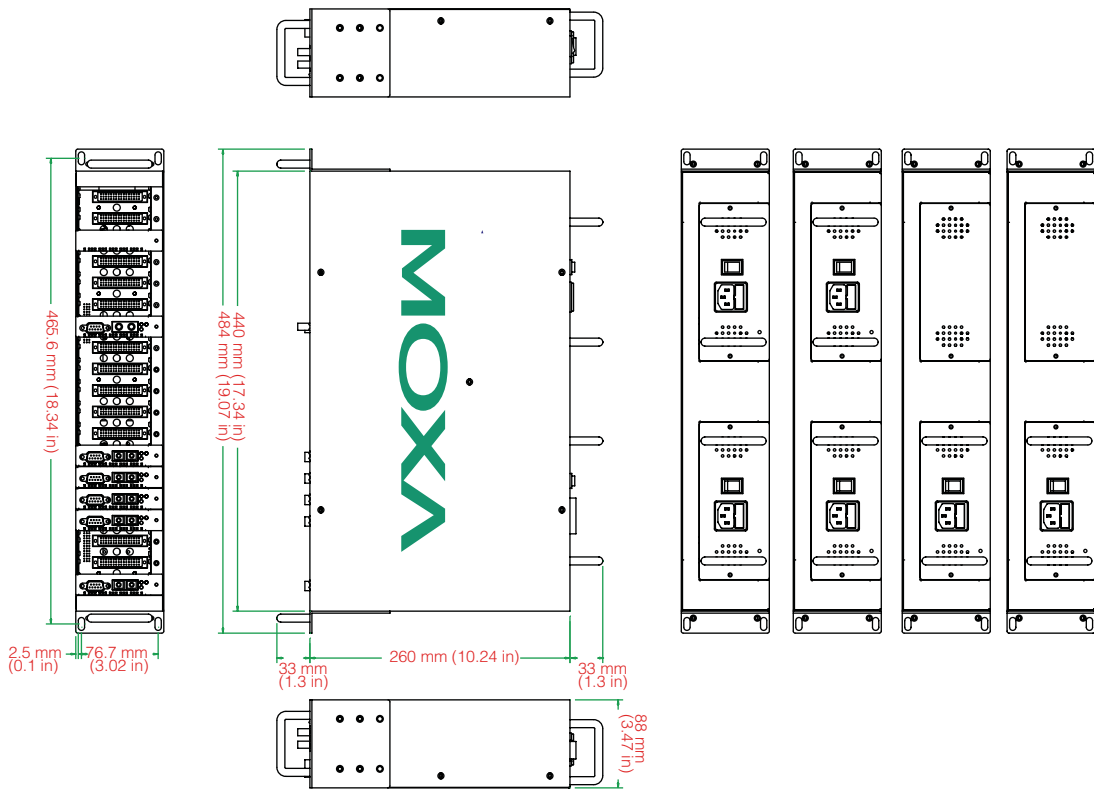
#### Regulatory Approvals

- CE:** Class A
- FCC:** Part 15 sub part B Class A
- EMI:** EN55022 2006, Class B
- EMS:**  
EN61000-4-2 (ESD), Criteria A, Level 4  
EN61000-4-3 (RS), Criteria A, Level 2  
EN61000-4-4 (EFT), Criteria A, Level 3  
EN61000-4-5 (Surge), Criteria A, Level 3  
EN61000-4-6 (CS), Criteria A, Level 2  
EN61000-4-8 (PFMF), Criteria A, Level 3  
EN61000-4-11 (DIPS), Criteria A

#### Warranty

- Warranty Period:** 5 years
- Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

Dimensions



Ordering Information

Available Models

- TRC-190-AC:** Rack chassis, 2U, single 110 to 240 VAC input, with 19 slots on front panel
- TRC-190-DC:** Rack chassis, 2U, single 12 to 48 VDC input, with 19 slots on front panel (coming soon)

Optional Accessories (can be purchased separately)

- PWR-190-AC:** Redundant power supply, 110 to 240 VAC
- PWR-190-DC:** Redundant power supply, 12 to 48 VDC (coming soon)
- Plate-1:** Face plate to cover unused front panel slots (required for all unused slots)

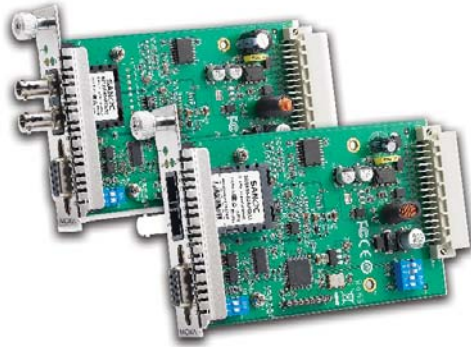
Package Checklist

- TRC-190 with single power input
- Power cord (for TRC-190-AC only)
- 18 face plates
- User's Manual (printed)
- Warranty Card



# TCF-142-RM Series

**RS-232/422/485 to fiber slide-in modules for the N Rack System™**



- > Extend RS-232/422/485 transmission up to:
  - 40 km with single mode
  - 5 km with multi-mode
- > 1K or 150K ohm adjustable pull high/low resistor
- > "Ring" and "Point-to-Point" transmission supported

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



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Media Converters > TCF-142-RM Series

## Introduction

The TCF-142-RM series of serial-to-fiber converters are slide-in modules that work with the TRC-190 chassis. The modules convert

from the RS-232, RS-422, or RS-485 signal to a fiber optic signal.

## Automatic Baudrate Detection

The TCF-142-RM series 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 problem.

## Specifications

### Optical Fiber Side

**Fiber Connector:** SC or ST

**Cable Requirements:**

Single-mode: 8.3/125, 8.7/125, 9/125, or 10/125  $\mu$ m  
Multi-mode: 50/125, 62.5/125, or 100/140  $\mu$ m

**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

### RS-232/422/485 Side

**Terminal Block**

**RS-232 Signals:** TxD, RxD, SGND

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

**RS-485-4w Signals:** TxD+, TxD-, RxD+, RxD-, SGND

**RS-485-2w Signals:** Data+, Data-, SGND

**Baudrate:** 50 bps to 921.6 Kbps

**ESD Protection:** 15 KV for all signals

### Physical Characteristics

**Housing:** SPCC

**Dimensions:** 86.8 x 136.5 x 21 mm (3.42 x 5.37 x 0.83 in)

### Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Operating Humidity:** 5 to 95% RH

**Storage Temperature:** -20 to 75°C (-4 to 158°F)

### Power Requirements

**Input Voltage:** 12 VDC

**Power Consumption:** 150 mA @ 12 V

### Regulatory Approvals

**CE:** Class A

**FCC:** Part 15 sub part B Class A

**EMS:**

EN61000-4-2 (ESD), Criteria A, Level 4

EN61000-4-3 (RS), Criteria A, Level 2

EN61000-4-4 (EFT), Criteria A, Level 3

EN61000-4-5 (Surge), Criteria A, Level 3

EN61000-4-6 (CS), Criteria A, Level 2

EN61000-4-8 (PFMF), Criteria A, Level 3

**Freefall:** IEC 60068-2-32

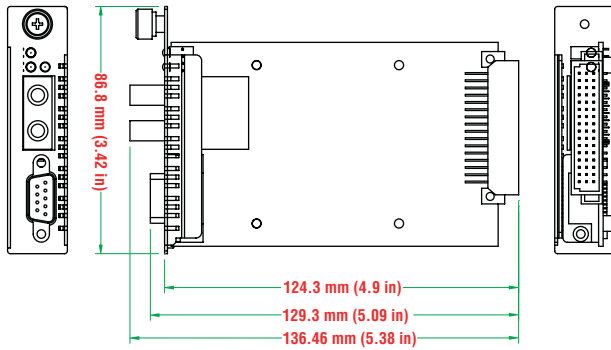
### Warranty

**Warranty Period:** 5 years

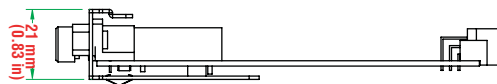
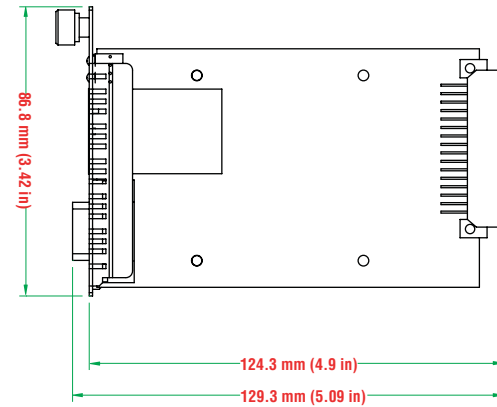
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

Dimensions

TCF-142-M/S-ST Series

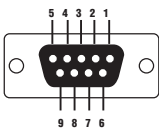


TCF-142-M/S-SC Series



Pin Assignment

DB9 female connector



Pin	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	Tx-	---
2	RxD	Tx+	---
3	TxD	Rx+	Data+
4	DTR	Rx-	Data-
5	GND	GND	GND
6	DSR	---	---
7	RTS	---	---
8	CTS	---	---

Ordering Information

Available Models

- TCF-142-M-SC-RM: RS-232/422/485 to multi-mode fiber slide-in module converter, SC connector
- TCF-142-M-ST-RM: RS-232/422/485 to multi-mode fiber slide-in module converter, ST connector
- TCF-142-S-SC-RM: RS-232/422/485 to single-mode fiber slide-in module converter, SC connector
- TCF-142-S-ST-RM: RS-232/422/485 to single-mode fiber slide-in module converter, ST connector

Package Checklist

- TCF-142 series fiber converter
- Quick Installation Guide (printed)
- Warranty Card

# ICF-1150 Series

## Industrial serial-to-fiber converters



- > RS-232, fiber, and RS-422/485 3-way communication
- > Rotary switch to change the pull high/low resistor value
- > Extend RS-232/422/485 transmission up to:
  - 40 km with single-mode
  - 5 km with multi-mode
- > 3-way Galvanic Isolation (for "I" model only)
- > -40 to 85°C wide temperature models available
- > Class I, Div. II certification (Pending)

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



### Three-Way Communication

The ICF-1150 series support 2 serial ports, with a D-sub connector for RS-232 communication and a removable terminal block for RS-422 or RS-485 communication. The 3 ports (2 serial ports and one fiber port) are completely independent. When an ICF-1150 converter receives data from any one port, it will send the data out through the other 2 ports. For example, once the ICF-1150 converter receives a command

from the remote master through the fiber port, it will convert the signal and send the command through the RS-232 and RS-422/485 ports at the same time. If the user is monitoring a system running on an RS-485 network, there is no need to use an additional RS-232 to RS-485 converter to connect the laptop computer's serial port to the RS-485 bus.

