

4 Wire Data with Contact Closure Fiber Link Card System

SYSTEM INSTALLATION INFORMATION

Description

The 4 Wire Data with Contact Closure Fiber Link Card system provides simultaneous transmission of 4 wire data and bidirectional contact closure over two optical fibers. It supports full duplex constant transmission up to 9600bps (9.6Kbps) in voice frequency range (300Hz-3.4KHz).

The card also interfaces with a dry contact and provides a contact closure on the far end. The system includes convenient contact closure input and output status LED indicators.

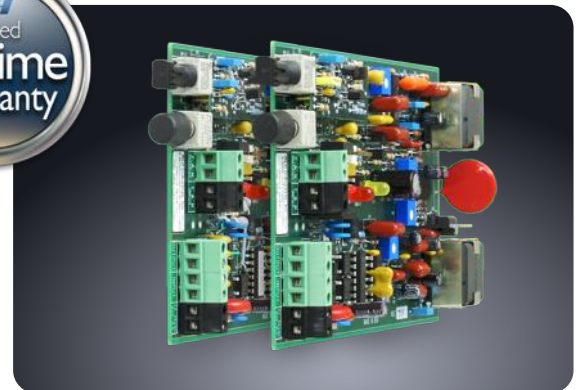
The **CO** (Central Office) Side Card provides the electrical-optical interface between a Central Office or PBX 4 wire copper line and two fiber strands, and the **Sub** (Subscriber) Side Card provides the optical-electrical interface between the fiber and a 4-wire copper line to a RTU, PBX, modem or other customer supplied equipment.

This industrial hardened Fiber Link Card system may be installed into any RLH card housings, and is covered by our **Limited Lifetime Warranty**.

Powering

The 4 Wire Data with Contact Closure CO and Sub cards may be powered by local or line power. Cards can accept local power from 22-56VDC@18 mA maximum, or power supplied from the serving office @15mA.

Note: To maintain high voltage isolation, Fiber Link CO and Sub cards must be powered from separate power sources.



4 Wire Data with Contact Closure Card

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Compliance Information

The 4 Wire Data with Contact Closure Fiber Link Card system is compliant with the following industry standards:

- **FCC PART-68B**
- **IEEE-487**
- **IEEE-1590**
- **Motorola R56**
- **BR 876-310-100 BT (Telcordia)**
- **Bellcore SR-3966**
- **GR-1089**
- **GR-63**

General Safety Practices

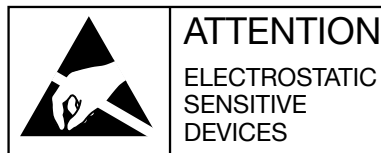
The equipment discussed in this document may require tools designed for the purpose being described. RLH recommends that service personnel be familiar with the correct handling and use of any installation equipment used, and follow all safety precautions including the use of protective personal equipment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

Caution - Severe Shock Hazard

- Never install during a lightning storm or where unsafe high voltages are present.
- Active phone lines may carry high DC voltages. Use caution when handling copper wiring.
- Observe the power requirements of this device and use appropriate power sources.

Special Handling Requirements

Be careful when handling electronic components



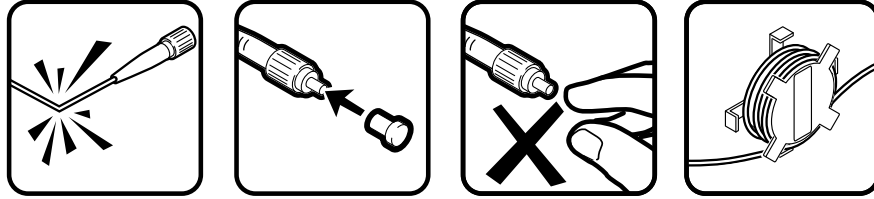
- This product contains static sensitive components.
- Handle the cards at their edges only.
- Follow proper electrostatic discharge procedures.

