

## 2 Wire Data

### System Installation Information

The 2 Wire Data Fiber Link Card System provides 2 wire analog data service up to 9600 bps for AC data transmission services. Such services may include 2 wire on-line modems, SCADA systems, and audio-tone protective relaying systems. The 2 Wire Data system provides a constant transmission path in the VF range.

The copper signal is converted to optical, transmitted over fiber optic cable, and converted back into the original copper signal. This allows for network extension over long distances, and provides electrical isolation between both ends of the network.

The 2 Wire Data Fiber Link Card system is compatible with any RLH fiber link card housing or shelf, temperature hardened for tough environmental conditions, and is covered by our Limited Lifetime Warranty.

## Cards

### 2-Wire Data CO (Central Office) Card

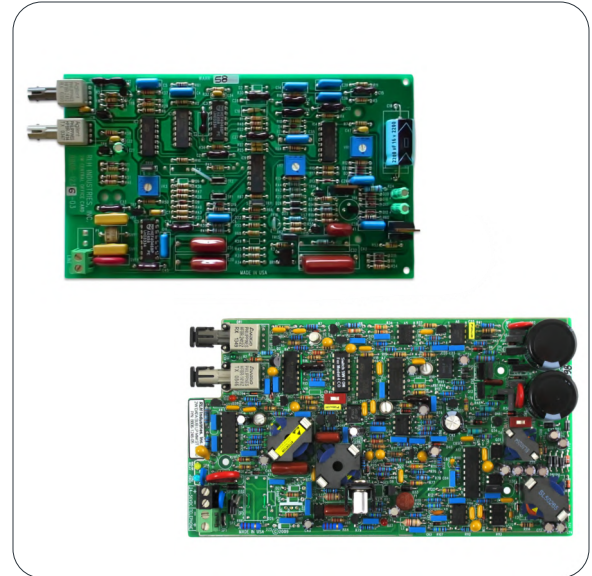
The 2 Wire Data CO Card is powered by Line Power or Local Power depending on the model purchased. It can transmit a maximum of 1.5 miles on multimode fiber optic cable and up to 37 miles (60km) on single-mode fiber.

### 2-Wire Data Sub (Subscriber) Card

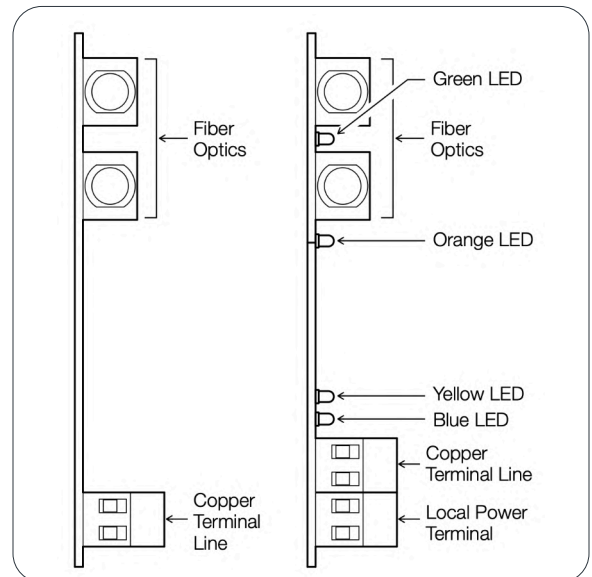
The 2 Wire Data Sub Card is powered by a 20-30V DC, 45mA local power source. The Sub Card has a LED power indicator that displays operational status.