### Rotary Switch for Setting the Pull High/Low Resistor

The RS-485 interface supports multi-drop or daisy-chain connections, which system engineers will use to connect serial devices such as meters, RTUs, and readers together on the same bus. Since the number of serial devices on the same bus will cause the impedance

of the data line to increase, the ICF-1150 allows users to tune the pull high/low resistor. Just rotate the switch to the appropriate value without removing the ICF-1150 from the DIN-rail.

#### Pull High/Low Resistor Values

Position	0	1	2	3	4	5	6	7	8	9
ohms	150K	10K	4.7K	3.3K	1K	909	822	770	500	485

### Specifications

#### Optical Fiber Side

**Fiber Connector:** SC or ST

#### Cable Requirements:

Single-mode: 8.3/125, 8.7/125, 9/125, or 10/125  $\mu$ m

Multi-mode: 50/125, 62.5/125, or 100/140  $\mu$ m

#### Transmission Distance:

Single-mode: 40 km

Multi-mode: 5 km

#### Wavelength:

ICF-1150-S (single-mode): 1310 nm

ICF-1150-M (multi-mode): 850 nm

#### Tx Output:

ICF-1150-S (single-mode): > -5 dBm

ICF-1150-M (multi-mode): > -5 dBm

#### Rx Sensitivity:

ICF-1150-S (single-mode): -25 dBm

ICF-1150-M (multi-mode): -20 dBm

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

**Multi-drop Transmission:** Half-duplex, fiber ring

#### RS-232/422/485 Side

**RS-232 Signals:** TxD, RxD, SGND

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

**RS-485-4w Signals:** TxD+, TxD-, RxD+, RxD-, SGND

**RS-485-2w Signals:** Data+, Data-, SGND

**Baudrate:** 50 bps to 921.6 Kbps

**ESD Protection:** 15 KV for all signals

**Isolation:** 2 KV RMS isolation per I/O port for 1 minute

### Physical Characteristics

**Housing:** Aluminum (1 mm)  
**Dimensions:** 30.3 x 70 x 115 mm (11.9 x 27.6 x 45.3 in)

### Environmental Limits

**Operating Temperature:**  
 Standard Models: 0 to 60°C (32 to 140°F)  
 Wide Temp. Models: -40 to 85°C (-40 to 185°F)

**Operating Humidity:** 5 to 95% RH

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

### Power Requirements

**Input Voltage:** 12 to 48 VDC

**Power Consumption:**  
 ICF-1150: 127 mA @ 12 V  
 ICF-1150I: 163 mA @ 12 V

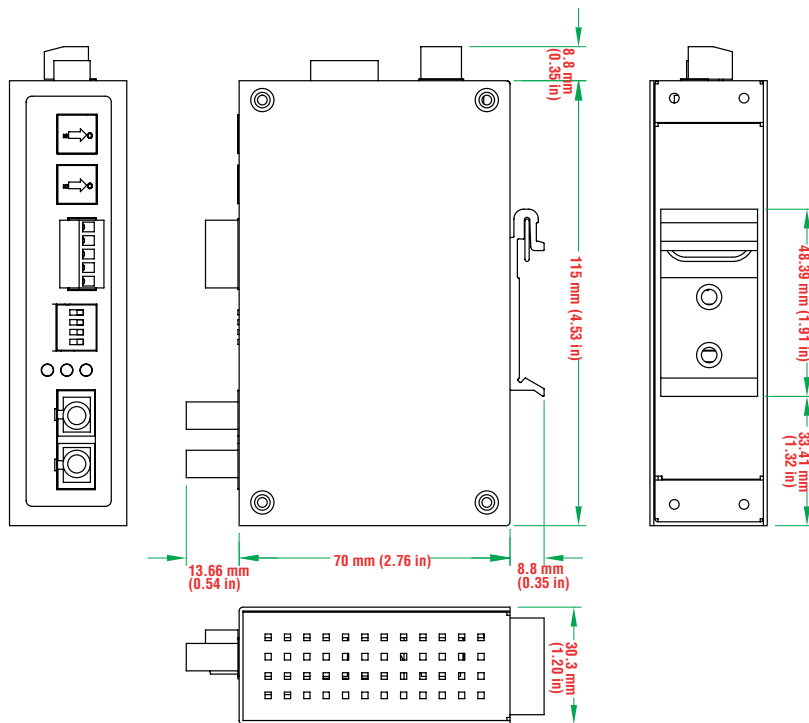
**Voltage Reversal Protection:** Protects against V+/V- reversal

**Over Current Protection:** 1.1 A (protects against two signals shorted together)

### Regulatory Approvals

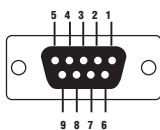
**CE:** Class B  
**FCC:** Part 15 sub Class B  
**Safety:** UL 508  
**EMI:** EN55022 2006, Class B  
**EMS:**  
 EN61000-4-2 (ESD), Criteria A, Level 4  
 EN61000-4-3 (RS), Criteria A, Level 2  
 EN61000-4-4 (EFT), Criteria A, Level 4  
 EN61000-4-5 (Surge), Criteria A, Level 3  
 EN61000-4-6 (CS), Criteria A, Level 2  
 EN61000-4-8 (PFMF), Criteria A, Level 3  
**ATEX:** Class 1, Zone 2, EEx nC IIC (pending)  
**Hazardous Location:** UL/cUL Class 1, Div. 2, Group A, B, C and D (Pending)  
**Freefall:** IEC 60068-2-32  
**Water and Dust Proof:** IP30  
**Warranty**  
**Warranty Period:** 5 years  
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions



### Pin Assignment

**DB9 female connector**



Pin	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	GND	GND
2	RxD	Rx-	Data-
3	TxD	Rx+	Data+
4	DTR	Tx-	---
5	GND	Tx+	---
6	DSR	---	---
7	RTS	---	---
8	CTS	---	---

## : Ordering Information

### Available Models

**ICF-1150-M-SC:** Industrial RS-232/422/485 to multimode fiber converter, SC connector, 0 to 60°C operating temperature  
**ICF-1150-M-ST:** Industrial RS-232/422/485 to multimode fiber converter, ST connector, 0 to 60°C operating temperature  
**ICF-1150-S-SC:** Industrial RS-232/422/485 to single mode fiber converter, SC connector, 0 to 60°C operating temperature  
**ICF-1150-S-ST:** Industrial RS-232/422/485 to single mode fiber converter, ST connector, 0 to 60°C operating temperature  
**ICF-1150I-M-SC:** Industrial RS-232/422/485 to multimode fiber converter, SC connector, 2 KV isolation, 0 to 60°C operating temperature  
**ICF-1150I-M-ST:** Industrial RS-232/422/485 to multimode fiber converter, ST connector, 2 KV isolation, 0 to 60°C operating temperature  
**ICF-1150I-S-SC:** Industrial RS-232/422/485 to single mode fiber converter, SC connector, 2 KV isolation, 0 to 60°C operating temperature  
**ICF-1150I-S-ST:** Industrial RS-232/422/485 to single mode fiber converter, ST connector, 2 KV isolation, 0 to 60°C operating temperature  
**ICF-1150-M-SC-T:** Industrial RS-232/422/485 to multimode fiber converter, SC connector, -40 to 85°C operating temperature  
**ICF-1150-M-ST-T:** Industrial RS-232/422/485 to multimode fiber converter, ST connector, -40 to 85°C operating temperature  
**ICF-1150-S-SC-T:** Industrial RS-232/422/485 to single mode fiber converter, SC connector, -40 to 85°C operating temperature  
**ICF-1150-S-ST-T:** Industrial RS-232/422/485 to single mode fiber converter, ST connector, -40 to 85°C operating temperature  
**ICF-1150I-M-SC-T:** Industrial RS-232/422/485 to multimode fiber converter, SC connector, 2 KV isolation, -40 to 85°C operating temperature  
**ICF-1150I-M-ST-T:** Industrial RS-232/422/485 to multimode fiber converter, ST connector, 2 KV isolation, -40 to 85°C operating temperature  
**ICF-1150I-S-SC-T:** Industrial RS-232/422/485 to single mode fiber converter, SC connector, 2 KV isolation, -40 to 85°C operating temperature  
**ICF-1150I-S-ST-T:** Industrial RS-232/422/485 to single mode fiber converter, ST connector, 2 KV isolation, -40 to 85°C operating temperature

### Optional Accessories

**DR-4524:** 45 W, 2 A Din-Rail 24 VDC power supply with universal 85 to 264 VAC input

### Package Checklist

- ICF-1150 series fiber converter
- Quick Installation Guide (printed)
- Warranty Card

# 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)

The certification logos shown here apply to some or all of the products in this section. For details, see “Regulatory Approvals” under “Specifications” below.



### 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.

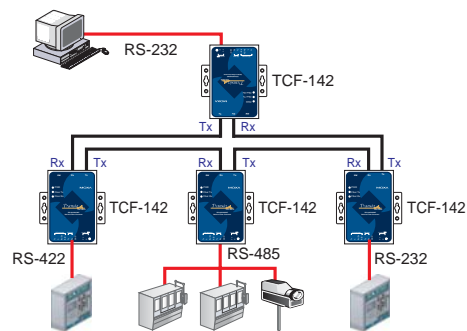
### Automatic Baudrate Detection

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.

