

Quick Installation Guide

IFC-CCF20A

2 Channel Contact Closure over Fiber Converter



Version 1.0

February, 2025

CTC Union Technologies Co., Ltd.

Far Eastern Vienna Technology Center

(Neihu Technology Park)

8F, No. 60 Zhouzi St.,

Neihu, Taipei 114, Taiwan

T +886-2-26591021

F +886-2-26590237

E sales@ctcu.com

H www.ctcu.com



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WARNING:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference in which case the user will be required to correct the interference at his own expense. NOTICE: (1) The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. (2) Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Introduction

IFC-CCF20A models are 2-channel contact closure fiber converters that can provide transmission of contact closure via fiber optic link. With SFP socket, FRM220-CCF20A provides SFP-LC connector that enables multi-mode, single-mode or bi-directional transmission using only a single fiber cable.

The contact closure module has two inputs and outputs. Outputs are normally open relays. The relay output follows the open/close input at the remote end. When the input is shorted, the remote relay output is closed. The front panel provides LED indicators that offer real-time information of input and output status. Applications include alarm event triggering, building automation, environmental control systems, fire & alarm systems, gate control, traffic signal control equipment, and more.

Package List

- One IFC-CCF20A or IFC-CCF20A-SFP device
- Din rail with screws
- Terminal blocks

Features

- 2 isolated contact closure (open/close) inputs (I1, I2) and relay outputs (O1, O2)
- Maximum breaking capacity AC 62.5VA / DC 60W load for 2 relay outputs
- Support duplex fiber or single fiber (Bi-directional) to save cabling
- Removable terminal block connector for power input, alarm, contact closure input and relay output
- CE, FCC, heavy industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Support alarm relay output for fiber link down, synchronization fail, and power fail
- Hardened housing with IP40 protection
- Fanless and DIN-Rail design for harsh industrial environment

Specifications

Optical Interface

- Fixed Fiber (IFC-CCF20A)
 - Number of interface: 1
 - Connector type: SC or ST
 - Data rate: 155Mbps
 - Duplex mode: Full duplex
 - Distance: 2KM (Multimode), 30KM (Single-mode), 20KM (Bi-directional)
- SFP Cage (IFC-CCF20A-SFP)
 - Number of interface: 1
 - Data rate: 155Mbps
 - Duplex mode: Full duplex
 - Distance: Depends on the transceiver

Input Contact Sensor

- 2-channel open/close inputs (I1, I2)
- Dry contact sensing
- Removable terminal block connector

Relay Output Contact

- 2 relay outputs (O1, O2)
- Removable terminal block connector
- Contact rating voltage: 250VAC/220VDC
- AC breaking capacity: Maximum AC 62.5VA
- DC resistive load breaking capacity: Maximum 60W (See diagram below for details.)
- Removable terminal block connector

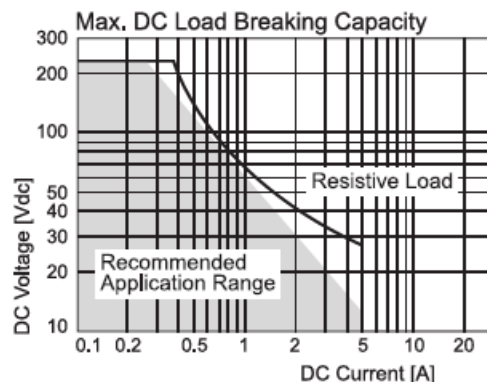


Figure 1. Maximum DC Load Breaking Capacity

Power

- Redundant dual power inputs 12/24/48VDC
- Support power input reverse polarity protection
- Consumption: 2.1W (12VDC), 2.4W (24VDC), 2.9W (48VDC)

Mechanical

- Water & Dust Proof: Rugged metal IP40 Protection
- Fanless design
- Dimensions: 106mm (D) x 32.6mm (W) x 142mm (H)
- Weight: 390g

Environment

- Operating Temperature: -40°C~75°C
- Storage Temperature: -40°C~85°C
- Humidity: 5%~95% (non-condensing)