This card utilizes circuitry that can be damaged by static electricity. When transporting the card, carry it in an ESD safe container such as the antistatic bag provided with the card. Before handling cards, discharge yourself of static electricity by physical bodily contact with earth ground. When handling cards, hold by outer edges and avoid touching circuitry. Failure to follow ESD precautions may cause serious damage to the card and prevent proper operation.

Warning

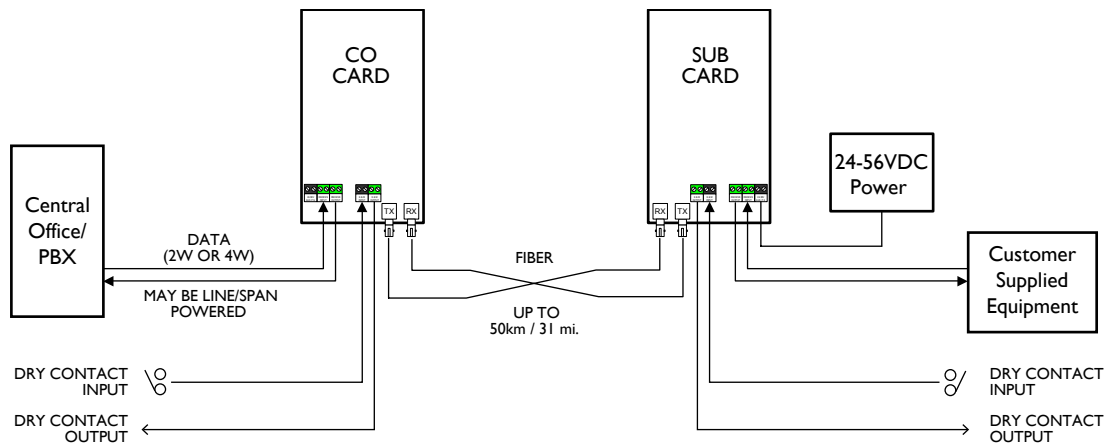
The intra-building port(s) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intra-building port(s) of the equipment **MUST NOT** be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

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

Installation



4-Wire Data with Contact Closure System Diagram

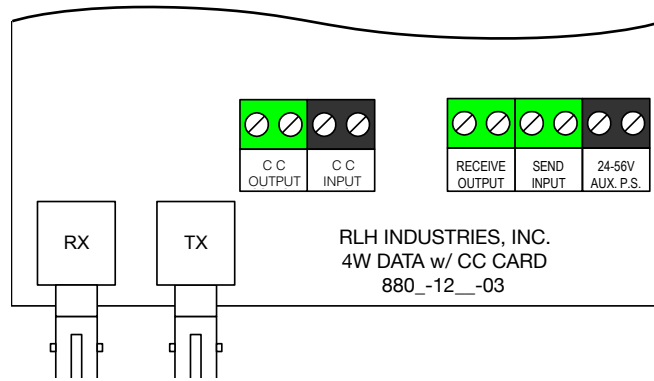
Before installing

- Check for shipping damage. In case of damage, file a claim immediately with the carrier, then contact RLH customer service.
- Check the contents to ensure correct model, mode and fiber connector type.
- Have a clean, dry installation environment ready.

Required for installation

- RLH card housing for RLH Fiber Link Cards.
- 24-56VDC@18mA local power sources as needed.

The 4 Wire Data with Contact Closure Fiber Link Card is designed to be installed into any RLH card housing. The housing should be properly installed before installing the card. All electrical and fiber optic connection are made directly onto the card.



4 Wire Data with Contact Closure Card Connectors

Connect fiber optic cable

Fiber Link cards are equipped with two optical connectors. Connect fibers to the transmitter and receiver marked TX and RX. Connect the transmitter (TX) fiber on one card to the receiver (RX) fiber on the other card and vice versa. Always route fiber cable loosely, avoiding tight bends.

