RLH Industries, Inc.

USER GUIDE

The leader in rugged fiber optic technology.

U-132 2024A-0807

4 Channel Contact Closure SFP DIN Fiber Link System

Installation and Configuration Information

4 Channel Contact Closure SFP System

Description

The system provides transmission of four (4) independent input signals over fiber optic cable. Applications include alarm event triggering, building automation, environmental control systems, fire & alarm systems, gate control, traffic signal control equipment, and more.

Fiber optic cable is immune to RF noise, EMI, high voltages, and may extend the signal up to 100km. A complete system requires a Transmitter and Receiver, a 24-48VDC power source, and a compatible SFP transceiver for the fiber interface.

Each unit features a wide operating temperature, redundant power terminals, and a system alarm contact for monitoring the unit for proper operation. LED indicators provide a convenient view of the systems current status. This hardened system can be wall or DIN rail mounted with the included DIN clip and wall mount ears, is made in the USA, and backed by our limited lifetime warranty.

Contact Input - Transmitter Device

The input terminals have the ability to sense 4 independent inputs. The dry contact model makes installation of the unit quick and simple. Wet contact models have the ability to receive an input signal between 5~12VDC or 24~48VDC.

Contact Output - Receiver Device

Each receiver device is paired with a transmitter on the opposite end of the system. The relays will be factory set to Normally Open or Normally Closed and for both these options

Standard Features
4 independent input signals over fiber
Convenient LED status indicators
Supports SFP Transceivers
Inputs either sense a dry contact or receive a voltage
Each input terminal is optically isolated, 3.5kV
Each output rated to support a load up to 60 Watts
Redundant power inputs (24-48VDC)
Pluggable terminal blocks
Alarm contact for status monitoring
Environmentally rugged with wide operating temp. -40°F to +158°F (-40°C to +70°C)
Standard T35 DIN rail and walll mount applications
Designed and Made in the U.S.A.

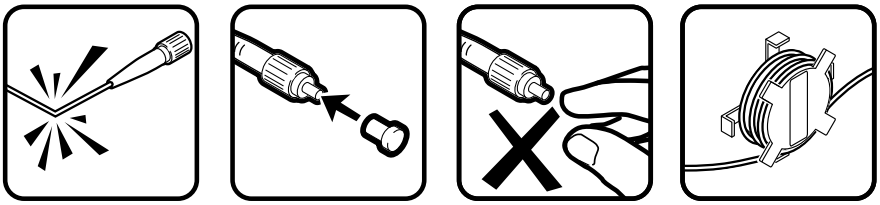
General Safety Practices

The equipment discussed in this document may require tools designed for the purpose being described. RLH recommends that service personnel be familiar with the correct handling and use of any installation equipment used, and follow all safety precautions including the use of protective personal equipment as required.

Caution - Severe Shock Hazard

- Never install during a lightning storm or where unsafe high voltages are present.
- Use caution when handling copper wiring and follow appropriate safety regulations.

Guidelines for Handling Terminated Fiber Cable



- Do not bend fiber cable sharply. Use gradual and smooth bends to avoid damaging glass fiber.
- Keep dust caps on fiber optic connectors at all times when disconnected.
- Do not remove dust caps from unused fiber.
- Keep fiber ends and fiber connectors clean and free from dust, dirt and debris. Contamination will cause signal loss.
- Do not touch fiber ends.
- Store excess fiber on housing spools or fiber spools at site

