ICF-1180I Series

Industrial PROFIBUS-to-fiber converters

Features and Benefits

- Fiber-cable test function validates fiber communication
- Auto baudrate detection and data speed of up to 12 Mbps
- PROFIBUS fail-safe prevents corrupted datagrams in functioning segments
- Fiber inverse feature
- Warnings and alerts by relay output
- 2 kV galvanic isolation protection
- Dual power inputs for redundancy (Reverse power protection)
- Extends PROFIBUS transmission distance up to 45 km
- Wide-temperature model available for -40 to 75°C environments
- Supports Fiber Signal Intensity Diagnosis

Certifications

c(UL)us LISTED   CE   FC

Introduction

The ICF-1180I industrial PROFIBUS-to-fiber converters are used to convert PROFIBUS signals from copper to optical fiber. The converters are used to extend serial transmission up to 4 km (multi-mode fiber) or up to 45 km (single-mode fiber). The ICF-1180I provides 2 kV isolation protection for the PROFIBUS system and dual power inputs to ensure that your PROFIBUS device will perform uninterrupted.

Fiber Cable Test Function

Fiber-optic cables are usually deployed for long-distance communication. To ensure proper communication across the fiber-optic cables, engineers use fiber sensors. A fiber cable test function through DIP switch adjustments helps ICF-11801 converters eliminate the need to rely on fiber-optic sensors.

This function not only detects fiber communication abnormalities but also validates the format of the received packet. It can also determine which side (Tx or Rx) is causing the problem.

PROFIBUS Fail-Safe

When the PROFIBUS device malfunctions or the serial interface fails, it will generate electrical noise, resulting in bus failure. Traditional media converters will let the noise signal pass through the fiber and on to the other converter. This will disrupt data transmissions between the two buses and eventually communication ceases across the entire system. When this occurs, the engineer will not be able to easily locate the failed device because the entire PROFIBUS network is down. To avoid this situation, the ICF-1180I was designed to detect and recognize noise signals. If the bus fails on one side, the noise signal will not propagate through the ICF-1180I and affect additional bus segments. In addition, the ICF-1180I will also trigger an alarm notification to the field engineer on the location of the failure.
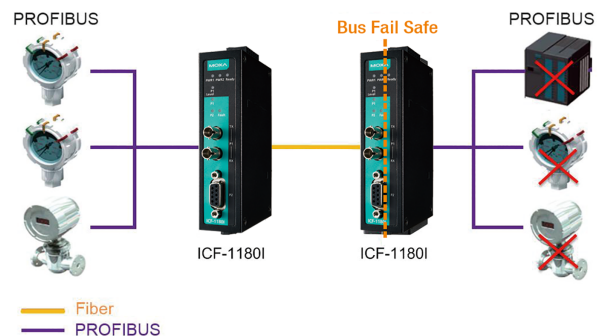
Auto/Manual Baudrate Settings

The ICF-1180I Series simply converts the signal back and forth between PROFIBUS and fiber. The ICF-1180I Series works under baudrates between 9.6 kbps to 12 Mbps. Engineers do not need to know the baudrate of the connected PROFIBUS device.

The ICF-1180I Series can automatically detect the baudrate of the PROFIBUS device and apply this baudrate directly. This is an extremely convenient feature. If necessary, baudrates can be set to a fixed value via DIP switches.

Fiber Inverse Function

The ICF-1180I provides a fiber inverse function to choose fiber-optic light ON or light OFF when sending logic signal '1'. For default settings, fiber-optic is light OFF when sending logic signal '1'; in Fiber Inverse mode, fiber-optic is light ON when sending logic signal '1'.

This feature provides greater compatibility when the ICF-1180I converter is integrated with PROFIBUS converters of other manufacturers. Please refer to third-party user manuals when using this feature.

Fiber Link Monitor

The ICF-1180I converters provide a fiber link monitor function to detect the communication errors on either the fiber side or PROFIBUS side. Once there is an error in communication, the corresponding LED will turn red, and the relay alarm will be activated.

Fiber Signal Intensity Diagnosis

In some circumstances, you may need to measure the reception level of the fiber-optic port with a voltmeter, which can be connected while the device is operating (doing so will not affect data transmission). The measurement can be taken with a voltmeter and read on a PLC that uses floating high impedance analog inputs, which allow you to do the following:

- Record the incoming optical power for later measurement (e.g., to indicate aging or damage).
- Carry out a good/bad test (limit value).

Specifications

Serial Interface

Connector	ICF-1180I-M-ST: Multi-mode ST connector ICF-1180I-M-ST-T: Multi-mode ST connector ICF-1180I-S-ST: Single-mode ST connector ICF-1180I-S-ST-T: Single-mode ST connector

Optical Fiber		Multi-Mode	Single-Mode
	Wavelength	820 nm	1310 nm
	Tx Output	-14 dBm	-7 dBm
	Rx Sensitivity	-28 dBm	-29 dBm
	Link Budget	14 dBm	21 dBm
	Typical Distance	4 km	45 km

PROFIBUS Interface

Industrial Protocols	PROFIBUS DP
No. of Ports	1
Connector	DB9 female
Baudrate	9600 bps to 12 Mbps
Isolation	2 kV (built-in)
Signals	PROFIBUS D+, PROFIBUS D-, RTS, Signal Common, 5V