Connect 4 wire data pairs

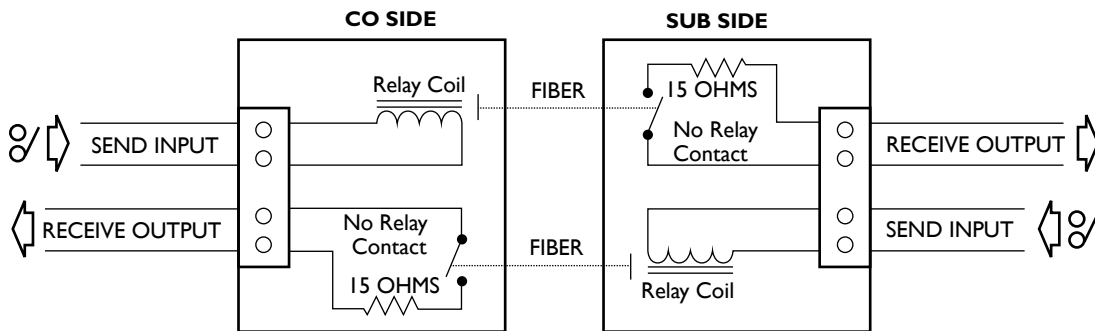
The analog voice-frequency data transmission supports full duplex constant transmission up to 9600 bps. The module has a contact output that corresponds to the contact input on the opposite end module.

The copper pairs from the CO or PBX connect to the green SEND/INPUT and RECEIVE/OUTPUT screw-down terminals on the CO Card.

The copper pairs from the remote terminal connect to the green SEND/INPUT and RECEIVE/OUTPUT screw-down terminals on the Sub Card.

Connect contact closure leads

Connect the contact closure leads to the black contact closure INPUT and green Contact Closure OUTPUT screw terminals. The INPUT of one side corresponds to the OUTPUT at the other end. The contact input is a dry contact only. Output is a normally open contact only.



Contact Closure Connection Diagram

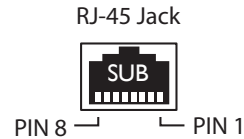
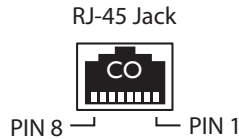
Contact closure operation status may be determined from the 2 status LED's. The red LED is ON when the input is active, and OFF when no input is present. The yellow LED is ON when the contact closure output is closed, and OFF when the output is open.

RJ-45 connectors

RJ45 adapters are available to enable connections to the cards using a standard RJ-45 connector. RJ jacks are gel filled to prevent corrosion.

CO side RJ adapters connect pins 1,2 to the card input connector and pins 7,8 to the card output.

Sub side RJ adapters connect pins 7,8 to the card input and 1,2 to the card output. Refer to the Ordering information for CO and SUB side RJ connector part numbers.



CO Card Pin Description		Sub Card Pin Description	
1 RX INPUT	5 NC	1 TX OUTPUT	5 NC
2 RX INPUT	6 NC	2 TX OUTPUT	6 NC
3 NC	7 TX OUTPUT	3 NC	7 RX INPUT
4 NC	8 TX OUTPUT	4 NC	8 RX INPUT

Connect Power

Connect a 24-56VDC (15mA minimum) local power source to the black AUX. P.S. screw-down terminals on the Card. The power input is not polarity sensitive. The CO card can operate off of simplex line power on the SEND/INPUT and RECEIVE/OUTPUT pairs where available.

Troubleshooting

If trouble is encountered, verify all connections, signal and voltage levels. If trouble persists, replace the unit and retest. If technical assistance is required, contact RLH Industries, Inc. Technical support department. Refer to the contact information at the end of this document.