Certifications

- EMC: CE (EN55024, EN55032)
- EMI (Electromagnetic Interference): FCC Part 15 Subpart B Class A, CE
- Immunity for Heavy Industrial Environment: EN61000-6-2
- Emission for Heavy Industrial Environment: EN61000-6-4
- EMS (Electromagnetic Susceptibility) Protection Level:
 - EN61000-4-2 (ESD) Level 3
 - EN61000-4-3 (RS) Level 3
 - EN61000-4-4 (EFT) Level 3
 - EN61000-4-5 (Surge) Level 3
 - EN61000-4-6 (CS) Level 3
- Freefall: IEC 60068-2-31
- Vibration: IEC 60068-2-6
- Shock: IEC 60068-2-27
- Green: RoHS

MTBF (MIL-HDBK-217)

- 1,166,619 Hours (IFC-CCF20A)
- 1,403,126 Hours (IFC-CCF20A-SFP)

Panels

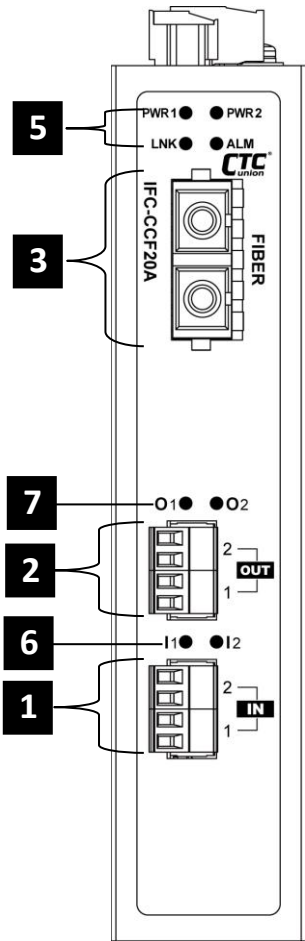


Figure 2. Front Panel of IFC-CCF20A

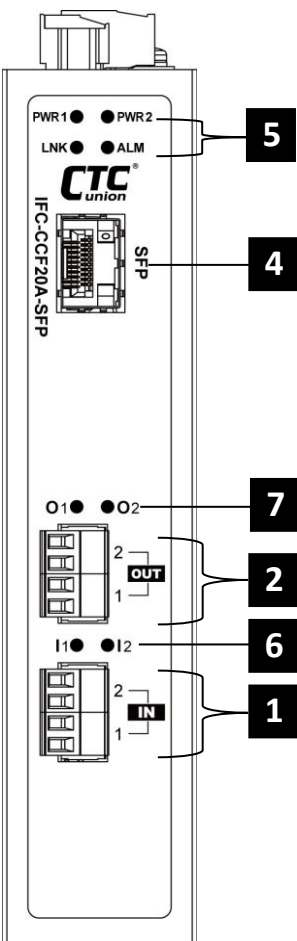


Figure 3. Front Panel of IFC-CCF20A-SFP

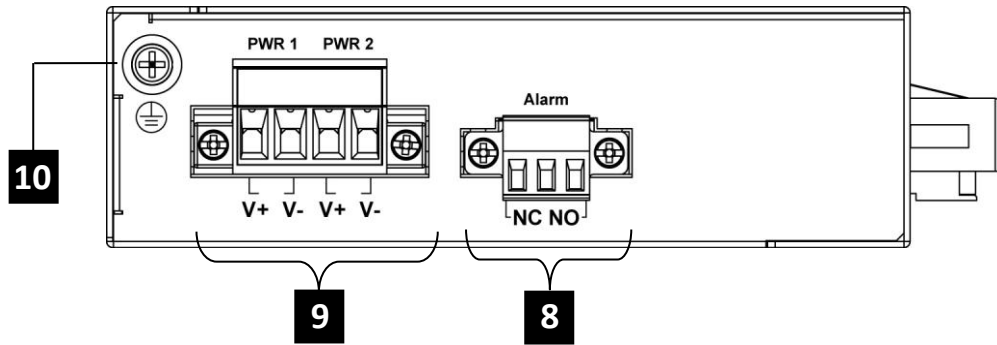


Figure 4. Top Panel

No.	Description
1	Two terminal blocks for 4 sets of contact closure inputs (IN 1, 2)
2	Two terminal blocks for 4 sets of relay outputs (OUT 1, 2)
3	Fixed fiber connector (for IFC-CCF20A model only)
4	SFP transceiver slot (for IFC-CCF20A-SFP model only)
5	Power 1, Power 2, Link, Alarm LED indicators
6	Contact closure input (I1, I2) LED indicator
7	Relay output (O1, O2) LED indicator
8	Alarm relay terminal block
9	Power terminal block
10	Grounding connector

