ICF-1150 Series

Industrial RS-232/422/485 to fiber converters

> **3-way communication: RS-232, fiber, and RS-422/485**
> **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 isolation protection (for I models only)**
> **-40 to 85°C wide temperature range models available**
> **C1D2, ATEX, and IECEx certified for harsh industrial environments**

: Three-Way Communication

The ICF-1150 series support 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.

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
Fiber Cable Requirements:

Low-Speed Fiber Module	Multi-Mode	Single-Mode
Fiber Cable Requirements	50/125 µm, 800 MHz 62.5/125 µm, 500 MHz	G.652
Typical Distance	5 km	40 km
Wave-length Typical (nm)	850	1310
Wave-length TX Range (nm)	840 to 860	1290 to 1330
Wave-length RX Range (nm)	800 to 900	1100 to 1650
Optical Power TX Range (dBm)	0 to -8	0 to -8
Optical Power RX Range (dBm)	0 to -25	0 to -25
Optical Power Link Budget (dB)	17	17
Optical Power Dispersion Penalty (dB)	1	1

Note: When using a power meter to measure the fiber TX power, set the baudrate to 9,600 bps and send data (00, …, 0h) to the serial converter's serial port.

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

RS-232/422/485 Side
RS-232 Signals: TxD, RxD, 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
Isolation: 2 kV RMS isolation per I/O port for 1 minute

Physical Characteristics
Housing: Metal
Dimensions:
ICF-1150: 118 g (0.26 lb)
ICF-1150I: 135 g (0.30 lb)

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Weight:
ICF-1150: 2,298,766 hrs
ICF-1150I: 1,770,450 hrs

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: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements
Input Voltage: 12 to 48 VDC
Input Current:
ICF-1150: 156 mA @ 12 VDC
ICF-1150I: 195 mA @ 12 VDC
Voltage Reversal Protection: Protects against V+/V- reversal
Overcurrent Protection: 1.1 A (protects against two signals shorted together)

Standards and Certifications
Safety: UL 508, EN 62368
Hazardous Location: UL/cUL Class I Division 2 Groups A/B/C/D, ATEX Zone 2 EEx nC IIC, IECEx

EMC: EN 55032/24
EMI: CISPR 32, FCC Part 15B Class B
EMS:
EN 61000-4-2 (ESD): Contact: 8 kV; Air: 15 kV
EN 61000-4-3 (RS): 80 MHz to 1 GHz: 3 V/m
EN 61000-4-4 (EFT): Power: 4 kV; Signal: 2 kV
EN 61000-4-5 (Surge): Power: 4 kV; Signal: 1 kV
EN 61000-4-6 (CS): 150 kHz to 80 MHz: 3 V/m
EN 61000-4-8 (PFMF)
Green Product: RoHS, CRoHS, WEEE
Freefall: IEC 60068-2-32

MTBF (mean time between failures)
Time: 792,085 hrs
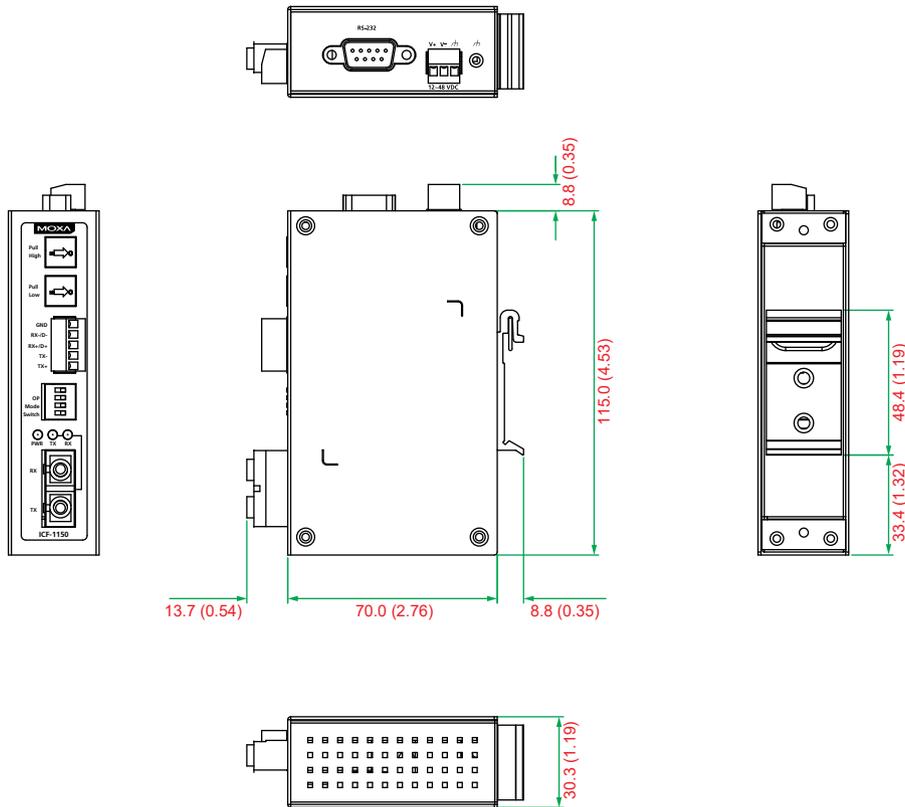**Standard:** Telcordia (Bellcore), GB
Water and Dust Proof: IP30