Acronyms

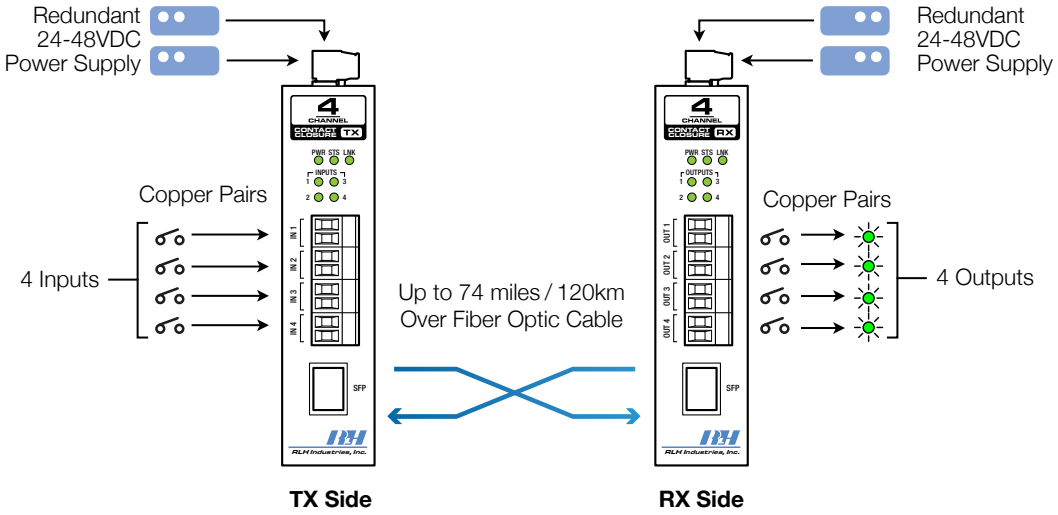
Commonly used acronyms and abbreviations

Acronym/Abbreviation	Description
TX	Transmit
RX	Receive
PWR	Power
CH	The logical connection between inputs and outputs
SFP	Small Form-factor Pluggable Transceiver
DRY	Input does not require voltage to sense a dry contact
WET	Input expects DC Voltage IN
Digital Input	An ON or OFF (1 or 0)
NO	Normally Open
NC	Normally Closed

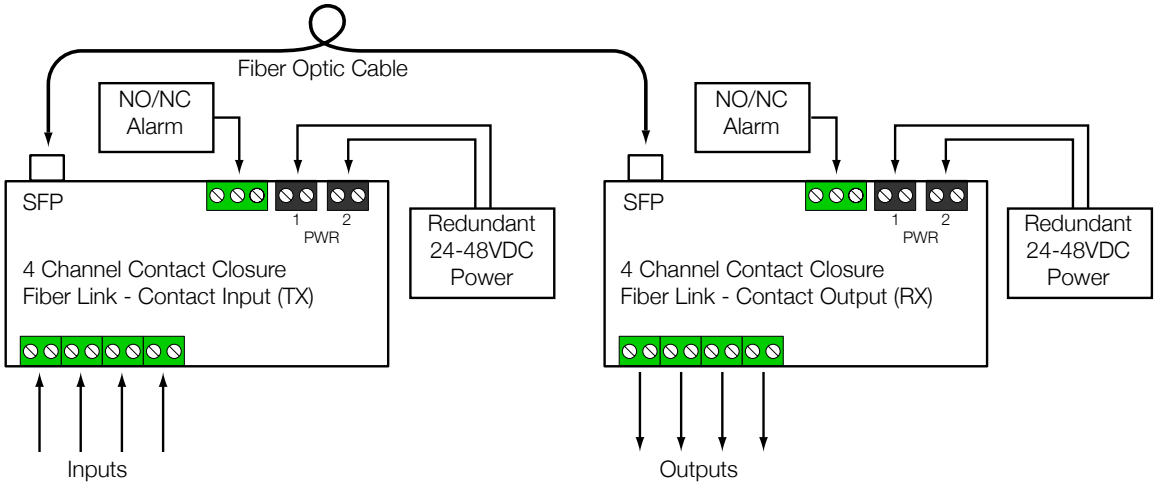
Applications

By utilizing fiber optic cable, the 4 Channel Contact Closure DIN Fiber Link system provides absolute electrical isolation between both ends of the network. It is immune to EMI/RF interference, ground loops, and high voltage surges from lightning or ground faults, and is ideal in electrically noisy environments such as near large power sources, electrical motors, and radio communications equipment.

Additionally, the contact closure system allows the use of fiber cable infrastructure to transport alarms to and from locations being able to achieve distances of up to 100Km. Using a fiber optic contact closure system can simplify messaging and eliminate the need for a PLC or RTU to transport the status of remote alarms and IO.



