

ICF-1150 Series

Industrial RS-232/422/485 to fiber converters



Features and Benefits

- 3-way communication: RS-232, RS-422/485, and fiber
- Rotary switch to change the pull high/low resistor value
- Extends RS-232/422/485 transmission up to 40 km with single-mode or 5 km with multi-mode
- 3-way isolation protection (for I models only)
- -40 to 85°C wide-temperature range models available
- C1D2, ATEX, and IECEx certified for harsh industrial environments

Certifications



Introduction

The ICF-1150 serial-to-fiber converters transfer RS-232/RS-422/RS-485 signals to optical fiber ports to enhance transmission distance. When an ICF-1150 device receives data from any serial port, it sends the data through the optical fiber ports. These products not only support single-mode and multi-mode fiber for different transmission distances, models with isolation protection are also available to enhance noise immunity. The ICF-1150 products feature Three-Way Communication and a Rotary Switch for setting the pull high/low resistor for onsite installation.

Three-Way Communication

The ICF-1150 Series supports 2 serial ports, with a DB9 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 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 multidrop 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.

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
Isolation	2 kV (I models)
Optical Fiber	100BaseFX ports: ICF-1150/1150I-M/S-SC Series: multi-mode/single-mode SC connector ICF-1150/1150I-M/S-ST Series: multi-mode/single-mode ST connector

	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 -8	0 to -8
	RX Range (dBm)	0 to -25	0 to -25
	Link Budget (dB)	15	20
	Dispersion Penalty (dB)	1	1
<p>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.</p>			
Pull High/Low Resistor for RS-485	150 kilo-ohm, 10 kilo-ohm, 4.7 kilo-ohm, 3.3 kilo-ohm, 1 kilo-ohm, 909 ohm, 822 ohm, 770 ohm, 500 ohm, 485 ohm		
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			
Input Current	ICF-1150 Series: 127 mA @ 12 VDC ICF-1150I Series: 163 mA @ 12 VDC		
Input Voltage	12 to 48 VDC		
No. of Power Inputs	1		
Overload Current Protection	Supported		
Power Connector	Terminal block		
Power Consumption	ICF-1150 Series: 163 mA @ 12 VDC ICF-1150I Series: 127 mA @ 12 VDC		
Physical Characteristics			
Housing	Metal		
IP Rating	IP30		
Dimensions	30.3 x 70 x 115 mm (1.19 x 2.76 x 4.53 in)		
Weight	330 g (0.73 lb)		
Installation	DIN-rail mounting		

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)
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: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 0.5 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
Hazardous Locations	-IEX models: IECEx