General Specifications

Transmission method	Frequency modulated light via two optical fibers	
	Multimode:	850nm
	Single-mode:	1310nm
Maximum Fiber Loss / Distance*	Multimode:	8dB / 1.2 miles (2km)
	Single-mode:	8dB / 9 miles (15km)
	SM Long Haul:	26dB / 31 miles (50km); minimum 8dB
	*Note: Distances equated using industry standard fiber and connector attenuation. (Multimode: 3.5dB/km, Single-mode: 0.4db/km, + 0.5dB per connector, + 0.3dB per splice)	
Fiber Type	Multimode: 62.5/125µm, 50/125µm ; Single-mode: 9/125µm	
Fiber Connector Types	ST or SC	
Analog Bandwidth	300 Hz to 3.4 KHz	
Maximum Analog Data Rate	9600 bps (9.6Kbps)	
DDS Data Rate	2.4Kbps and 4.8Kbps	
Contact Closure Input	Dry Contact Closure of 2000 Ohms maximum	
Contact Closure Output	Normally Open, Solid State Relay, 150mA 220VAC 330VDC	
Response Time	On: 1.4µs / Off: 1.9 msec (Dry Contact Only)	
LED Indicators	Yellow Contact Output Status (LD1)	ON: Closed, OFF: Open
	Red Contact Input Status (LD2)	ON: Closed, OFF: Open
Channel Noise	< 20dBmC (15dBmC typical)	
DC Resistance Limits	2000 Ohms typical for 50V DC CO battery	
Nominal Impedance	600 Ohm input and output	
Insertion Loss	0dB +/- 0.5dB each direction	
Overload Level	8dBm into 600 Ohms	
Surge Protection	PTC thermistors, zener diodes and varistors	
Power Requirements	Line: 15mA ; Local: 24-56VDC, card current limits at 18mA	
Power Connector	Screw type connector terminal, 12-26 AWG	
Powering Method	Simplex line power or local DC power supply connected to AUX. P.S.	
Simplex Current Output Option	18mA@24VDC on XMIT pairs, Sub side only	
Operating Temperature	-40° to +158° F (-40° to +70° C), 95% non-condensing	
Dimensions	7 "x 4" x 1" Standard RLH Fiber Link Card form factor	
Warranty	Limited Lifetime	Visit www.fiberopticlinc.com for warranty details

Ordering Information

RLH Fiber Optic Link products are available directly through RLH Industries, Inc. or its distributors nationwide. Please call RLH customer service for ordering assistance.

Each 4 Wire Data with Contact Closure Card is identified with the part number.

Optics	Distance	Fiber	Description	Part Number
Multimode ST	2km / 1.25 mi.	62.5 μ m	CO Card	8806-1238-02-SM11
			Sub Card	8806-1248-02-SM11
Multimode SC	2km / 1.25 mi.	62.5 μ m	CO Card	8805-1238-02-SM11
			Sub Card	8805-1248-02-SM11
Single-mode ST	15km / 9 mi.	8~9 μ m	CO Card	8806-1277-01-SM11
			Sub Card	8806-1287-01-SM11
Single-mode SC	15km / 9 mi.	8~9 μ m	CO Card	8805-1277-01-SM11
			Sub Card	8805-1287-01-SM11
Long Haul Single-mode ST	50km / 31 mi.	8~9 μ m	CO Card	8806-1277-01-LH-SM11
			Sub Card	8806-1287-01-LH-SM11
Long Haul Single-mode SC	50km / 31 mi.	8~9 μ m	CO Card	8805-1277-01-LH-SM11
			Sub Card	8805-1287-01-LH-SM11

- ▶ 62.5 μ m multimode fiber compatibility is standard, add **-50** to part number for 50 μ m
- ▶ Add **-RJ** to part number for installed RJ48S adapter
- ▶ A complete system requires one **CO** card and one **Sub** card

Technical Support

Email:	support@fiberopticlink.com
24/7 technical support:	Toll Free 1-855-RLH-24X7
	Toll Free 1-855-754-2497

Contact Information

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Please contact your RLH sales representative for pricing and delivery information.

Specifications subject to change without notice.