Power Parameters

Input Current	269 mA @ 12 to 48 VDC
Input Voltage	12 to 48 VDC
No. of Power Inputs	2
Overload Current Protection	Supported
Power Connector	Terminal block (for DC models)
Power Consumption	269 mA @ 12 to 48 VDC

Physical Characteristics

Housing	Metal
IP Rating	IP30

Dimensions	30.3 x 115 x 70 mm (1.19 x 4.53 x 2.76 in)
Weight	180 g (0.39 lb)
Installation	DIN-rail mounting (with optional kit), Wall mounting

Environmental Limits

Operating Temperature	Standard Models: 0 to 60°C (32 to 140°F) Wide Temp. Models: -40 to 75°C (-40 to 167°F) 0 to 60°C (32 to 140°F) -40 to 75°C (-40 to 167°F) 0 to 60°C (32 to 140°F) -40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 0.5 kV IEC 61000-4-5 Surge: Power: 0.5 kV IEC 61000-4-6 CS: 3 V IEC 61000-4-8 PFMF
Environmental Testing	IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-3
Hazardous Locations	ATEX, Class I Division 2, IECEx
Safety	EN 60950-1, IEC 60950-1
Vibration	IEC 60068-2-6

MTBF

Time	1,722,769 hrs
Standards	Telcordia (Bellcore), GB

Warranty

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

Package Contents

Device	1 x ICF-1180I Series converter
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)

Wall-Mounting Kit

DIN-Rail Kit

Wall-Mounting Kit
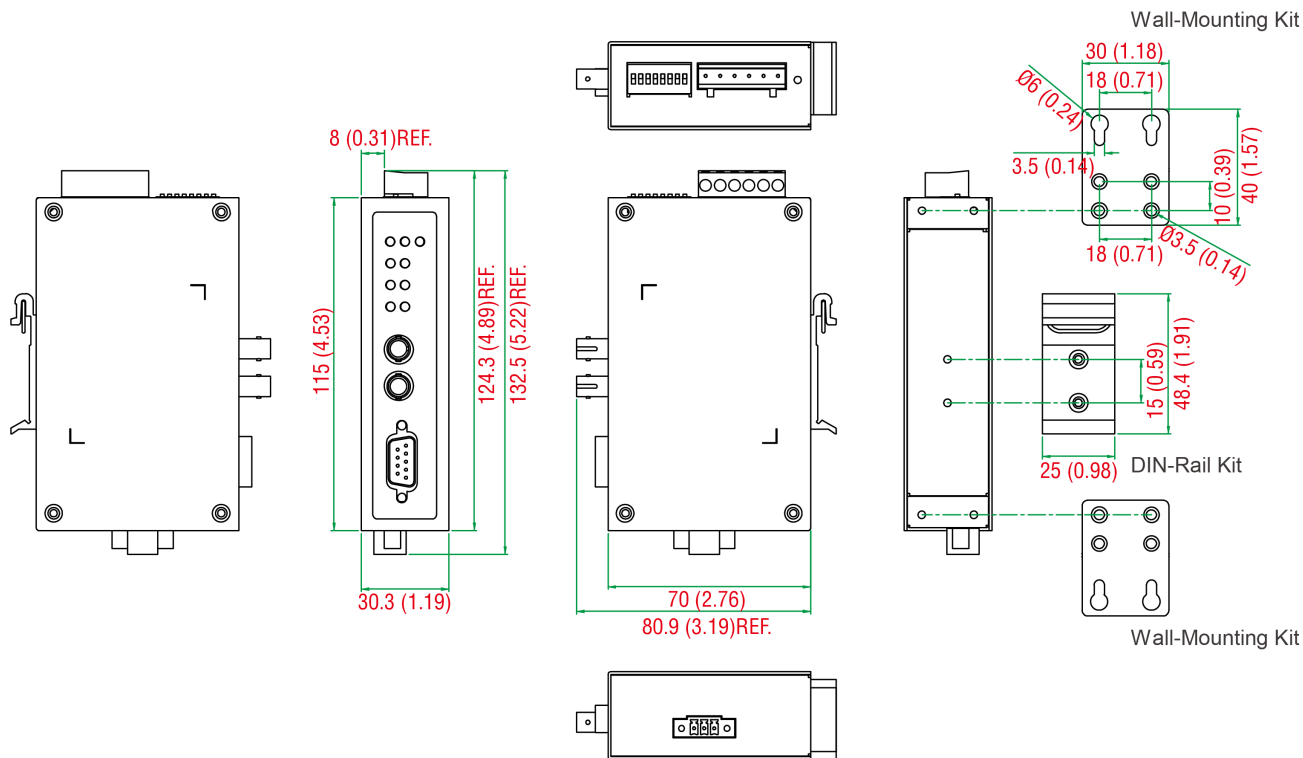
Ordering Information

Model Name	Operating Temp.	Fiber Module Type
ICF-1180I-M-ST	0 to 60°C	Multi-mode ST
ICF-1180I-S-ST	0 to 60°C	Single-mode ST
ICF-1180I-M-ST-T	-40 to 75°C	Multi-mode ST
ICF-1180I-S-ST-T	-40 to 75°C	Single-mode ST

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