MTBF

Time	792,085 hrs
Standards	Telcordia (Bellcore), GB

Warranty

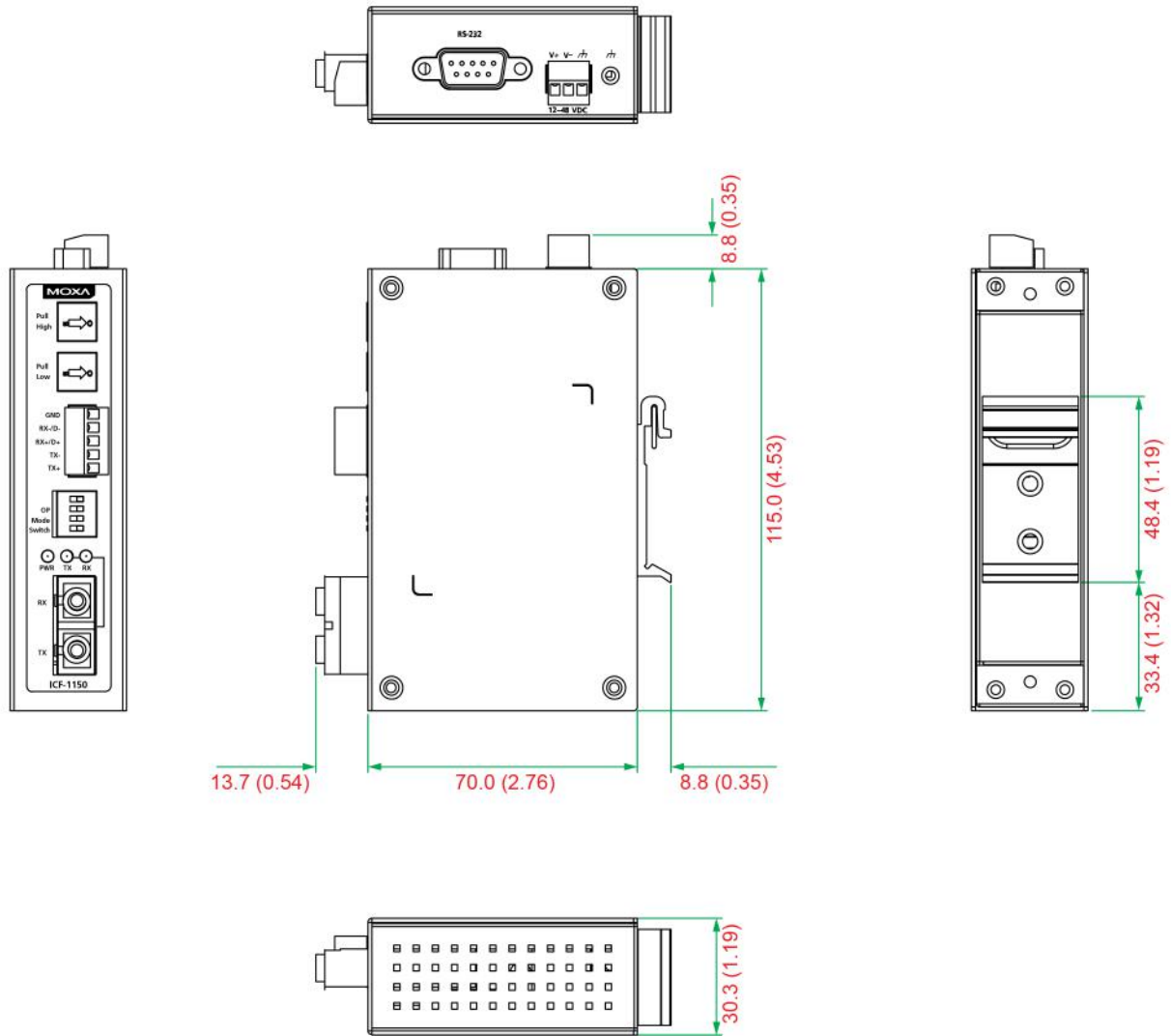
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x ICF-1150 Series converter
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	Isolation	Operating Temp.	Fiber Module Type	IECEx Supported
ICF-1150-M-ST	-	0 to 60°C	Multi-mode ST	-
ICF-1150-M-SC	-	0 to 60°C	Multi-mode SC	-
ICF-1150-S-ST	-	0 to 60°C	Single-mode ST	-
ICF-1150-S-SC	-	0 to 60°C	Single-mode SC	-
ICF-1150-M-ST-T	-	-40 to 85°C	Multi-mode ST	-
ICF-1150-M-SC-T	-	-40 to 85°C	Multi-mode SC	-
ICF-1150-S-ST-T	-	-40 to 85°C	Single-mode ST	-
ICF-1150-S-SC-T	-	-40 to 85°C	Single-mode SC	-
ICF-1150I-M-ST	2 kV	0 to 60°C	Multi-mode ST	-
ICF-1150I-M-SC	2 kV	0 to 60°C	Multi-mode SC	-
ICF-1150I-S-ST	2 kV	0 to 60°C	Single-mode ST	-
ICF-1150I-S-SC	2 kV	0 to 60°C	Single-mode SC	-
ICF-1150I-M-ST-T	2 kV	-40 to 85°C	Multi-mode ST	-

Model Name	Isolation	Operating Temp.	Fiber Module Type	IECEx Supported
ICF-1150I-M-SC-T	2 kV	-40 to 85°C	Multi-mode SC	–
ICF-1150I-S-ST-T	2 kV	-40 to 85°C	Single-mode ST	–
ICF-1150I-S-SC-T	2 kV	-40 to 85°C	Single-mode SC	–
ICF-1150-M-ST-IEX	–	0 to 60°C	Multi-mode ST	✓
ICF-1150-M-SC-IEX	–	0 to 60°C	Multi-mode SC	✓
ICF-1150-S-ST-IEX	–	0 to 60°C	Single-mode ST	✓
ICF-1150-S-SC-IEX	–	0 to 60°C	Single-mode SC	✓
ICF-1150-M-ST-T-IEX	–	-40 to 85°C	Multi-mode ST	✓
ICF-1150-M-SC-T-IEX	–	-40 to 85°C	Multi-mode SC	✓
ICF-1150-S-ST-T-IEX	–	-40 to 85°C	Single-mode ST	✓
ICF-1150-S-SC-T-IEX	–	-40 to 85°C	Single-mode SC	✓
ICF-1150I-M-ST-IEX	2 kV	0 to 60°C	Multi-mode ST	✓
ICF-1150I-M-SC-IEX	2 kV	0 to 60°C	Multi-mode SC	✓
ICF-1150I-S-ST-IEX	2 kV	0 to 60°C	Single-mode ST	✓
ICF-1150I-S-SC-IEX	2 kV	0 to 60°C	Single-mode SC	✓
ICF-1150I-M-ST-T-IEX	2 kV	-40 to 85°C	Multi-mode ST	✓
ICF-1150I-M-SC-T-IEX	2 kV	-40 to 85°C	Multi-mode SC	✓
ICF-1150I-S-ST-T-IEX	2 kV	-40 to 85°C	Single-mode ST	✓
ICF-1150I-S-SC-T-IEX	2 kV	-40 to 85°C	Single-mode SC	✓

Accessories (sold separately)

Cables

CBL-F9M9-150	DB9 female to DB9 male serial cable, 1.5 m
CBL-F9M9-20	DB9 female to DB9 male serial cable, 20 cm

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