ICF-1171I Series

Industrial CAN-to-fiber converters for distance extension

Features and Benefits

- Transmits data for up to 40 km over optical fiber
- Converts CAN signals to fiber and vice versa
- Supports CAN 2.0A, CAN 2.0B, and CAN FD; conforms with the ISO 11898 standard
- CAN 2.0 supports auto-baudrate
- CAN 2.0 arbitration rate up to 1 Mbps
- CAN FD arbitration rate up to 1 Mbps; data rate up to 5 Mbps
- Dual power inputs for redundancy
- Wide-temperature model available for -40 to 75°C environments
- DIP switch for 120-ohm terminal resistance
- Rotary switches for CAN 2.0/CAN FD arbitration and data rate configuration
- LEDs for CAN bus diagnostics, fiber diagnostics, and power input status

Certifications

Introduction

The ICF-1171I Series CAN-to-fiber converters are used in pairs to connect two CAN 2.0 or two CAN FD devices or networks via single-mode or multi-mode optical fiber. The ICF-1171I provides 2-kV isolation protection for the CAN interface and dual power inputs to ensure that your CANbus system will work uninterrupted.

Extend the CAN Bus Transmission Distance

The total transmission distance of a CAN 2.0 or CAN FD system can be extended by 2 km (multi-mode fiber) or by 40 km (single-mode fiber) using ICF-1171I converters, regardless of the CAN baudrate.

Easily Fulfil Various Communication Scenarios

Two CAN 2.0 networks or CAN FD networks can communicate with each other using different baudrates. The ICF-1171I converters can automatically detect the baudrate of the connected CAN 2.0 device and apply the baudrate to itself. Therefore, users do not need to know the baudrate of the connected CAN 2.0 device. This is an extremely convenient feature. Baudrates can also be set to a predefined value via rotary switches.

Easily Troubleshoot Communication Issues

It is easy to check if an issue exists on the CAN bus or the Fiber link. The ICF-1171I converters are provided with LEDs that indicate the fiber link state, fiber communication status, CAN bus state, and CAN bus communication status.

Specifications

Serial Interface

Optical Fiber

100Base-Fx ports (single-mode/multi-mode ST connector)

Fiber module optical interface		Multi-mode	Single-mode
Fiber Data Rate		100Base-Fx	
Fiber Cable Requirements		62.5/125 µm	9/125 µm
		OM1	OS1
Typical Distance		2 km	40 km
Wavelength	Typical (nm)	1310	
	TX Range (nm)	1280 to 1340	
	RX Range (nm)	1100 to 1600	
Optical Power	TX Range (dBm)	-10 to -20	0 to -5
	RX Range (dBm)	-3 to -32	-3 to -34
	Link Budget (dB)	12	29
	Dispersion Penalty (dB)	3	1

Note: The “typical distance” of a specific fiber transceiver can be computer using Link budget (dB) > Dispersion penalty (dB) + Total link loss (dB).

CAN Interface

Isolation	2 kV (built-in)
No. of Ports	1
Signals	CAN_L, CAN_H, CAN Signal GND
Terminator	N/A, 120 ohms (by DIP)
Protocols	CAN 2.0A, CAN 2.0B, CAN FD, compatible with ISO 11898 standard (DIP switch to select CAN 2.0/CAN FD setting)

Fiber Interface

No. of Ports	1
Connector	ICF-1171I-S-ST/ ICF-1171I-S-ST-T: Single-mode ST connector ICF-1171I-M-ST/ ICF-1171I-M-ST-T: Multi-mode ST connector
Optical Fiber	Single-mode, typical distance 40 km Multi-mode, typical distance 2 km

Power Parameters

Input Current	188.5 mA (max.)
Input Voltage	12 to 48 VDC
No. of Power Inputs	2
Power Connector	Terminal block

Relays

Contact Current Rating	Resistive load: 1 A @ 30 VDC
Pinouts	NC, COM, NO

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	294 g (0.65 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	ICF-1171I-S-ST, ICF-1171I-M-ST: 0 to 60°C (32 to 140°F) ICF-1171I-S-ST-T, ICF-1171I-M-ST-T: -40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 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: 2 kV, Signal: 2 kV IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m IEC 61000-4-8 PFMF
International Approval	KC
Safety	UL 62368-1, EN 62368-1
Vibration	IEC 60068-2-6