Recommended Power, Alarm, Ground Wiring Scheme

DC Power Connection

On the top panel, there are two removable terminal blocks. One is for power connection, the other is for alarm connection. Power can be provided through the dual inputs from separate sources (PWR1 & PWR2). One power supply is enough to power up the device. If two power supplies are used, the device provides power redundancy function. See the figure provided below for recommended DC power wiring scheme.

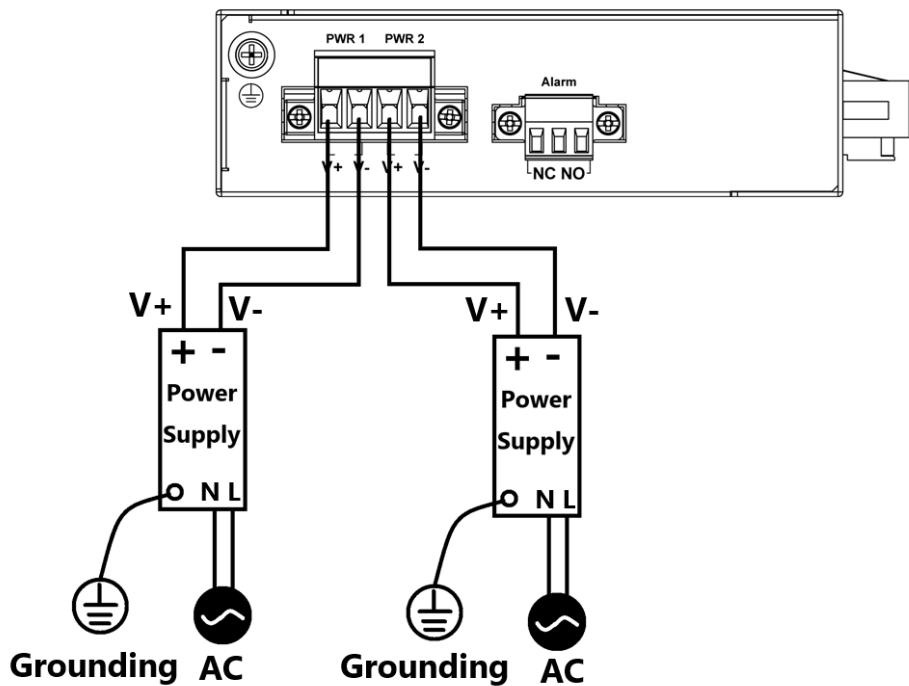


Figure 5. DC Power Connection

Alarm Relay Connection

The Alarm is one electrical relay that can be wired into an alarm circuit and is triggered in the event of fiber link loss, loss of either one power source or sync loss (the other end is not connected to IFC-CCF20A device). From the common pin (COM), the relay can be connected as Normally Open (NO) or Normally Closed (NC). When an alarm occurs the NC-to-COM circuit opens and the COM-to-NO circuit closes. See figures below for normal and fault illustration in each alarm relay type. Please note that the alarm relay contact can only support 1A current at 24VDC. Do not apply voltage and current that exceed these specifications.