System Application Diagram



Single Fiber System Connection Diagram

Installation

Prior to installation:

- Check for shipping damage.
- Check the contents to ensure correct model and fiber type.
- Have a clean, dry installation environment ready.
- Ensure that the SFP transceivers being installed in each unit are compatible.

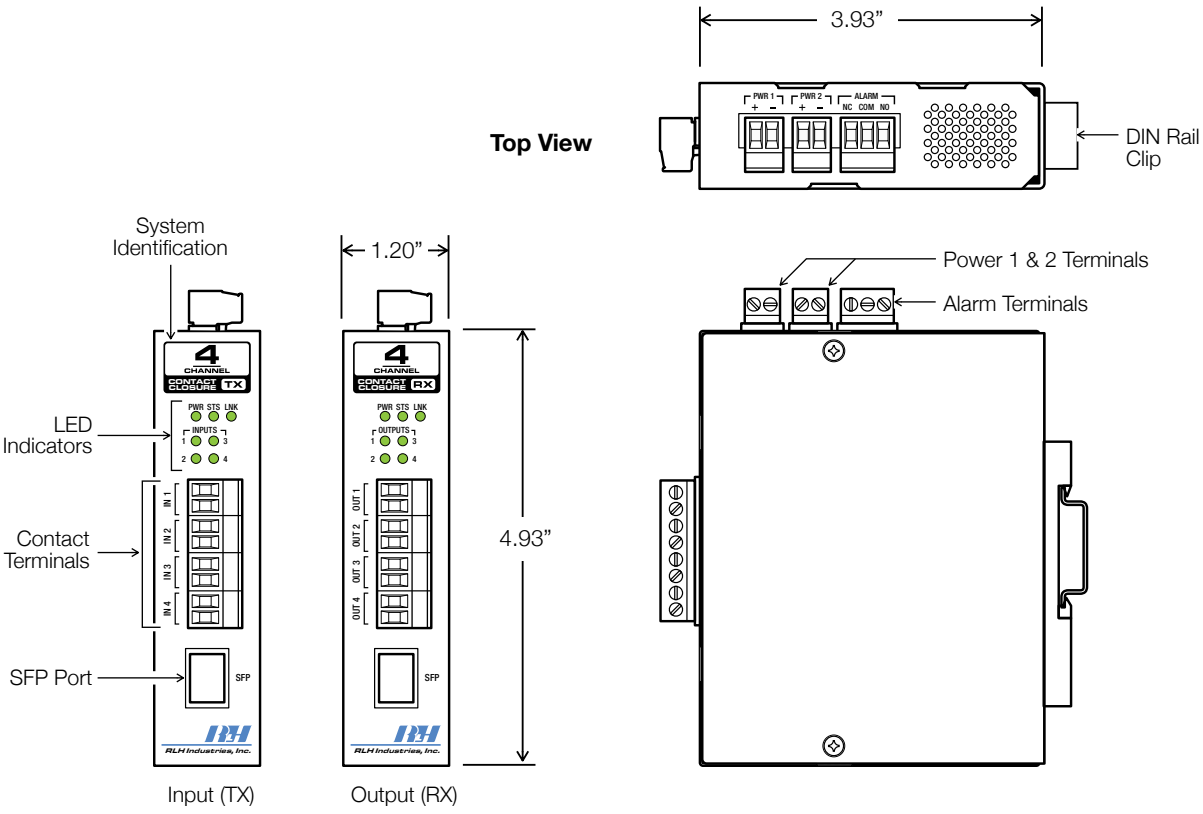
Required for installation:

- 24-48VDC power source at both installation sites.
- DIN rail or wall space for mounting
- Multimeter

Measure the DC voltage of the source power to ensure that it is 24-48VDC. All electrical and fiber optic connection are made directly onto the unit.

Front Panel

The front panel contains all the input or output contact terminals, LED's, and the fiber port.