MTBF

Time	2,412,885 hrs
Standards	Telcordia (Bellcore), GB

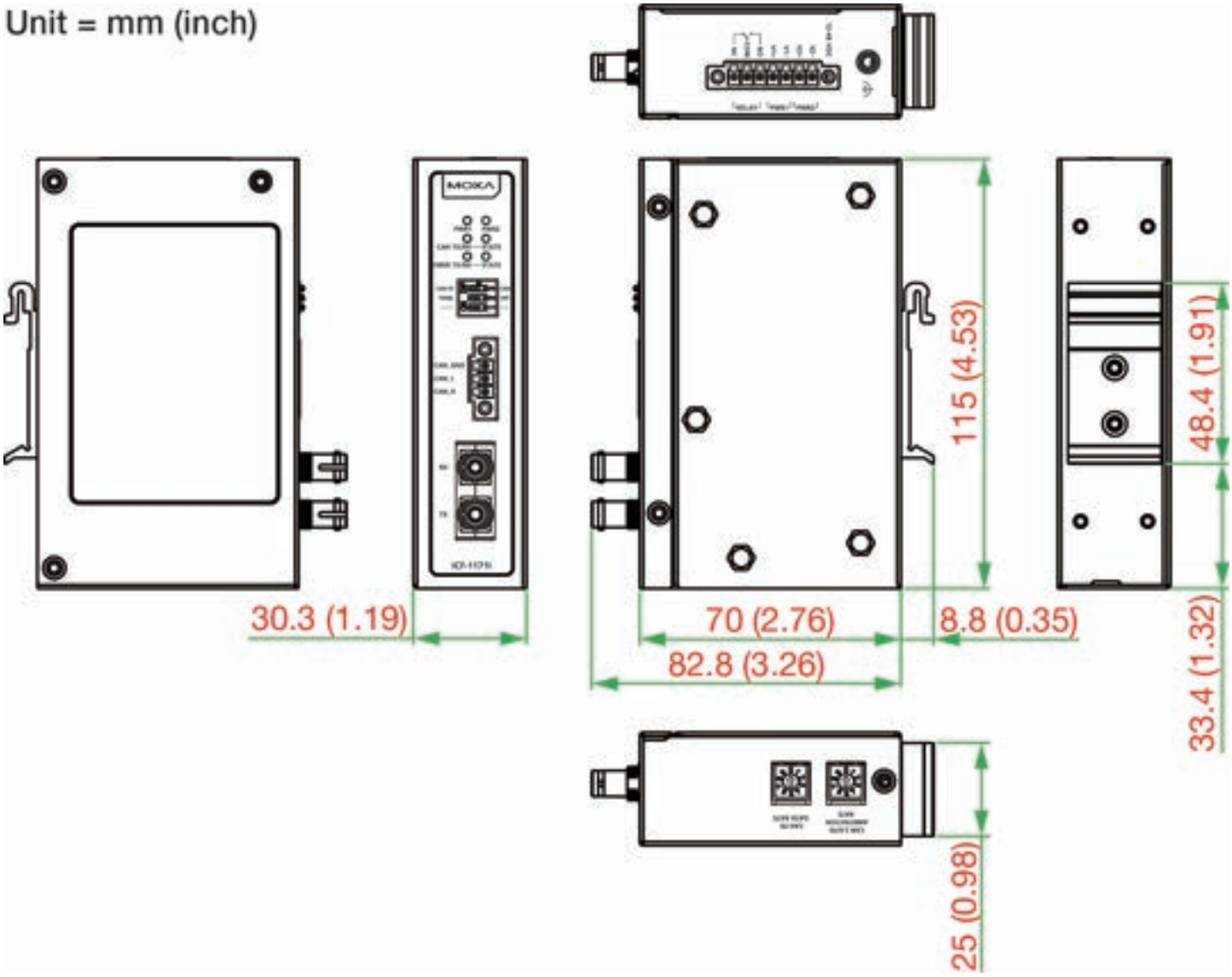
Warranty

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

Package Contents

Device	1 x ICF-1171I Series converter
Documentation	1 x quick installation guide 1 x warranty card

Dimensions



Ordering Information

Model Name	Operating Temp.	Fiber Module Type
ICF-1171I-S-ST	0 to 60°C	Single-mode ST
ICF-1171I-S-ST-T	-40 to 75°C	Single-mode ST
ICF-1171I-M-ST	0 to 60°C	Multi-mode ST
ICF-1171I-M-ST-T	-40 to 75°C	Multi-mode ST

Accessories (sold separately)

Mounting Kits

WK-30-02	Wall-mounting kit, 2 plates, 4 screws, 30 x 66.8 x 2 mm

© Moxa Inc. All rights reserved. Updated Aug 26, 2022.

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