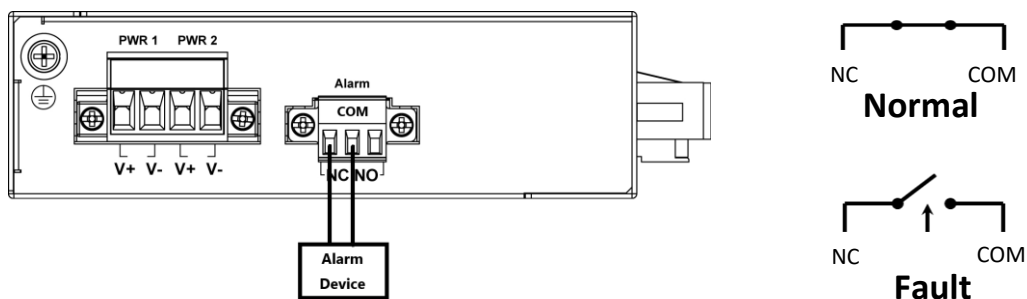


Figure 6. Alarm Relay for NC (Normally Closed) Type

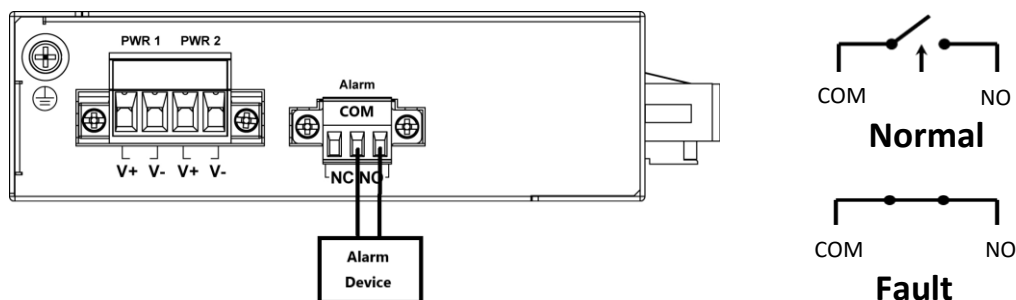


Figure 7. Alarm Relay for NO (Normally Open) Type

Earth Ground Connection

An earth ground connector is provided on the top panel with an earth ground sign next to it. Grounding the device can help to release leakage of electricity to the earth safely so as to reduce injuries from electromagnetic interference (EMI).

Prior to connecting to the power, it is important to connect the ground wire to the earth. Follow steps below to install ground wire:

1. Loosen or remove the grounding screw.
2. Attach the grounding screw to the ring-type or fork-type terminal of the grounding cable. Make sure that the grounding cable is long enough to reach the earth.
3. Use a screwdriver to fasten the grounding screw.