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Standalone Series > TCF-142 Series

## Specifications

### Optical Fiber Side

**Fiber Connector:** SC or ST

**Cable Requirements:**

Single-mode: 8.3/125, 8.7/125, 9/125, or 10/125  $\mu\text{m}$   
 Multi-mode: 50/125, 62.5/125, or 100/140  $\mu\text{m}$

**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:** -20 to 70°C (-4 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

**TÜV:** EN60950-1

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

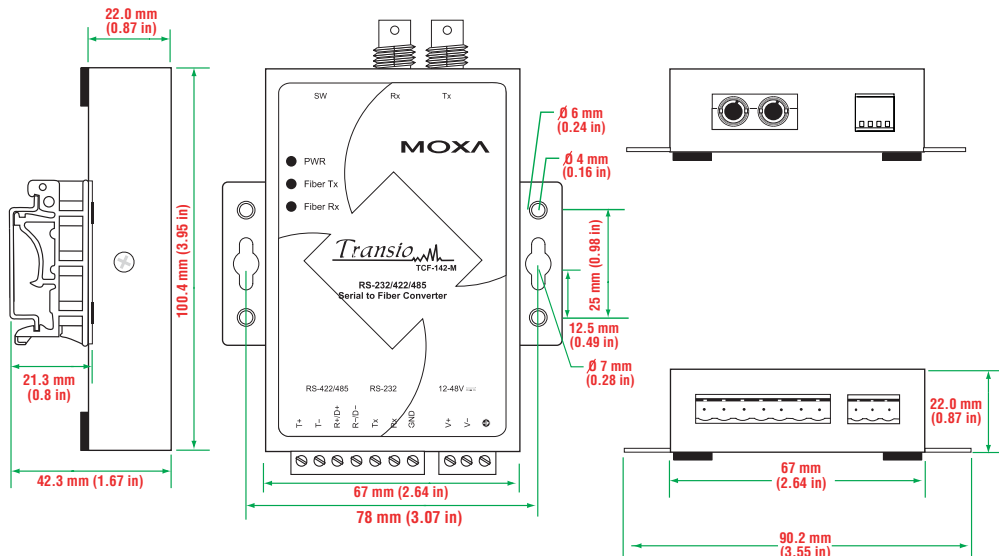
12 Standalone Series > TCF-142 Series

### Dimensions

#### DIP Switch Settings

Serial Connection	SW1	SW2	Built-in 120-ohm Terminator	SW3	Fiber Mode	SW4
RS-232	ON	OFF	Enable	ON	Ring mode	ON
RS-422	OFF	OFF	Disable	OFF	Point-to-Point mode	OFF
RS-485-4w	OFF	OFF				
RS-485-2w	OFF	ON				

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



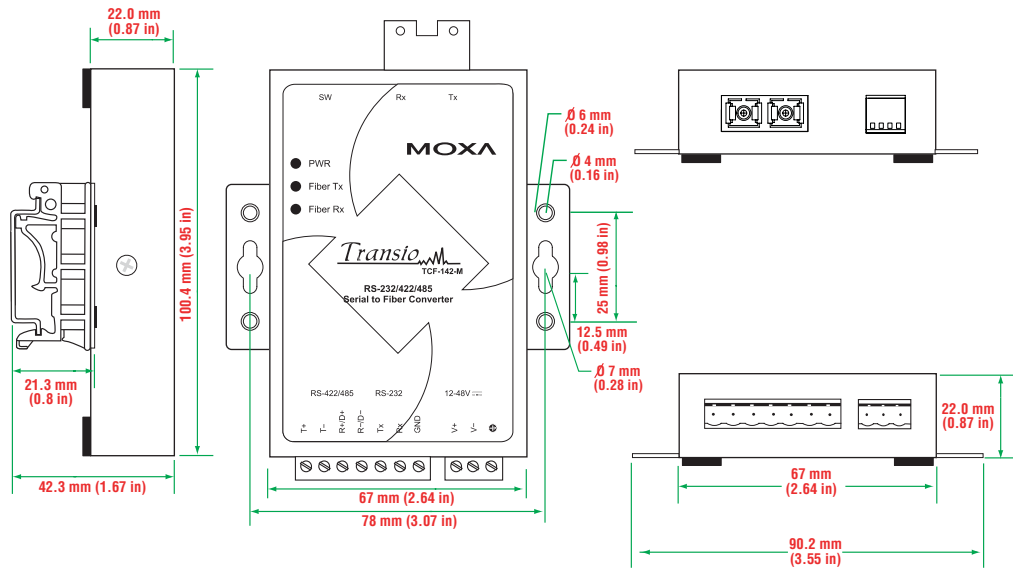
### DIP Switch Settings

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



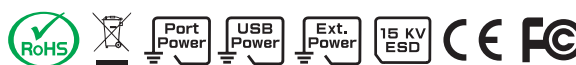
# TCF-90 Series

## Port-powered RS-232 to optical fiber media converters



- > Use either external power or power over serial
- > Extends RS-232 transmission up to:
  - 40 km with single-mode—TCF-90-S
  - 5 km with multi-mode—TCF-90-M
- > Reduces signal interference
- > Protects against electrical interference or chemical corrosion
- > 15 KV ESD protection for serial signals
- > Baudrates up to 115.2 Kbps
- > Compact size

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



12 Standalone Series > TCF-90 Series

### Introduction

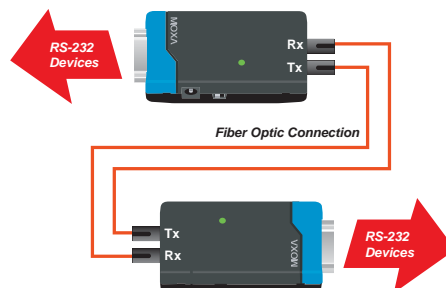
The TCF-90 is a compact media converter that transmits RS-232 signals over optical fiber. Power is derived from either the serial port or an external power source. The TCF-90 extends RS-232 transmission up to 5 km with multi-mode fiber, or up to 40 km with single-mode fiber. A pair of TCF-90 converters can be used to connect two RS-232

devices with optical fiber in full duplex mode. The optical fiber isolates the data signals from dangerous increases in ground potential, ground loops, and electrical EMI/RFI noise, and enhances data security by eliminating the harmful effects of RF radiation and susceptibility to electromagnetic radiation.

### Self-powered RS-232 to Optical Fiber

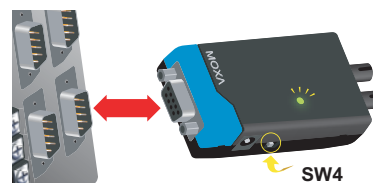
Connecting RS-232 devices to the TCF-90 is easy. The ST-type optical fiber connector is designed especially for data communication applications that transmit data either between or within buildings. The TCF-90 can be used for industrial applications and for applications that require secure data transfer.

The RS-232 port on the TCF-90 uses a DB9 female socket to connect directly to the host PC, with power drawn from the Tx, D, and R lines. Although the TCF-90 can obtain enough power from the three data/handshake lines whether the signal is high or low, we strongly recommend setting either the RTS or DTR signal to ON.



### LED Port Power Indicator

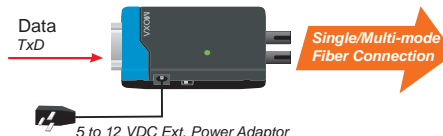
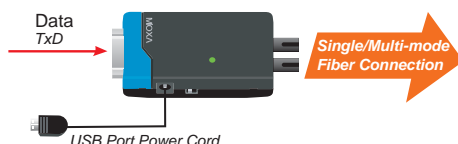
It's easy enough to use a multimeter to test if the serial device is supplying the TCF-90 with enough power through the serial connection, but why bother when the TCF-90 can do the testing for you? Connect the TCF-90 to the device's RS-232 port and set the SW4 switch to Test mode. If the port power LED indicator lights up, the TCF-90 is receiving enough power. If the LED does NOT light up, you will need to attach an external power source to the TCF-90.



### Optional External Power Source

In most circumstances, the TCF-90 should be able to operate without using an external power source. However, an external USB power cord or DC power supply can be used in situations where the handshake

lines are not available, both the RTS/DTR signals are set to OFF, or the attached device's serial interface chip provides less power than required.



## Specifications

### Optical Fiber Side

**Fiber Connector:** ST

**Cable Requirements:**

Single-mode: 8.3/125, 8.7/125, 9/125, or 10/125  $\mu\text{m}$   
 Multi-mode: 50/125, 62.5/125, or 100/140  $\mu\text{m}$

**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: -24 dBm  
 Multi-mode: -20 dBm

### RS-232 Side

**Connector:** DB9 female

**Signals:**

RS-232 Tx, Rx, GND (Loop-back wiring: RTS to CTS, DTR to DSR and DCD)

**Baudrate:** 300 bps to 115.2 Kbps

### Physical Characteristics

**Housing:** ABS + PC

**Dimensions:** 42 x 80 x 22 mm (1.65 x 3.15 x 0.87 in)

### Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Operating Humidity:** 5 to 95% RH