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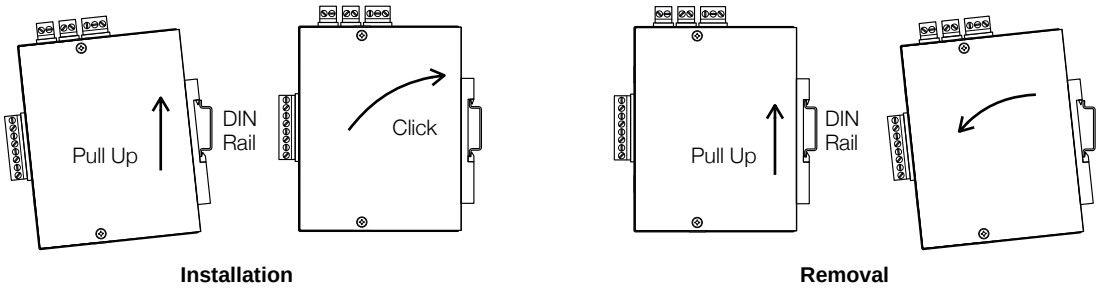
DIN rail mounting

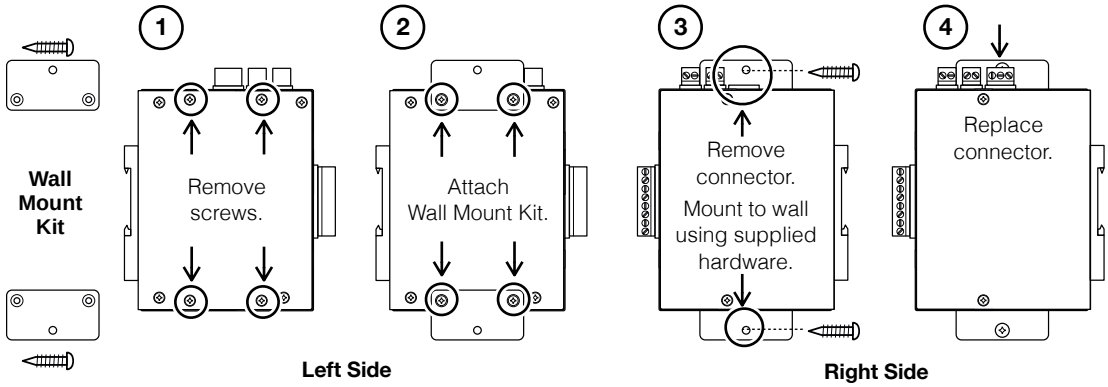
The DIN clip for mounting the system is mounted onto the rear panel. Hook the DIN clip on the bottom flange of the DIN rail, pull up, and rotate to the locked position to install. To remove, pull up to depress the spring latch and rotate off of the DIN rail.



DIN Rail Mounting

Wall mounting

The system can be easily wall mounted by attaching the provided wall mount ears and hardware. Attach the wall mount ears by following the instructions below.

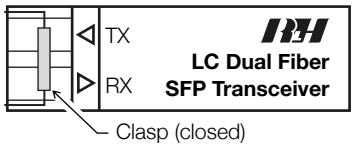


Wall Mounting

Install SFP Transceiver

Verify the SFP transceivers compatibility. SFP's are sold separately, and compatible transceivers are listed in the *RLH Certified SFP Transceiver* section of this document.

- Dual fiber systems require identical SFP transceivers.
- Single fiber systems require a matching pair, side A and side B.
- Close clasp and slide the SFP transceiver into the port.
- To remove, pull the clasp back to release it, and then slide it out.



Connect Fiber Optic Cable

The optical ports are for use with SFP transceivers only. Remove the dust caps from the SFP transceiver and fiber connectors. Plug the cable(s) securely into the SFP.

- Dual fiber systems require the TX fiber port to be connected to the RX fiber port on the other end.
- Once the system is properly connected the Link LED should turn ON.

Connect Contact Wire Pairs

DO NOT APPLY VOLTAGE to the input terminals without verifying that you have the Wet input model or the system maybe damaged.

- The contact terminals may be removed and accept wire sizes 16~26 AWG.
- Ensure to fully seat the terminal blocks back into the connector socket before operating the system.
- Channel assignments must match on the remote unit. *Example, Input 1 is paired with Output 1*.

Dry Inputs

- Dry Inputs will sense a dry contact closure to trigger the Input.
- Check to ensure the copper pairs being used do not exceed 100 Ohms.
- Do not apply voltage to Dry Input terminals as the system may be damaged.