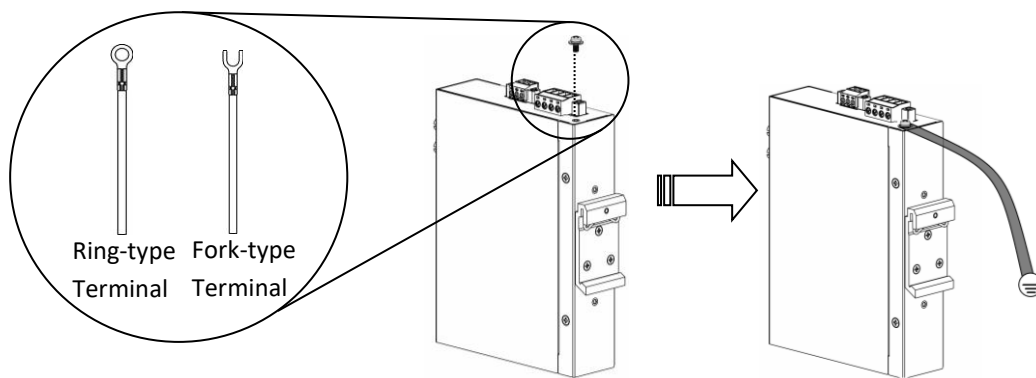


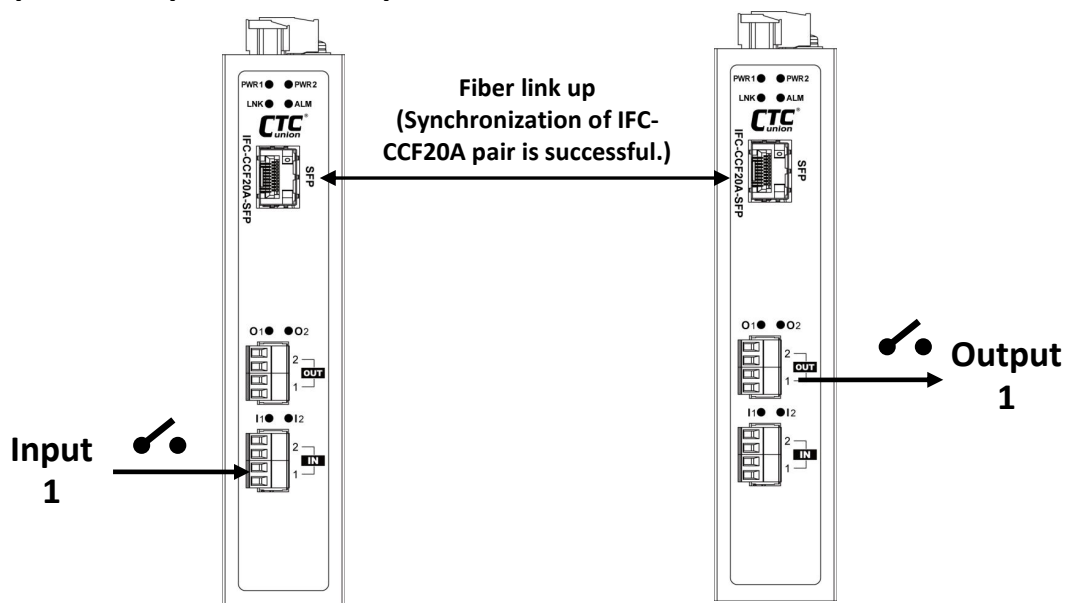
Figure 8. Grounding Cable Type

Figure 9. Grounding Connection

Input / Output Application

Each IFC-CCF20A provides 2-channel inputs (I1, I2) and 2-channel outputs (O1, O2). In actual networking scenario, IFC-CCF20A is used as a pair. For example, as demonstrated below, two IFC-CCF20A devices are used. “Input 1” connectors transmit input signals and then send signals via fiber optic to the remote “Output 1”. The remote device reacts depending on signals received. If the input contact is opened, the output relay is opened. On the other hand, if the input is closed, the output relay is closed too.