**Storage Temperature:** -20 to 75°C (-14 to 167°F)

### Power Requirements

**Source of Input Power:** RS-232 port (Tx/D signal) or power input jack

**Input Voltage:** 12 to 48 VDC

**Power Consumption:** 20 mA @ 5 V (with termination disabled)

### Regulatory Approvals

**CE:** Class B

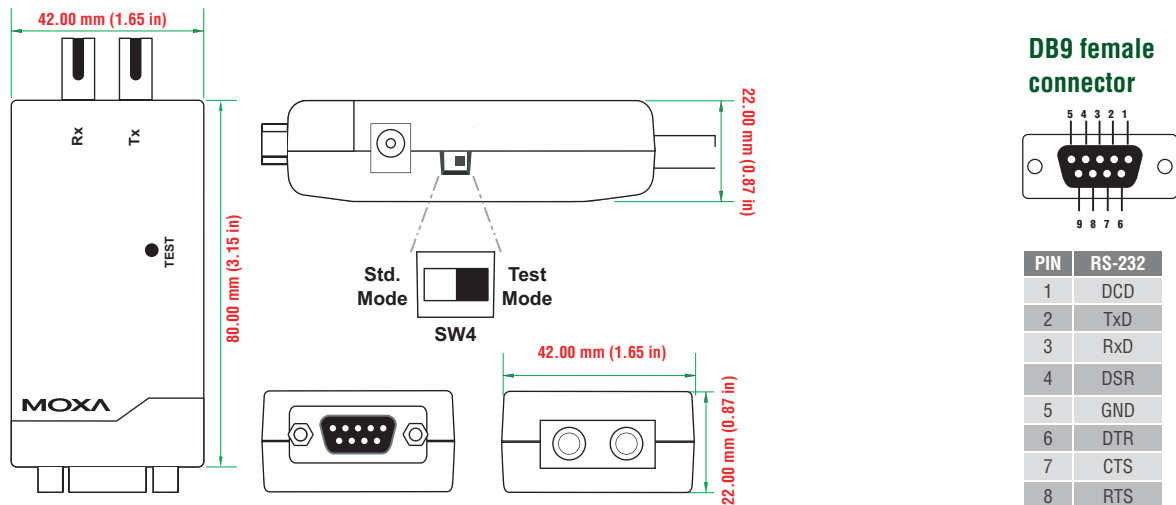
**FCC:** Class B

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions



## Ordering Information

### Available Models

**TCF-90-M:** Port-powered RS-232 to multi-mode optical fiber converter with ST connector for 5 km transmission

**TCF-90-S:** Port-powered RS-232 to single-mode optical fiber converter with ST connector for 40 km transmission

**Note:** Models with SC/FC connectors or a 60 km range are available by request.

### Package Checklist

- TCF-90 media converter
- USB power cord (50 cm)
- Quick Installation Guide
- Warranty Card

### Optional Accessories (can be purchased separately)

**Power Adaptor:** See Appendix A for details

**CBL-F9M9-20:** DB9 male to DB9 female RS-232 cable (20 cm)

# TCC-100/100I Series

**Industrial RS-232 to RS-422/485 converters with optional 2 KV isolation**



- > RS-232 to RS-422 conversion with RTS/CTS support
- > RS-232 to 2-wire or 4-wire RS-485 conversion
- > 2 KV isolation protection (TCC-100I)
- > Wall and DIN-rail mounting
- > Plug-in terminal block for easy RS-422/485 wiring
- > LED indicators for power, Tx, Rx
- > -20 to 60°C operating temperature
- > Wide temperature model available (-40 to 85°C)

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



12 Standalone Series > TCC-100/100I Series

## Introduction

The TCC-100/100I series RS-232 to RS-422/485 converters increase networking capability by extending the RS-232 transmission distance. Both converters have a superior industrial-grade design that includes

DIN-rail mounting, terminal block wiring, external terminal block for power, and optical isolation (TCC-100I and TCC-100I-T only). The TCC-100/100I series converters are ideal solutions for converting RS-232 signals to RS-422/485 in critical industrial environments.

## Specifications

### RS-232 Side

**Connector:** DB9 female

**Signals:**

RS-232: TxD, RxD, RTS, CTS, GND

### RS-422/485 Side

**Connector:** Terminal Block

**Signals:**

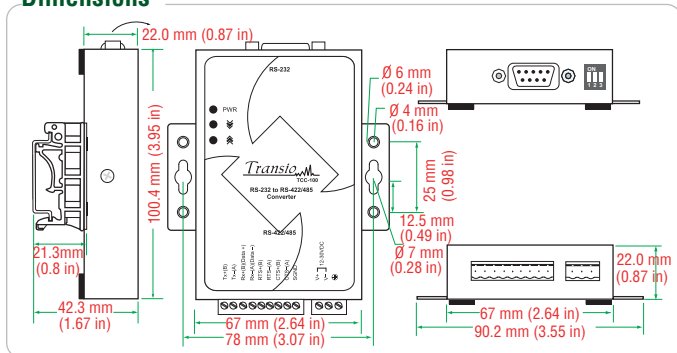
(interface selected by DIP switch)

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

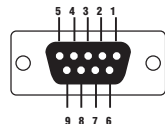
RS-485-4w: TxD+, TxD-, RxD+, RxD-, GND

RS-485-2w Signals: Data+, Data-, GND

### Dimensions



### DB9 female connector



PIN	RS-232
1	---
2	TxD
3	RxD
4	---

PIN	RS-232
5	GND
6	---
7	CTS
8	RTS

### Serial Communication

**Baudrate:** 50 bps to 921.6 Kbps

**ESD Protection:** 15 KV

**Optical Isolation Protection:** 2 KV (TCC-100I/100I-T)

### Physical Characteristics

**Housing:** Aluminum

**Dimensions:** 67 x 100.4 x 22 mm (2.64 x 3.93 x 0.87 in)

**Weight:** 148 ± 5 g

### Environmental Limits

**Operating Temperature:**

Standard Models: -20 to 60°C (-4 to 140°F)

Wide Temp. Models: -40 to 85°C (-40 to 185°F)

**Operating Humidity:** 5 to 95% RH

**Storage Temperature:** -20 to 85°C (-14 to 176°F)

### Power Requirements

**Source of Input Power:** Power input jack

**Input Voltage:** 12 to 48 VDC

**Power Consumption:**

TCC-100/100-T: 300 mA @ 12 V

TCC-100I/100I-T: 400 mA @ 12 V

**Voltage Reversal Protection:** Protects against V+/V- reversal

**Over Current Protection:** Protects against two signals shorted together

### Regulatory Approvals

**CE:** Class B

**FCC:** Class B

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Ordering Information

### Available Models

**TCC-100:** RS-232 to RS-422/485 converter, -20 to 60°C operating temperature

**TCC-100I:** RS-232 to RS-422/485 converter with optical isolation, -20 to 60°C operating temperature

**TCC-100-T:** RS-232 to RS-422/485 converter, -40 to 85°C operating temperature

**TCC-100I-T:** RS-232 to RS-422/485 converter with optical isolation, -40 to 85°C operating temperature

### Package Checklist

- TCC-100/100I series media converter
- DK-35A: DIN-rail mounting kit
- Power jack to 3-pin terminal block adaptor
- Quick Installation Guide (printed)
- Warranty Card

# TCC-80/80I Series

## Port-powered RS-232 to RS-422/485 converter with optional 2.5 KV isolation



- > External power source supported but not required
- > High-speed transmission up to 921.6 Kbps
- > Compact size
- > Converts RS-422, and both 2-wire and 4-wire RS-485
- > RS-485 automatic data direction control
- > Automatic baudrate detection
- > 15 KV serial ESD protection
- > Built-in 120-ohm termination resistors
- > 2.5 KV isolation (for TCC-80I only)
- > LED port power indicator

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



### Introduction

The TCC-80/80I media converters provide complete signal conversion between RS-232 and RS-422/485, without requiring an external power source. The converters support both half duplex 2-wire RS-485 and full duplex 4-wire RS-422/485, either of which can be converted between RS-232's TxD and RxD lines. In addition, the TCC-80/80I's 15 KV ESD protection guards against damage from electrostatic discharge, and the TCC-80I is the world's first high-speed, port-

powered converter with 2.5 KV isolation.

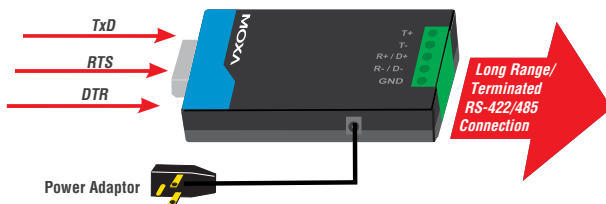
Automatic data direction control is provided for RS-485. In this case, the RS-485 driver is enabled automatically when the circuitry senses the TxD output from the RS-232 signal. This means that no programming effort is required to control the transmission direction of the RS-485 signal. Moreover, the TCC-80I's patented LED port power indicator lets you check whether or not the TCC-80I is receiving enough power.

### Port Power over RS-232

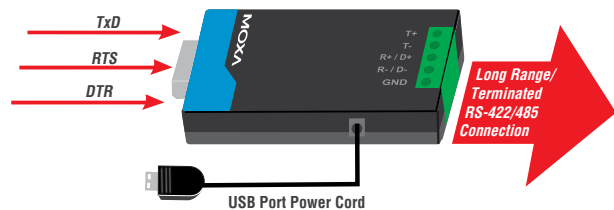
The RS-232 port of the TCC-80/80I is a DB9 female socket that can connect directly to the host PC, with power drawn from the TxD line. Regardless of whether the signal is high or low, the TCC-80/80I can obtain enough power from the data line. However, external power can be used if the handshake line is not available, if the serial cable is too long, or if the RS-232 device is a low power device. For external power, a 5 to 12 VDC power supply can be connected using an adaptor or a USB power cord.



### External Power Adaptor



### USB Power



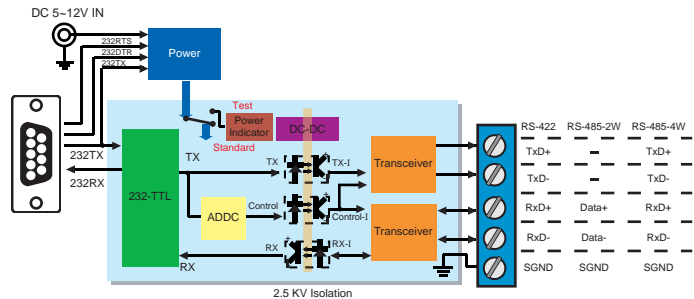
## Port Power Dissipation

When installing a TCC-80 or TCC-80I converter, it is important to pay attention to power consumption, RS-232 cable length, and RS-422/485 transmission distance. In general, the TCC-80 and TCC-80I obtain 50 mW of power from the power source. Standard PC COM ports can provide 70 to 90 mW of power if the TxD, RTS, and DTR

lines are connected. Moreover, the RS-232 cable should be shorter than 15 m (@ 9600 bps) to ensure that less power is lost from the host/device to the TCC-80. The remainder of the supplied power is used for transmitting the RS-422/485 signal.