Wet Inputs

- Remove all voltage when wiring inputs.
- Wet inputs are NOT polarity sensitive. Connect **+** and **-** wire pair in any order.

Relay Outputs

- Remove power to the unit before installing or maintenance.
- Ensure the output relays maximum load of 60 Watts (AC or DC) is not being exceeded.
- Disconnect all power to load wiring prior to installation or maintenance

Alarm Wiring

Connect alarm relay monitoring equipment wire pair to the alarm contact on the bottom of the unit.

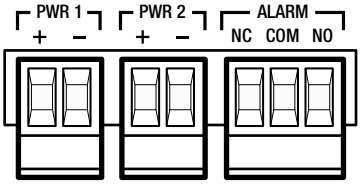
- Use the NO or NC contact positions as required.
- The alarm terminal block may be removed and accept wire sizes 16~26 AWG.
- Fully seat the terminal block back into the connector before operating the system.

Connect Power

Ensure power supply is OFF prior to wiring the system. Connect a 24-48VDC power supply to the screw-down terminals located on the bottom of the unit.

- Requires one (1) 24-48VDC power supply. Use a second power source for redundant power.
- Fully seat the terminal block back into the connector before operating the system.

Note: Both power inputs are NOT polarity sensitive. If a High DC or Low DC powering option was ordered, be sure to confirm the appropriate power source is being used before wiring.

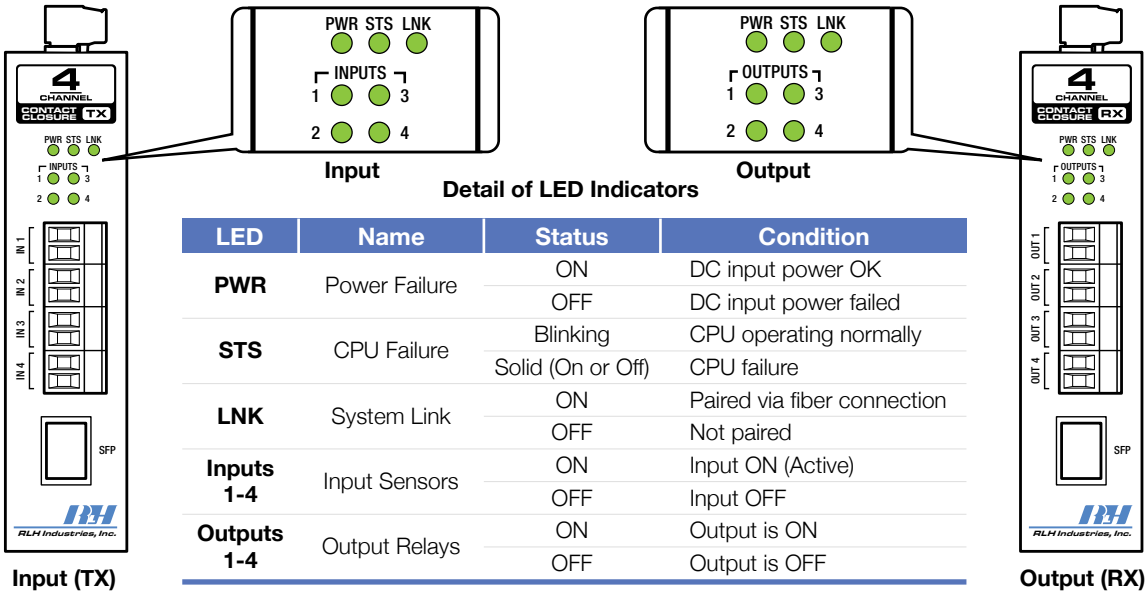


Power and Alarm Terminals

System Alarm Contacts

- Alarms on power failure.
- Alarms when fiber links down.

LED Identification



Detail of LED Indicators

LED	Name	Status	Condition
PWR	Power Failure	ON	DC input power OK
		OFF	DC input power failed
STS	CPU Failure	Blinking	CPU operating normally
		Solid (On or Off)	CPU failure
LNK	System Link	ON	Paired via fiber connection
		OFF	Not paired
Inputs 1-4	Input Sensors	ON	Input ON (Active)
		OFF	Input OFF
Outputs 1-4	Output Relays	ON	Output is ON
		OFF	Output is OFF

Ordering Information

Each 4 Channel Contact Closure DIN Fiber Link unit is identified with a part number.