Input & Output Contact Opened



Input & Output Contact Closed

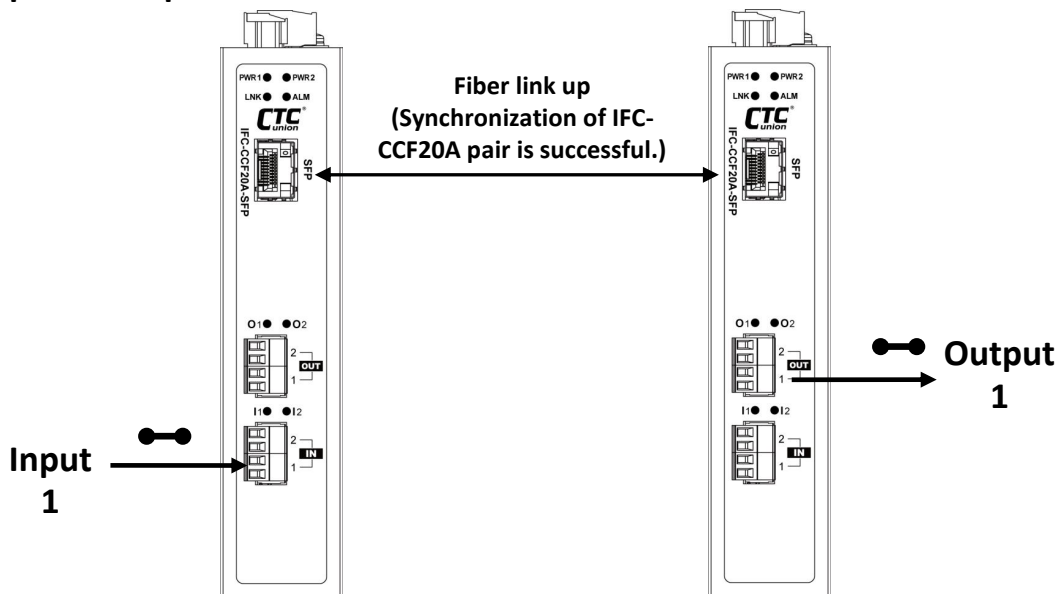


Figure 10. Connection Diagram

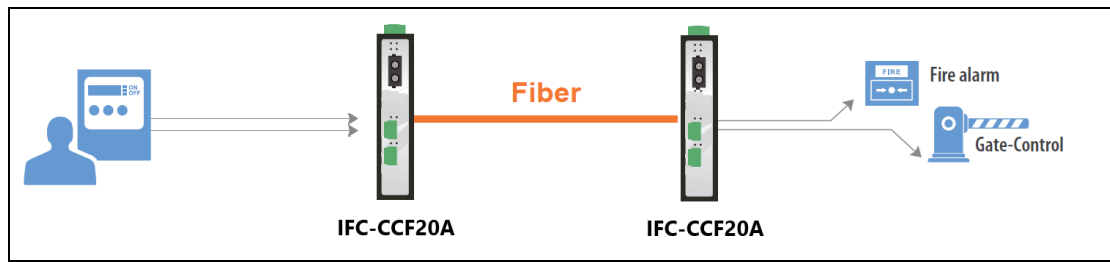


Figure 11. Application Example

Installation

IFC-CCF20A comes with both wall mount and DIN rail hardware brackets. When installing the DIN rail bracket, be sure to correctly align the orientation pin.

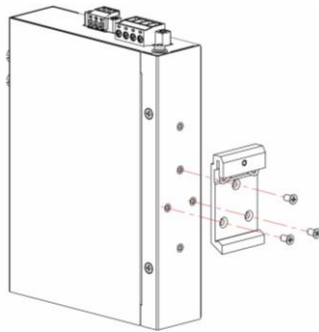


Figure 12. DIN Rail

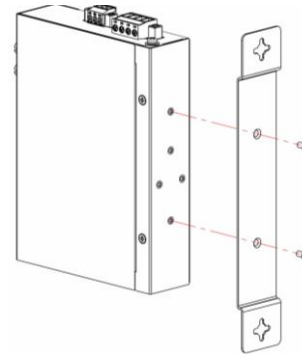


Figure 13. Wall Mount

IFC-CCF20A with DIN Rail bracket has a steel spring in the upper rail of the bracket. This spring is compressed for mounting and un-mounting by applying downward force.

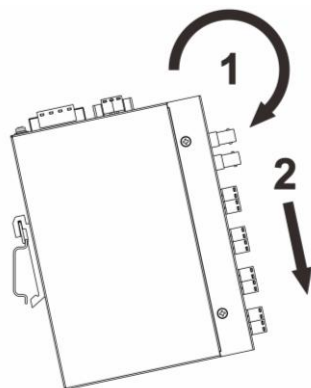


Figure 14. Mounting

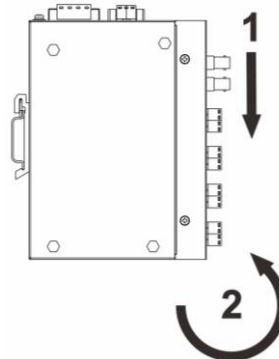


Figure 15. Un-mounting

LED Indicators

LED	Color	Status	Definition
PWR1 PWR2	Green	On	Power is connected and up.
		Off	Power is not connected.
LNK (Link)	Green	On	Fiber link is up and synchronizes with the remote device.
		Flash	Fiber link is up but synchronization with the remote device fails. (1s On & 1s Off)
		Off	Loss of signals.
ALM (Alarm)	Red	On	Link down, synchronization fail*, one power loss.
		Off	Normal operation.
I1~I2 (Input)	Green	On	Input contact closed.
		Off	Input contact opened.
O1~O2 (Output)	Green	On	Output contact closed.
		Off	Output contact opened.

** IFC-CCF20A is used as a pair. If the other end of the device is not IFC-CCF20A, the alarm LED indicator will be lit in red due to device synchronization fail.*