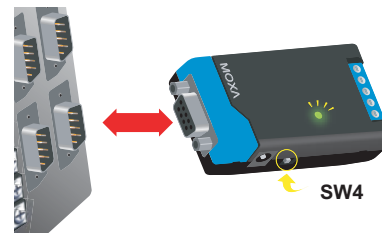
## Port Power and Optical Isolation

The RS-232 port of the TCC-80/80I is a DB9 female socket that can connect directly to the host PC, with power drawn from the TxD line. Electrical 2.5 KV isolation for the TCC-80I is achieved with a photo coupler that transforms the electrical signal into light, and then re-transforms the light back into an electrical signal on the other side. In this way, the two electrical circuits are completely isolated from each other. This also protects the devices from ground loop currents, reduces damage caused by data loss, and prevents damage to the communication interfaces.



## LED Port Power Indicator

It's easy enough to test the serial device with a multimeter to determine that the serial device will provide enough power to the media converter. However, it's even easier to let the TCC-80/80I test the device for you. Simply connect the TCC-80/80I to the device's RS-232 port and set the SW4 switch to Test mode. If the patented port power LED indicator lights up, the TCC-80/80I is receiving enough power. If the LED does not light up, you will need to attach an external power source to the TCC-80/80I.



## Specifications

### RS-232 Side

**Connector:** DB9 female

**Signals:**

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND  
(Loop-back wiring: RTS to CTS, DTR to DSR and DCD)

### RS-422/485 Side

**Connector:** Terminal Block or DB9 male

**Signals:**

(interface selected by DIP switch)  
RS-422: TxD+, TxD-, RxD+, RxD-, GND  
RS-485-4w: TxD+, TxD-, RxD+, RxD-, GND  
RS-485-2w Signals: Data+, Data-, GND

**RS-485 Data Direction Control:** ADDC® (automatic data direction control)

### Serial Communication

**Baudrate:** 50 bps to 921.6 Kbps

**Pull High Resistance:** 1k ohm

**Pull Low Resistance:** 150k ohm

**ESD Protection:** 15 KV

**Optical Isolation:** 2.5 KV rms for 1 minute (TCC-80I only)

### Physical Characteristics

**Housing:** ABS + PC

**Dimensions:** 42 x 80 x 22 mm (1.65 x 3.15 x 0.87 in)

**Weight:** 50 ± 5 g

### Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Operating Humidity:** 5 to 95% RH

**Storage Temperature:** -20 to 75°C (-14 to 167°F)

### Power Requirements

**Source of Input Power:** RS-232 port (TxD, RTS, DTR) or power input jack

**Input Voltage:** 5 to 12 VDC

**Power Consumption:**

TCC-80: 10 mA @ 5 V (with termination disabled)

TCC-80I: 20 mA @ 5 V (with termination disabled)

### Regulatory Approvals

**CE:** Class B

**FCC:** Class B

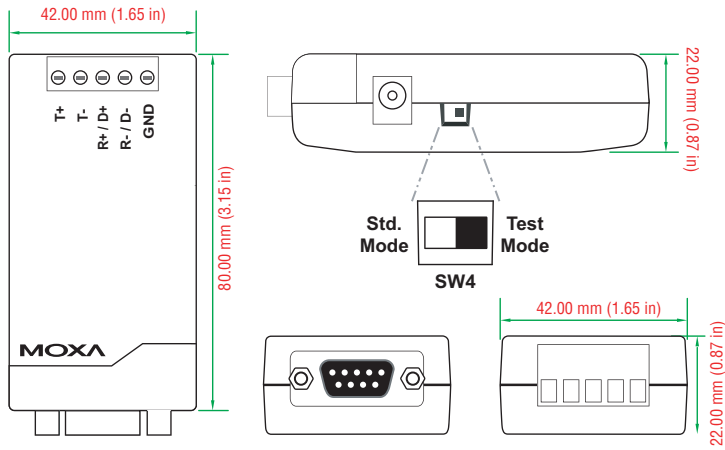
### Warranty

**Warranty Period:** 5 years

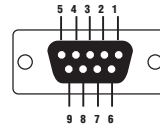
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

**Dimensions**

**TCC-80/80I**



**DB9 female connector**



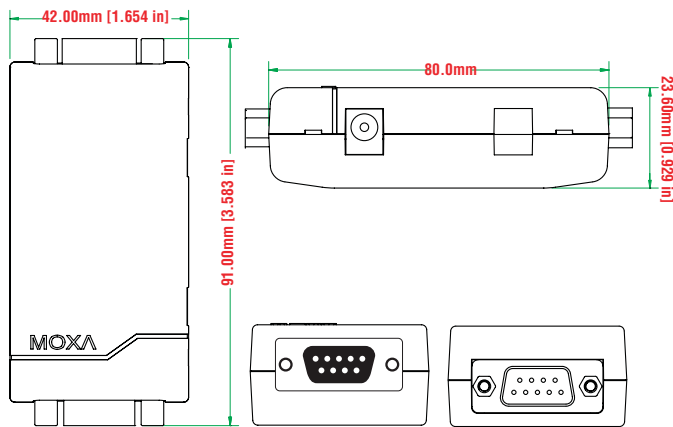
PIN	RS-232
1	DCD
2	TxD
3	RxD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS

**DIP Switch Settings**

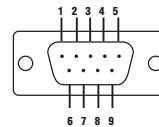


DIP Switch Settings			
RS-422 with Terminator	SW1 OFF	SW2 OFF	SW3 ON
RS-422	SW1 OFF	SW2 OFF	SW3 OFF
4-wire RS-485 with Terminator	SW1 ON	SW2 OFF	SW3 ON
4-wire RS-485	SW1 ON	SW2 OFF	SW3 OFF
2-wire RS-485 with Terminator	SW1 ON	SW2 ON	SW3 ON
2-wire RS-485	SW1 ON	SW2 SW3 OFF	OFF

**TCC-80-DB9, TCC-80I-DB9**



**DB9 male RS-422/485 port**



PIN	RS-422/RS-485-4w	RS-485-2w
1	TxD+(B)	---
2	TxD-(A)	---
3	RxD+(B)	Data+(B)
4	RxD-(A)	Data-(B)
5	GND	GND
6	---	---
7	---	---
8	---	---

**Ordering Information**

**Available Models**

**TCC-80:** Port-powered RS-232 to RS-422/485 converter with 15 KV serial ESD protection and terminal block on the RS-422/485 side

**TCC-80-DB9:** Port-powered RS-232 to RS-422/485 converter with 15 KV serial ESD protection and DB9 male connector on the RS-422/485 side

**TCC-80I:** Port-powered RS-232 to RS-422/485 converter with 15 KV serial ESD protection, terminal block on the RS-422/485 side, and 2.5 KV optical isolation

**TCC-80I-DB9:** Port-powered RS-232 to RS-422/485 converter with 15 KV serial ESD protection, DB9 male connector on the RS-422/485 side, and 2.5 KV optical isolation

**Optional Accessories** (can be purchased separately)

**CBL-F9M9-20:** DB9 male to DB9 female RS-232 cable (20 cm)

**Package Checklist**

- TCC-80 or TCC-80I media converter
- USB power cord (50 cm)
- Quick Installation Guide (printed)
- Warranty Card

# TCC-120/120I

## Industrial RS-422/485 converter/repeater with optional 2 KV isolation



- > Boost serial signal to extend transmission distance
- > Wall or DIN-rail mounting
- > Terminal block for easy wiring
- > Power input from terminal block
- > DIP switch setting for built-in terminator (120 ohms)
- > Boost RS-422 or RS-485 signal, or convert RS-422 to RS-485
- > 2 KV isolation protection (TCC-120I)

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



12

Standalone Series > TCC-120/120I

### Introduction

The TCC-120 and TCC-120I are RS-422/485 converters/repeaters designed to extend RS-422/485 transmission distance. Both products have a superior industrial-grade design that includes

DIN-rail mounting, terminal block wiring, and external terminal block for power. In addition, the TCC-120I supports optical isolation for system protection. The TCC-120 and TCC-120I are ideal RS-422/485 converters/repeaters for critical industrial environments.

### Specifications

#### Serial Communication

**Connectors:** Terminal Block on both ends

**Baudrate:** 50 bps to 921.6 Kbps

**Signals:**

RS-422/485-4w: TxD+, TxD-, RxD+, RxD-

RS-485-2w: Data+, Data-

**RS-485 Data Direction Control:** ADDC® (automatic data direction control)

**ESD Protection:** 15 KV for all signals

**Optical Isolation:** 2 KV for power and signal (TCC-120I only)

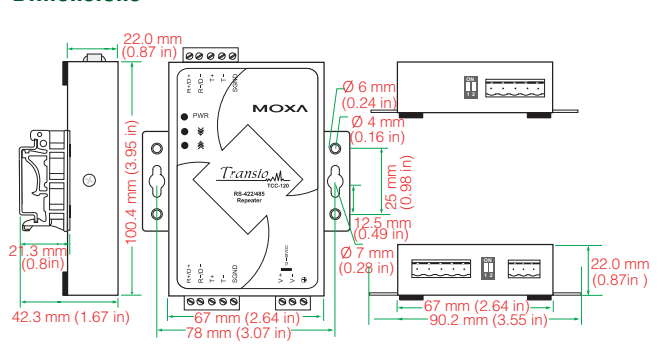
#### Physical Characteristics

**Housing:** Aluminum

**Dimensions:** 67 x 100.4 x 22 mm (2.64 x 3.93 x 0.87 in)

**Weight:** 148 ± 5 g

#### Dimensions



#### Environmental Limits

**Operating Temperature:** -20 to 60°C (-4 to 140°F)

**Operating Humidity:** 5 to 95% RH

**Storage Temperature:** -20 to 85°C (-14 to 176°F)

#### Power Requirements

**Source of Input Power:** RS-232 port (TxD signal) or power input jack

**Input Voltage:** 12 to 48 VDC

**Power Consumption:**

TCC-120: 98 mA @ 12 V, 1.18 W

TCC-120I: 234 mA @ 12 V, 2.81 W

**Voltage Reversal Protection:** Protects against V+/V- reversal

**Over Current Protection:** Protects against two signals shorted together

#### Regulatory Approvals

**CE:** Class B

**FCC:** Class B

#### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Ordering Information

#### Available Models

**TCC-120:** RS-422/485 converter/repeater

**TCC-120I:** RS-422/485 converter/repeater with 2 KV optical isolation

#### Package Checklist

- TCC-120 or TCC-120I media converter
- DK-35A: DIN-rail mounting kit
- Quick Installation Guide (printed)
- Warranty Card