## Compliance Information

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



CO and SUB Card System



Dimensions

### **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 HAZZARD**

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

### **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

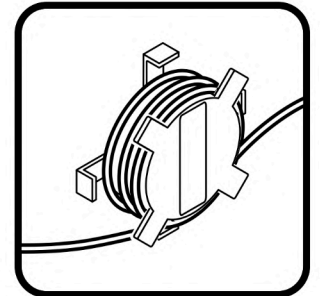
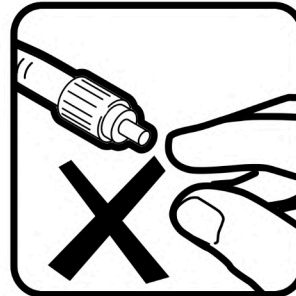
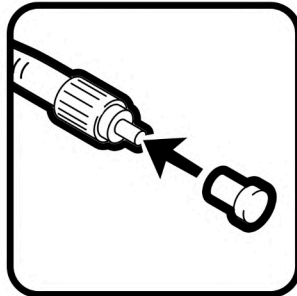
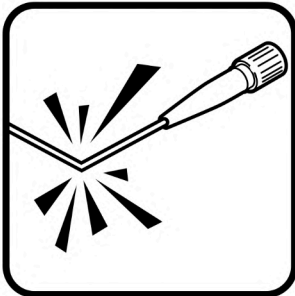
This card utilizes circuitry that can be damaged by static electricity. When transporting the card, carry it in an ESD safe container such as the antistatic bag provided with the card. Before handling cards, discharge yourself of static electricity by physical bodily contact with earth ground. When handling 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 metallicly 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 metallicly to OSP wiring.

### **General Safety Practices (cont'd)**

#### **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**

#### Prior to installation:

- Check for shipping damage
- Check the contents to ensure correct model and fiber type
- Have a clean, dry installation environment ready

#### Required for installation:

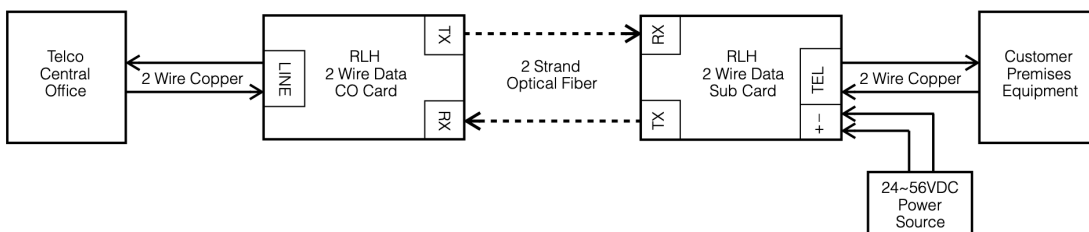
- 24~56VDC (200mA@24VDC min.) local power source for the FXS/Sub card
- RLH Fiber Link card housing or enclosure
- A weatherproof enclosure is required for outdoor use

The 2-Wire Data Fiber Link card can be installed into any compatible RLH card housing. All electrical and fiber optic connection are made directly onto the card.

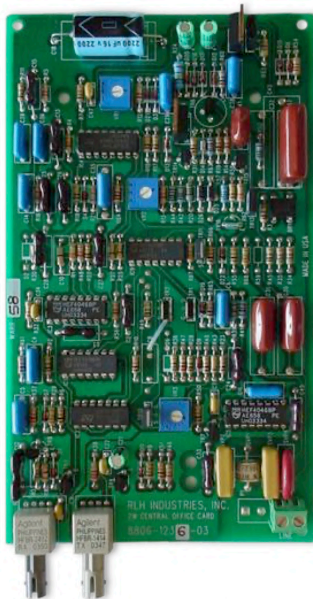
### Installation (cont'd)

#### Connect fiber optic cable

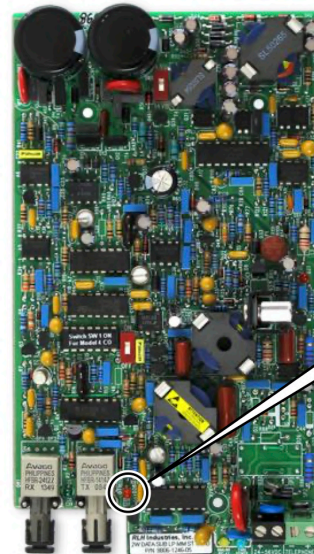
Fiber is connected via transmit (TX) and receive (RX) optical connectors on the RLH 2 Wire Card. Be sure to route fiber loosely to avoid excessive optical loss. The TX optical fiber must be connected to the RX optical fiber on the opposite end of fiber, i.e., if the #1 fiber is connected to the TX optical on the CO Card, then the #1 fiber must be connected to the RX optical on the Sub Card.



2-Wire Data System Diagram



2-Wire Data CO Card  
(Line powered model shown)



The red LED is ON when the Sub card is operating.