Description	Relay Setting	Part Number
4 Channel Contact Closure Input Contact - Transmitter	DRY	**4CD-TX-DR-3**
	WET (5~12VDC)	**4CD-TX-12-3**
	WET (24~48VDC)	**4CD-TX-48-3**
4 Channel Contact Closure Output Contact - Receiver	Normally Open	**4CD-RX-NO-3**
	Normally Closed	**4CD-RX-NC-3**

- A complete system requires a pair of units. One (1) **Transmitter** unit and one (1) **Receiver** unit.
- SFP Transceivers are sold separately. A list of compatible RLH Certified SFP's are listed below.
- Add **-A** to the end of the part number for 125 VDC input power option.
- Add **-B** to the end of the part number for 12 VDC input power option.
- Please contact your RLH sales representative for pricing and delivery information.

RLH Certified SFP Transceivers

Each 4 Channel Contact Closure DIN Fiber Link system requires a pair SFP Transceivers.

Description	Fibers	Mode	Side	Distance	Wavelength	Part Number
RLH Certified SFP Transceivers - 155Mbps - LC Connectors	Dual	MM	-	2km/1.2 mi.	1310nm	**SFP-155-04-2**
	Single	SM	A	20km/12.4 mi.	Tx1310nm/Rx1550nm	**SFP-155-20-2**
		SM	B	20km/12.4 mi.	Tx1550nm/Rx1310nm	**SFP-155-21-2**
	Single	SM	A	60km/37 mi.	Tx1310nm/Rx1550nm	**SFP-155-24-2**
		SM	B	60km/37 mi.	Tx1550nm/Rx1310nm	**SFP-155-25-2**
	Dual	SM	-	20km/12.4 mi.	1310nm	**SFP-155-30-2**
	Dual	SM	-	60km/37 mi.	1310nm	**SFP-155-31-2**
	Dual	SM	-	100km/62 mi.	1550nm	**SFP-155-34-2**

- Single fiber (bi-directional) SFP transceivers must always be paired, side **A** and side **B**.
- Please contact your RLH sales representative for pricing and delivery information

General Specifications

Fiber Connector Type	SFP Transceiver		
Compatibility	RLH 155 Mbps SFPs *RLH Devices are MSA compliant and should work with most MSA Compliant SFP's*		
LED	PWR, STS, LNK, and Inputs 1~4 (TX) or Outputs 1~4 (RX)		
Power Input	24-48VDC (22~56V) Polarity Insensitive -A 125VDC (46~150V) -B 12VDC (11~30V)		
	Dual redundant power inputs		
Power Consumption	6 Watts Max.		
Wire Connectors	Screw down terminal block, 16~26AWG		
Inputs 1~4	**Dry** (0-100 ohms)		
	Wet (5~12VDC / 5mA)	Optical isolation 3.5kV	
	Wet (24~48VDC / 5mA)		
Outputs 1~4	Relay Contacts		
Output Relay Contacts Maximum Rating	115VAC	1.087A	125VA
	12VDC	3.000A	36 Watts
	24VDC	2.500A	60 Watts
	48VDC	1.250A	60 Watts
	130VDC	0.462A	60 Watts
	250VDC	0.240A	60 Watts
System Alarm Output	Normally Open / Closed Relay		
Relay Response Time	5ms typical, 10ms maximum		
Surge Protection	Varistors, Automatic resettable fuses		
DC Input Isolation	1.5kV		
Construction	Powder coated steel and aluminum alloy		
Temperature	Operating	-40˚C ~ 70˚C (-40˚F ~ 158˚F)	
Humidity	95%		
MTBF	175,000 Hrs.		
Dimensions	H 4.93” x W 1.2” x D 3.93” (not including DIN clip or pluggable connectors)		
Weight	1.0lbs (0.47kg)		
Mounting	Standard T35 DIN rail or wall mounted with included ears		
Warranty	Limited Lifetime	*Visit* www.fiberopticlink.com *for warranty details*	

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