# TCC-82

## Port-powered RS-232 4-channel isolator



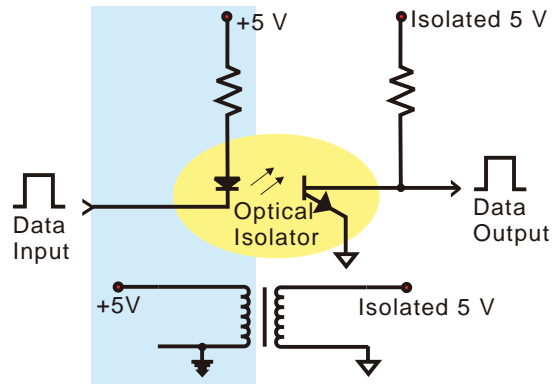
- > 4 channels of 4 KV RMS isolation for 1 minute
- > External power source supported but not required
- > 15 KV serial ESD protection
- > Automatic baudrate detection
- > Compact size

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



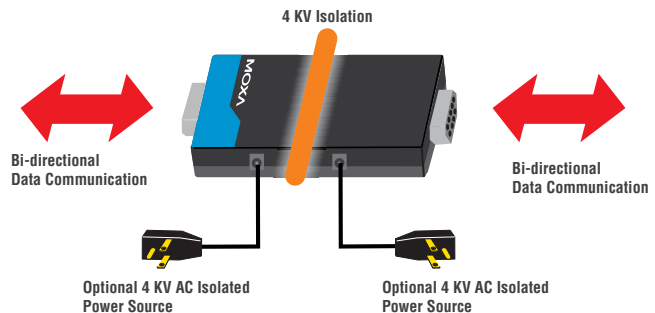
### Introduction

The TCC-82 provides full electrical isolation for bi-directional serial communication between two RS-232 devices in a compact, industrial-grade package. Both sides of an RS-232 connection are isolated optically to provide perfect protection against lightning surges, accidental high voltage shorts, and ground loops. The built-in, wide range isolators are tested to ensure that they can withstand more than 4 KV rms input to output for 1 minute. This means that the TCC-82 not only meets the requirements of general serial data communications, but also the high standards required by industrial automation and medical applications. The TCC-82 protects the Tx/D and Rx/D data lines, and also protects the RTS and CTS handshake lines for a total of 4 isolated channels to provide complete protection of your RS-232 applications.



### External Power Source Not Required

The TCC-82 supports port-powered operation, which means that it can obtain power directly from the attached serial devices. Power is obtained from the RS-232 Tx/D, RTS, or DTR lines, regardless of whether the signal is high or low, eliminating the need for an external power supply. However, external power can be used if handshake lines are not available, if the serial cable is too long, or if the serial device is a low powered device. For external power, the TCC-82 can use a 5 to 12 VDC adaptor or a USB power cord. Note that both sides of the connection are powered independently, so if necessary, one side can rely on port power and the other on an external power source.



When installing the TCC-82, we recommend that you connect all output signals. The TCC-82 obtains power from these signals even if they are not used by your system. Care should be taken when choosing the external power supply if your application requires the full 4 KV of isolation. Most commercial power supplies provide only 1500 VAC isolation between the primary and secondary windings. If you are using external power for both sides of the TCC-82, make sure that separate power sources are used, each with sufficient isolation protection.



## Specifications

### Serial Communication

**Connectors:** DB9 male and DB9 female

**Baudrate:** 50 bps to 921.6 Kbps

**Signals:**

RS-232: TxD, RxD, RTS, CTS

(Loop-back wiring: DTR to DSR and DCD)

**ESD Protection:** 15 KV for all signals

**Optical Isolation:** 4 KV for 1 minute

### Physical Characteristics

**Housing:** ABS

**Dimensions:** 42 x 80 x 23.6 mm (1.65 x 3.15 x 0.93 in)

**Weight:** 60 ± 5 g

### Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Operating Humidity:** 5 to 95% RH

**Storage Temperature:** -20 to 75°C (-14 to 167°F)

### Power Requirements

**Source of Input Power:** RS-232 port (TxD signal) or power input jack

**Input Voltage:** 5 to 12 VDC

**Power Consumption:** 20 mA @ 5 V

### Regulatory Approvals

**CE:** Class B

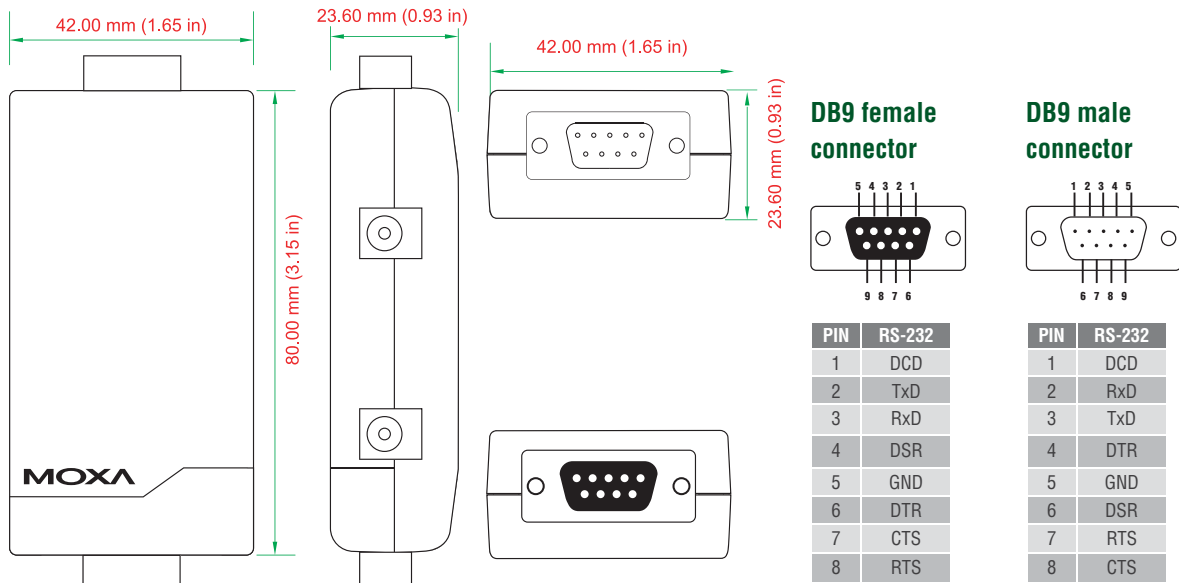
**FCC:** Class B

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions



## Ordering Information

### Available Models

**TCC-82:** Port-powered RS-232 isolator with 4 KV isolation and 15 KV serial ESD protection

### Optional Accessories (can be purchased separately)

**Power Adaptor**

**CBL-F9M9-20:** DB9 male to DB9 female RS-232 cable (20 cm)

### Package Checklist

- TCC-82 media converter
- USB power cord (50 cm) x 2
- Quick Installation Guide (printed)
- Warranty Card

# IMC-101G

## Industrial Gigabit Ethernet to fiber media converter



- > 10/100/1000BaseT(X) and 1000BaseSX/LX/LHX/ZX supported
- > Link Fault Pass-Through (LFP)
- > Power failure, port break alarm by relay output
- > Redundant power input
- > -40 to 75°C operating temperature range (T models)
- > Designed for hazardous locations

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



### : Introduction

The IMC-101G industrial Gigabit media converters are designed to provide reliable and stable 10/100/1000BaseT(X) to 1000BaseSX/LX/LHX/ZX media conversion in harsh industrial environments. The IMC-101G's industrial design is excellent for keeping your industrial automation applications running continuously, and each IMC-101G

converter comes with a relay output warning alarm to help prevent damage and loss. All IMC-101G models are subjected to a 100% burn-in test, and are available in models that support a standard operating temperature range of 0 to 60°C, and an extended operating temperature range of -40 to 75°C.