2-Wire Data Sub Card

#### 2-Wire Data Card Connectors and LEDs

#### Connect 2-wire copper pair

2 Wire Data CO and Sub Cards can be mounted in any RLH Card Housing. Copper telephone wires are connected to green screw down terminals marked TEL or LINE. The TEL / LINE terminals on the RLH 2 Wire Data CO and Sub Cards are not polarity sensitive.

## Installation (cont'd)

### Connect Power

DC Power for the Subscriber side card is connected to the black screw down terminal marked 24V with positive and negative indicators.

## Troubleshooting

If trouble is encountered, verify all installer 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.

## Ordering Information

Card Type	Mode	Connector	Distance	Fibers	Part Number
CO Card (line powered)	Multimode	ST	2.4km/1.5 miles	Dual Fiber	8806-1236-02
CO Card (locally powered)	Multimode	ST	2.4km/1.5 miles	Dual Fiber	8806-1236-02LP
SUB Card (locally powered)	Multimode	ST	2.4km/1.5 miles	Dual Fiber	8806-1246-05
CO Card (line powered)	Singlemode	ST	15km/9 miles	Dual Fiber	8806-1363-01
CO Card (locally powered)	Singlemode	ST	15km/9 miles	Dual Fiber	8806-1363-01LP
SUB Card (locally powered)	Singlemode	ST	15km/9 miles	Dual Fiber	8806-1373-03
CO Card (line powered)	Singlemode	SC	15km/9 miles	Dual Fiber	8805-1363-01
CO Card (locally powered)	Singlemode	SC	15km/9 miles	Dual Fiber	8805-1363-01LP
SUB Card (locally powered)	Singlemode	SC	15km/9 miles	Dual Fiber	8805-1373-03
CO Card (line powered)	Singlemode	ST	60km/37 miles	Dual Fiber	8806-1363-01-LH
CO Card (locally powered)	Singlemode	ST	60km/37 miles	Dual Fiber	8806-1363-01LP-LH
SUB Card (locally powered)	Singlemode	ST	60km/37 miles	Dual Fiber	8806-1373-03-LH
CO Card (line powered)	Singlemode	SC	60km/37 miles	Dual Fiber	8805-1363-01-LH
CO Card (locally powered)	Singlemode	SC	60km/37 miles	Dual Fiber	8805-1363-01LP-LH
SUB Card (locally powered)	Singlemode	SC	60km/37 miles	Dual Fiber	8805-1373-03-LH

- A complete system requires a CO and a SUB card

## USER GUIDE

[www.fiberopticlink.com](http://www.fiberopticlink.com)

### Key Specifications

<b>Transmission Method:</b>	Multimode: 820nm Singlemode: 1310nm <small>*Amplitude modulated light via two optical fibers</small>
<b>Maximum Fiber Loss / Distance:</b>	Multimode: 10dB / 1.5 miles (2.4km) Singlemode: 8dB / 9 miles (15km) SM Long Haul: 26db / 37 miles (60km) <small>*Distances equated using industry standard fiber losses and connector attenuation of 3dB/km. *Fiber condition, splices and connectors will affect actual range.</small>
<b>Fiber Type:</b>	Multimode: 62.5/125µm, 50/125µm Singlemode: 8~9/125µm
<b>Fiber Connector Types:</b>	ST or SC
<b>Frequency Response:</b>	Terminated with 600 Ohms at 1000 Hz: 300-3400 Hz +0.5 to -2.0 dB
<b>Insertion Loss:</b>	0dB +/- 0.5dB
<b>Overload Level:</b>	+5 dBm into 600 Ohms
<b>Channel Noise:</b>	Less than 20 dBrnC (10 dBrnC typical)
<b>DC Resistance Limits:</b>	1600 Ohms loop (including CO DC feed)
<b>Maximum Data Rate:</b>	9600 bps (9.6Kbps) (analog) <small>*Using Data Compression; otherwise any AC Data that can be transmitted over POTS network cable pairs</small>
<b>Insertion Loss:</b>	0dB +/- 0.5dB each direction
<b>Powering Requirements:</b>	CO Card: Line Power: 18~54V DC, 18mA minimum, 28mA maximum Local Power: 24~56VDC 28mA maximum Sub Card: All Models: Local power, 24~56VDC 45mA
<b>Operating Temperature:</b>	-40° to +158° F (-40° to +70° C), 95% non-condensing

**USER GUIDE**[www.fiberopticlink.com](http://www.fiberopticlink.com)**Contact**

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**Tech Support**

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