ICF-1180I Series

Industrial PROFIBUS-to-fiber converters

> Fiber cable test function validates fiber communication
> Auto baudrate detection and data speed up to 12 Mbps
> PROFIBUS bus fail prevents corrupted datagram in functioning segment
> Fiber inverse feature
> Alarm 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

: Overview

The ICF-1180I series 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.
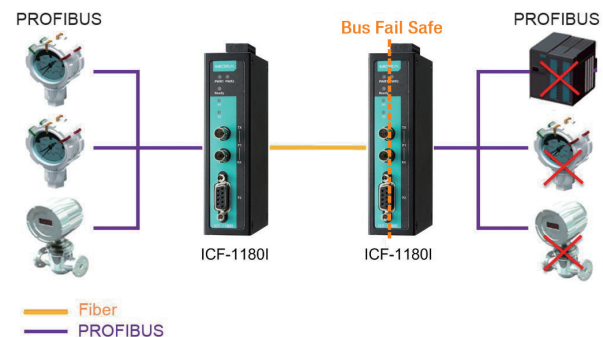
: Fiber Cable Test Function

Fiber-optic cables are usually deployed for long distance communication. To ensure proper communication across the fiber-optic cables, engineers use fiber sensors. With fiber cable test function through DIP switch adjustments, the ICF-1180I series 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 convert the signal back and forth between PROFIBUS and fiber. The ICF-1180I series work 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 setting, 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 series converters provide 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 activate.

: Specifications

Technology
Standards:
IEC 61158-2 for PROFIBUS DP

Interface
P1 Port: ST optical fiber
P2 Port: PROFIBUS DP (DB9 female)
Relay Alarm: One relay output with current carrying capacity of 2 A @ 30 VDC (Normal open)
LED Indicators: PWR1, PWR2, Ready, P1 Status, P2 Status
DIP Switches:
DIP 1 to 4: Baudrate setting
DIP 5: Fiber link monitor
DIP 6: Fiber inverse function
DIP 7: Reserved
DIP 8: Fiber cable test function

PROFIBUS Communication
Data Rate: 9.6, 19.2, 45.45, 93.75, 187.5, 500, 1500, 3000, 6000, and 12000 kbps
Auto Baudrate: Yes
Isolation Protection: 2 kV

Optical Fiber Side
Point-to-Point Transmission:

	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

Physical Characteristics
Housing: Metal
Mounting: DIN-Rail mounting, wall mounting (with optional kit)
Dimensions: 30.3 x 115 x 70 mm (1.19 x 4.53 x 2.76 in)
Weight: 180 g

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)
Storage Temperature: -40 to 75°C (-40 to 167°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements
Input Voltage: 12 to 48 VDC
Power Consumption: 186 mA @ 12 V
Connector: Terminal Block
Power Line Protection: Level 3 (2 kV) Surge Protection
Over Current Protection: 1.1 A

Standards and Certifications
Safety: UL 508, EN 60950-1
Hazardous Location: UL/cUL Class I Division 2 Groups A/B/C/D (Pending), ATEX Zone 2 EEx nC IIC (Pending), IECEx (Pending)
EMC: CE, FCC Part 15 Subpart B Class A
EMI: EN 55022, Class A; EN 55024
EMS:
EN 61000-4-2 (ESD) Level 3,
EN 61000-4-3 (RS) Level 3,
EN 61000-4-4 (EFT) Level 3,
EN 61000-4-5 (Power Surge) Level 3,
EN 61000-4-5 (Communication Surge) Level 3,
EN 61000-4-6 (CS) Level 3
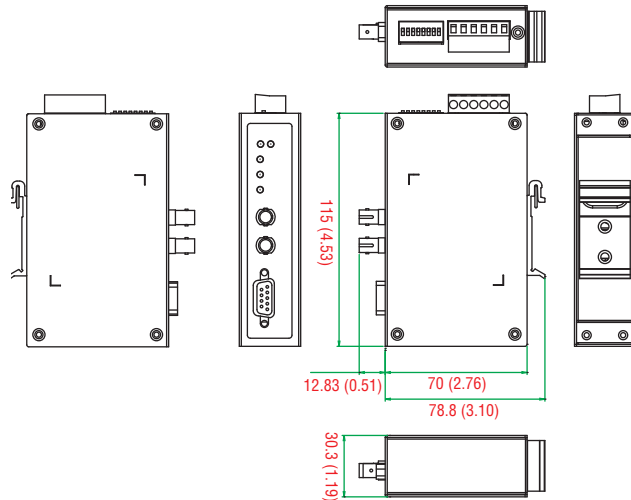**Freefall:** IEC 60068-2-32
Green Product: RoHS, CRoHS, WEEE

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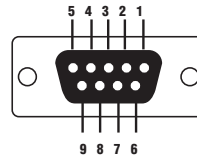**Warranty Period:** 5 years
Details: See www.moxa.com/warranty

Dimensions and Pin Assignment

Unit: mm (inch)

Pin Assignment

PROFIBUS Connector (DB9 Female)

PIN	Signal Name
1	N–C
2	N–C
3	Profibus D+
4	RTS
5	Signal common
6	5 V
7	N–C
8	Profibus D-
9	N–C

Dimensions: 115 (4.53), 12.83 (0.51), 70 (2.76), 78.8 (3.10), 30.3 (1.19)

: Ordering Information

Available Models

ICF-1180I-M-ST: PROFIBUS to fiber converter, multi-mode, ST connector, 0 to 60°C
ICF-1180I-S-ST: PROFIBUS to fiber converter, single-mode, ST connector, 0 to 60°C
ICF-1180I-M-ST-T: PROFIBUS to fiber converter, multi-mode, ST connector, -40 to 75°C
ICF-1180I-S-ST-T: PROFIBUS to fiber converter, single-mode, ST connector, -40 to 75°C

Package Checklist

- ICF-1180I series PROFIBUS-to-fiber converter
- Hardware installation guide (printed)
- Warranty card