### : Specifications

#### Technology

##### Standards:

IEEE 802.3 for 10BaseT  
 IEEE 802.3u for 100BaseT(X) and 100BaseFX  
 IEEE 802.3ab for 1000BaseT(X)  
 IEEE 802.3z for 1000BaseSX/LX/LHX/ZX

#### Interface

**RJ45 ports:** 10/100/1000BaseT(X)  
**Fiber ports:** Optional 1000BaseSX/LX/LHX/ZX (LC connector)  
**LED Indicators:** PWR1, PWR2, FAULT, 10/100M (TP port), 1000M (TP and Fiber port)  
**DIP Switches:** Port break alarm mask, Fault Pass-Through, Fiber AN/Force

**Alarm Contact:** One relay output with current carrying capacity of 1A @ 24 VDC

#### Optical Fiber

##### Multi-mode Transmission Distance:

1000BaseSX:  
 • 0 to 500 m, 850 nm (50/125 μm, 400 MHz\*km)  
 • 0 to 275 m, 850 nm (62.5/125 μm, 200 MHz\*km)  
 1000BaseLX:  
 • 0 to 1100 m, 1310 nm (50/125 μm, 800 MHz\*km)  
 • 0 to 550 m, 1310 nm (62.5/125 μm, 500 MHz\*km)

##### Single-mode Transmission Distance:

1000BaseLX: 0 to 10 km, 1310 nm (9/125 μm, 3.5 PS/(nm\*km))  
 1000BaseLHX: 0 to 40 km, 1310 nm (9/125 μm, 3.5 PS/(nm\*km))  
 1000BaseZX: 0 to 80 km, 1550 nm (9/125 μm, 19 PS/(nm\*km))

#### Physical Characteristics

**Housing:** Metal, IP30 protection  
**Dimensions:** 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)  
**Weight:** 630 g  
**Installation:** DIN-Rail mounting, wall mounting (with optional kit)

#### 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 85°C (-40 to 185°F)

#### Power Requirements

**Input Voltage:** 24 VDC (12 to 45 VDC), redundant inputs

**Input Current:** 0.11A (@ 24 V)

**Connection:** Removable terminal block

**Overload Current Protection:** 1.1A

**Reverse Polarity Protection:** Present

#### Regulatory Approvals

**Safety:** UL508

**EMI:** FCC Part 15, CISPR (EN55022) class A

##### EMS:

EN61000-4-2 (ESD), level 3  
 EN61000-4-3 (RS), level 3  
 EN61000-4-4 (EFT), level 3  
 EN61000-4-5 (Surge), level 3  
 EN61000-4-6 (CS), level 3  
 EN61000-4-8  
 EN61000-4-11

**Freefall:** IEC60068-2-32

**Shock:** IEC60068-2-27

**Vibration:** IEC60068-2-6

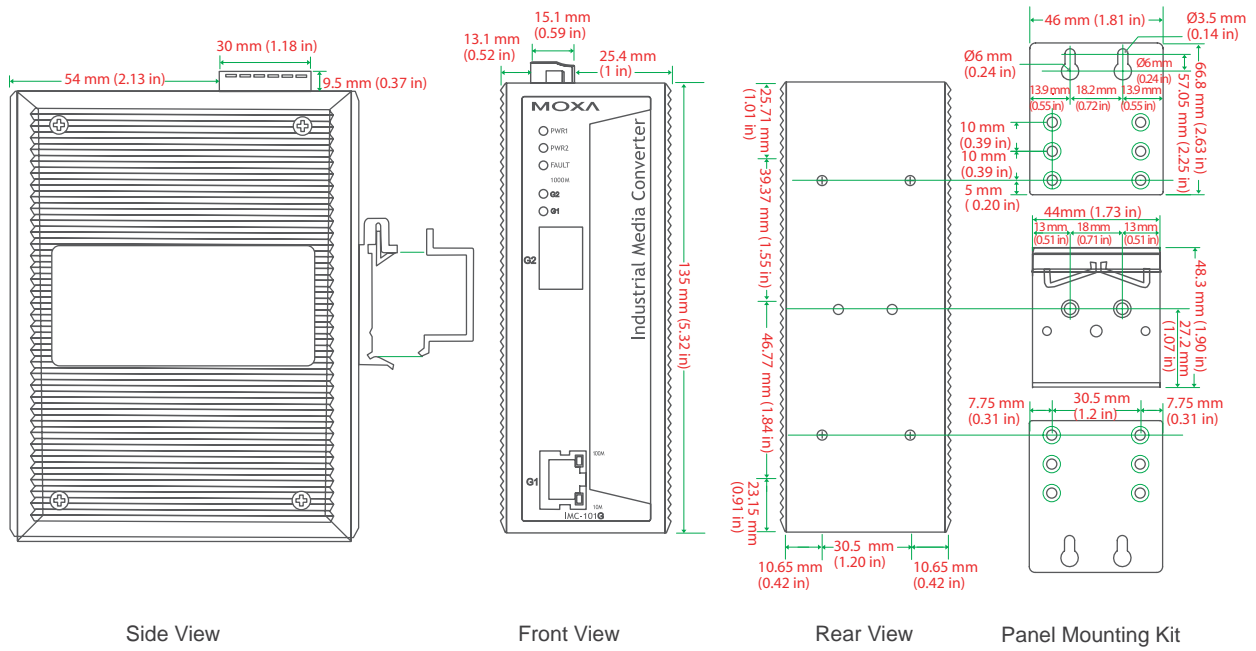
**MTBF:** 500,000 hrs; Database: Telcordia (Bellcore), GB

#### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Dimensions



## Ordering Information

### Available Models

**IMC-101G:** Industrial 10/100/1000BaseT(X) to 1000BaseSX/LX/LHX/ZX media converter, 0 to 60°C operating temperature

**IMC-101G-T:** Industrial 10/100/1000BaseT(X) to 1000BaseSX/LX/LHX/ZX media converter, -40 to 75°C operating temperature

### Optional Accessories (can be purchased separately)

**DR-4524:** 45W/2A DIN-Rail 24 VDC power supply, 85 to 264 VAC input

**DR-75-24:** 75W/3.2A DIN-Rail 24 VDC power supply, 85 to 264 VAC input

**DR-120-24:** 120W/5A DIN-Rail 24 VDC power supply, 88 to 132 VAC or 176 to 264 VAC input by switch

**WK-46:** Wall mounting kit

**RK-4U:** 4U-high 19" rack mounting kit

# IMC-101 Series

## Industrial 10/100BaseT(X) to 100BaseFX media converters



- > 10/100BaseT(X) auto-negotiation and auto-MDI/MDI-X
- > Link Fault Pass-Through (LFP)
- > Power failure, port break alarm by relay output
- > Redundant power inputs
- > -40 to 75°C operating temperature range (T models)
- > Designed for hazardous locations (Class 1 Div. 2/Zone 2)



The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

### Introduction

The IMC-101 industrial media converters provide industrial-grade media conversion between 10/100BaseT(X) and 100BaseFX (SC/ST connectors). The IMC-101 converters' reliable industrial design is excellent for keeping your industrial automation applications running continuously, and each IMC-101 converter comes with a relay output warning alarm to help prevent damage and loss. The IMC-101 media converters are designed for harsh industrial environments, such

as in hazardous locations (Class 1, Division 2/Zone 2, DNV, and GL Certification), and comply with FCC, TV, UL, and CE standards. The IMC-101 series is available in models that support an operating temperature from 0 to 60°C, and an extended operating temperature from -40 to 75°C. All IMC-101 series converters are subjected to a 100% burn-in test.

### Specifications

#### Technology

##### Standards:

IEEE 802.3 for 10BaseT

IEEE 802.3u for 100BaseT(X) and 100BaseFX

##### Interface

**RJ45 ports:** 10/100BaseT(X)

**Fiber ports:** 100BaseFX (SC/ST connectors)

**LED Indicators:** PWR1, PWR2, FAULT, 10/100M (TP port), 100M (Fiber port), FDX/COL (Fiber port)

**DIP Switches:** 100BaseFX Full/Half duplex selection, port break alarm mask

**Alarm Contact:** One relay output with current carrying capacity of 1A @ 24 VDC

##### Optical Fiber

	100BaseFX		
	Multi-mode	Single-mode	Single-mode, 80 km
Wavelength	1300 nm	1310 nm	1550 nm
Max. TX	-10 dBm	0 dBm	0 dBm
Min. TX	-20 dBm	-5 dBm	-5 dBm
RX Sensitivity	-32 dBm	-34 dBm	-34 dBm
Link Budget	12 dB	29 dB	29 dB
Typical Distance	5 km <sup>a</sup> 4 km <sup>b</sup>	40 km <sup>c</sup>	80 km <sup>d</sup>
Saturation	-6 dBm	-3 dBm	-3 dBm

a. 50/125 μm, 800 MHz\*km fiber optic cable

b. 62.5/125 μm, 500 MHz\*km fiber optic cable

c. 9/125 μm, 3.5 PS/(nm\*km) fiber optic cable

d. 9/125 μm, 19 PS/(nm\*km) fiber optic cable

#### Physical Characteristics

**Housing:** Metal, IP30 protection

**Dimensions:** 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)

**Weight:** 630 g

**Installation:** DIN-Rail mounting, wall mounting (with optional kit)

#### 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 85°C (-40 to 185°F)

#### Power Requirements

**Input Voltage:** 24 VDC (12 to 45 VDC), redundant inputs

**Input Current:** 0.16A (@ 24 V)

**Connection:** Removable terminal block

**Overload Current Protection:** 1.1A

**Reverse Polarity Protection:** Present

## Regulatory Approvals

**Safety:** UL508, UL60950-1, CSA C22.2 No. 60950-1, EN60950-1

**EMI:** FCC Part 15, CISPR (EN55022) class A

**EMS:**

EN61000-4-2 (ESD), level 3

EN61000-4-3 (RS), level 3

EN61000-4-4 (EFT), level 3

EN61000-4-5 (Surge), level 3

EN61000-4-6 (CS), level 3

EN61000-4-8

EN61000-4-11

**Hazardous Location:**

UL/cUL Class1, Division 2, Groups A, B, C, and D, ATEX Class1, Zone 2, Ex nC IIC (IMC-101-M-ST, IMC-101-S-SC-80 pending)