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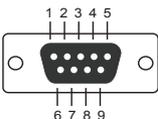**Warranty Period:** 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

8.8 (0.35)
115.0 (4.53)
13.7 (0.54)
70.0 (2.76)
8.8 (0.35)
48.4 (1.19)
33.4 (1.32)
30.3 (1.19)

Pin Assignment

DB9 female connector

Pin	RS-232
1	–
2	TxD
3	RxD
4	–
5	GND
6	–
7	–
8	–

Terminal block connector
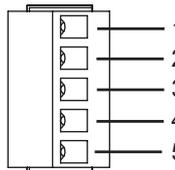
Pin	RS-422/485-4w	RS-485-2w
1	GND	GND
2	RxD-(A)	Data-(A)
3	RxD+(B)	Data+(B)
4	TxD-(A)	–
5	TxD+(B)	–

: Ordering Information

Available Models

ICF-1150-M-SC: Industrial RS-232/422/485 to multi-mode fiber converter, SC connector, 0 to 60°C operating temperature

ICF-1150-M-ST: Industrial RS-232/422/485 to multi-mode 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 multi-mode fiber converter, SC connector, 2 kV isolation, 0 to 60°C operating temperature

ICF-1150I-M-ST: Industrial RS-232/422/485 to multi-mode 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 multi-mode fiber converter, SC connector, -40 to 85°C operating temperature

ICF-1150-M-ST-T: Industrial RS-232/422/485 to multi-mode 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 multi-mode fiber converter, SC connector, 2 kV isolation, -40 to 85°C operating temperature

ICF-1150I-M-ST-T: Industrial RS-232/422/485 to multi-mode 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

IECEx Models

ICF-1150-M-SC-IEX: Industrial RS-232/422/485 to multi-mode fiber converter, SC connector, IECEx, 0 to 60°C operating temperature

ICF-1150-M-ST-IEX: Industrial RS-232/422/485 to multi-mode fiber converter, ST connector, IECEx, 0 to 60°C operating temperature

ICF-1150-S-SC-IEX: Industrial RS-232/422/485 to single-mode fiber converter, SC connector, IECEx, 0 to 60°C operating temperature

ICF-1150-S-ST-IEX: Industrial RS-232/422/485 to single-mode fiber converter, ST connector, IECEx, 0 to 60°C operating temperature

ICF-1150I-M-SC-IEX: Industrial RS-232/422/485 to multi-mode fiber converter, SC connector, 2 kV isolation, IECEx, 0 to 60°C operating temperature

ICF-1150I-M-ST-IEX: Industrial RS-232/422/485 to multi-mode fiber converter, ST connector, 2 kV isolation, IECEx, 0 to 60°C operating temperature

ICF-1150I-S-SC-IEX: Industrial RS-232/422/485 to single-mode fiber converter, SC connector, 2 kV isolation, IECEx, 0 to 60°C operating temperature

ICF-1150I-S-ST-IEX: Industrial RS-232/422/485 to single-mode fiber converter, ST connector, 2 kV isolation, IECEx, 0 to 60°C operating temperature

ICF-1150-M-SC-T-IEX: Industrial RS-232/422/485 to multi-mode fiber converter, SC connector, IECEx, -40 to 85°C operating temperature

ICF-1150-M-ST-T-IEX: Industrial RS-232/422/485 to multi-mode fiber converter, ST connector, IECEx, -40 to 85°C operating temperature

ICF-1150-S-SC-T-IEX: Industrial RS-232/422/485 to single-mode fiber converter, SC connector, IECEx, -40 to 85°C operating temperature

ICF-1150-S-ST-T-IEX: Industrial RS-232/422/485 to single-mode fiber converter, ST connector, IECEx, -40 to 85°C operating temperature

ICF-1150I-M-SC-T-IEX: Industrial RS-232/422/485 to multi-mode fiber converter, SC connector, 2 kV isolation, IECEx, -40 to 85°C operating temperature

ICF-1150I-M-ST-T-IEX: Industrial RS-232/422/485 to multi-mode fiber converter, ST connector, 2 kV isolation, IECEx, -40 to 85°C operating temperature

ICF-1150I-S-SC-T-IEX: Industrial RS-232/422/485 to single-mode fiber converter, SC connector, 2 kV isolation, IECEx, -40 to 85°C operating temperature

ICF-1150I-S-ST-T-IEX: Industrial RS-232/422/485 to single-mode fiber converter, ST connector, 2 kV isolation, IECEx, -40 to 85°C operating temperature

Optional Accessories (can be purchased separately)

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

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Package Checklist

- 1 ICF-1150 series fiber converter
- Quick installation guide (printed)
- Warranty card

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