**Freefall:** IEC60068-2-32

**Shock:** IEC60068-2-27

**Vibration:** IEC60068-2-6

**Maritime:** DNV, GL

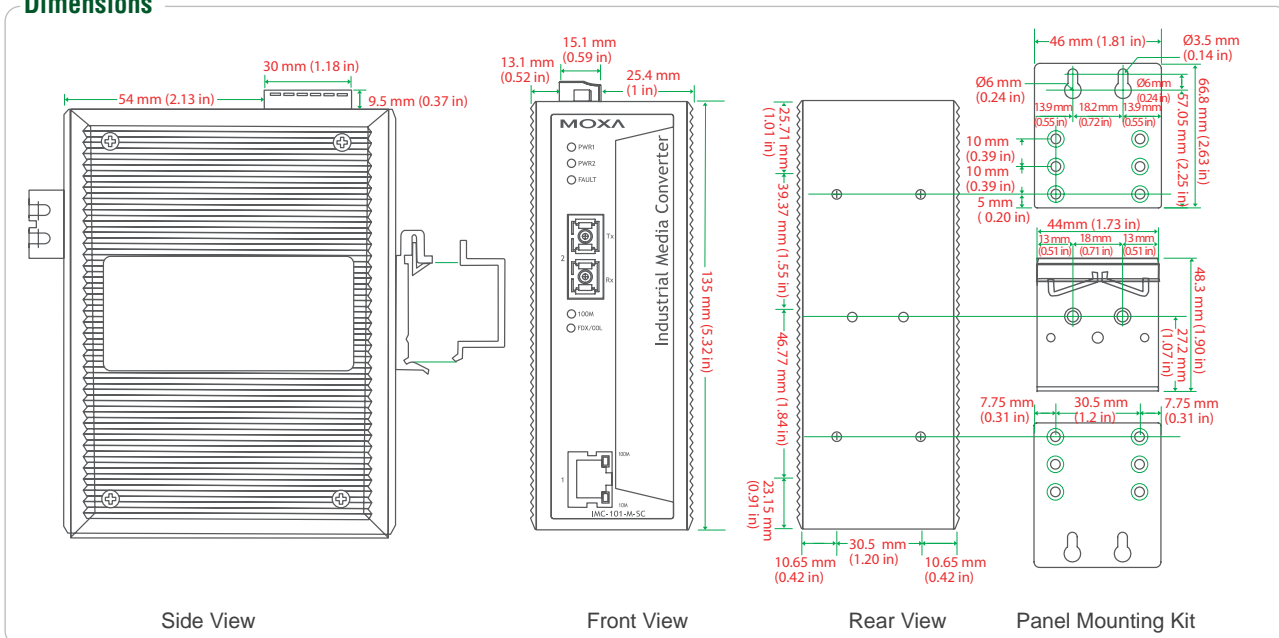
**MTBF:** 401,000 hrs; Database: MIL-HDBK-217F: GB 25°C

## Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Dimensions



## Ordering Information

### Available Models

**IMC-101-M-SC:** Industrial 10/100BaseT(X) to 100BaseFX media converter, multi mode, SC connector, 0 to 60°C operating temperature

**IMC-101-M-ST:** Industrial 10/100BaseT(X) to 100BaseFX media converter, multi mode, ST connector, 0 to 60°C operating temperature

**IMC-101-S-SC:** Industrial 10/100BaseT(X) to 100BaseFX media converter, single mode, SC connector, 40 km, 0 to 60°C operating temperature

**IMC-101-S-SC-80:** Industrial 10/100BaseT(X) to 100BaseFX media converter, single mode, SC connector, 80 km, 0 to 60°C operating temperature

**IMC-101-M-SC-T:** Industrial 10/100BaseT(X) to 100BaseFX media converter, multi mode, SC connector, -40 to 75°C operating temperature

**IMC-101-M-ST-T:** Industrial 10/100BaseT(X) to 100BaseFX media converter, multi mode, ST connector, -40 to 75°C operating temperature

**IMC-101-S-SC-T:** Industrial 10/100BaseT(X) to 100BaseFX media converter, single mode, SC connector, 40 km, -40 to 75°C operating temperature

**IMC-101-S-SC-80-T:** Industrial 10/100BaseT(X) to 100BaseFX media converter, single mode, SC connector, 80 km, -40 to 75°C operating temperature

### Optional Accessories (can be purchased separately)

**DR-4524:** 45W/2A DIN-Rail 24 VDC power supply, 85 to 264 VAC input

**DR-75-24:** 75W/3.2A DIN-Rail 24 VDC power supply, 85 to 264 VAC input

**DR-120-24:** 120W/5A DIN-Rail 24 VDC power supply, 88 to 132 VAC/176 to 264 VAC input by switch

**WK-46:** Wall mounting kit

**RK-4U:** 4U-high 19" rack mounting kit

**SC to ST, SC to SC, ST to ST Connectors:** See page A-11 for details

# IMC-21 Series

## Entry-level industrial 10/100BaseT(X) to 100BaseFX media converters



- > Multi-mode or single-mode, with SC or ST fiber connector
- > Link Fault Pass-Through (LFP)
- > Power inputs: 12 to 45 VDC, 18 to 30 VAC (47-63 Hz)
- > -10 to 60°C operating temperature range
- > DIP switches to select FDX/HDX/10/100/Auto/Force



The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

### Introduction

The IMC-21 industrial media converters are entry-level 10/100BaseT(X) to 100BaseFX media converters designed to provide reliable and stable operation in harsh industrial environments. The converters are a cost-effective solution that run on either a 12 to 45 VDC power input or 18 to 30 VAC power input, and can operate

reliably in temperatures ranging from -10 to 60°C. The rugged hardware design ensures that your Ethernet equipment can withstand demanding industrial conditions. The IMC-21 converters are easy to mount on a DIN-Rail or in distribution boxes.

### Specifications

#### Technology

##### Standards:

IEEE 802.3 for 10BaseT  
IEEE 802.3u for 100BaseT(X) and 100BaseFX  
IEEE 802.3x for Flow Control

##### Interface

**RJ45 ports:** 10/100BaseT(X)

**Fiber ports:** 100BaseFX (SC/ST connectors)

**LED Indicators:** Power, 10/100M (TP port), 100M (fiber port), FDX/ COL (fiber port)

**DIP Switches:** TP port's 10/100M, Half/Full modes, and Force/Auto modes, fiber connection's Full/Half mode, Link Fault Pass-Through (LFP)

#### Optical Fiber

	100BaseFX	
	Multi-mode	Single-mode
Distance	5 km, 1300 nm	40 km, 1310 nm
Max. TX Output	-14 dBm	0 dBm
Min. TX Output	-20 dBm	-5 dBm
RX Sensitivity	-34 to -30 dBm	-36 to -32 dBm

#### Physical Characteristics

**Housing:** Plastic, IP30 protection

**Dimensions:** 25 x 109 x 97 mm (0.98 x 4.29 x 3.82 in)

**Weight:** 125 g

**Installation:** DIN-Rail 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)

**Operating Humidity:** 5 to 95% RH

**Storage Temperature:** -40 to 70°C (-40 to 158°F)

#### Power Requirements

**Input Voltage:** 12 to 45 VDC, 18 to 30 VAC (47-63 Hz)

**Input Current:** 0.15A (@ 24 V)

**Connection:** Removable 3-contact terminal block

**Overload Current Protection:** 1.1 A

**Reverse Polarity Protection:** Present

### Regulatory Approvals

**Safety:** UL508, UL60950-1, CSA C22.2 No. 60950-1, EN60950-1

**EMI:** FCC Part 15, CISPR (EN55022) class A

**EMS:**

EN61000-4-2 (ESD)

EN61000-4-3 (RS)

EN61000-4-4 (EFT)

EN61000-4-5 (Surge)

EN61000-4-6 (CS)

**Freefall:** IEC60068-2-32

**Shock:** IEC60068-2-27

**Vibration:** IEC60068-2-6

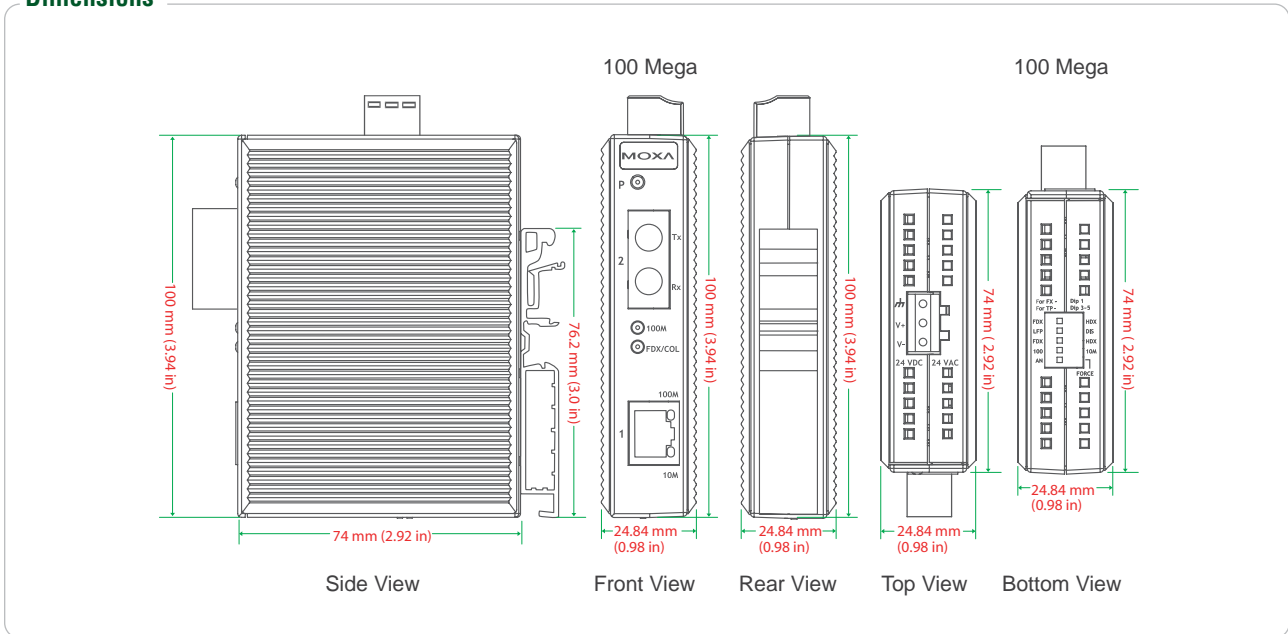
**MTBF:** 353,000 hrs; Database: MIL-HDBK-217F: GB 25°C

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions



### Ordering Information

#### Available Models

**IMC-21-M-SC:** Industrial 10/100BaseT(X) to 100BaseFX media converter, multi mode, SC connector

**IMC-21-M-ST:** Industrial 10/100BaseT(X) to 100BaseFX media converter, multi mode, ST connector

**IMC-21-S-SC:** Industrial 10/100BaseT(X) to 100BaseFX media converter, single mode, SC connector

#### Optional Accessories (can be purchased separately)

**RK-4U:** 4U-high 19" rack mounting kit

**SC to ST, SC to SC, ST to ST Connectors:** See page A-11 for details

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