

2 Wire DID Fiber Link Card System

SYSTEM INSTALLATION INFORMATION

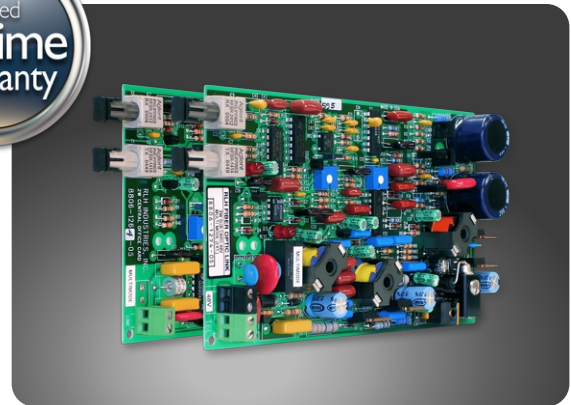
Description

The 2 Wire DID (Direct Inward Dialing) Fiber Link system provides a fiber optic transmission of a Telco DID TRUNK line to a PBX (loop start) over two optical fibers. The 2 Wire DID system transmits signals in the voice-frequency or audio range (300Hz-3.4KHz) while providing reverse battery signaling to communicate call status.

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

Key Features

- Applications for critical, high voltage, remote or un-manned locations that must remain operating 24/7/365.
- CO side is locally powered.
- Environmentally hardened to operate in -40°F to +170°F (-40°C to +76°C) environments.
- Full duplex transmission when off-hook.
- Available in Single and Multi-mode
- Available with ST or SC Connectors
- Compatible with wide variety of housings.
- Covered by our **Limited Lifetime Warranty**.
- **Made in the USA**



2 Wire DID Fiber Link Card

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Compliance Information

The 2 Wire DID 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

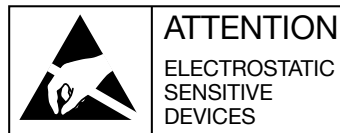
The equipment discussed in this document may require tools designed for the purpose being described. RLH recommends that service personnel be familiar with the correct handling and use of any installation equipment used, and follow all safety precautions including the use of protective personal equipment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

Special handling requirements

Be careful when handling electronic components



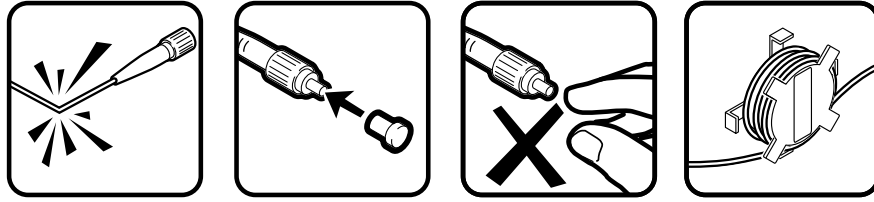
- This product contains static sensitive components.
- Handle the cards at their edges only.
- Follow proper electrostatic discharge procedures.

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.

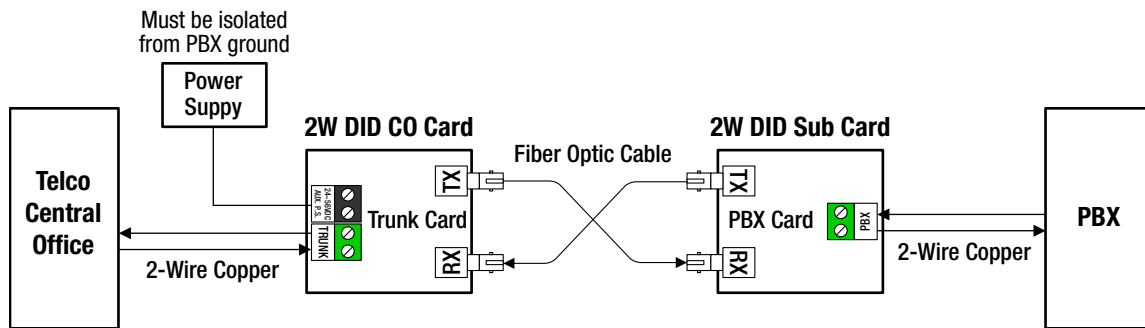
Warning

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



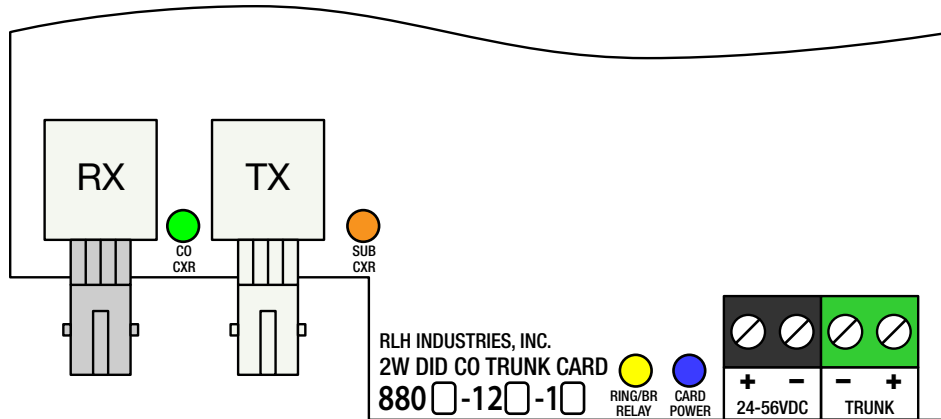
2-Wire DID System Diagram

Installation

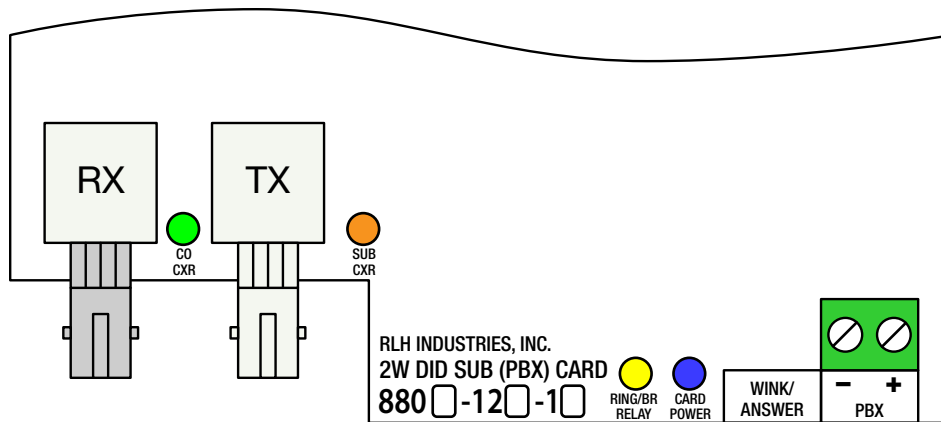
After unpacking the card, immediately inspect it for shipping damage. If damage is discovered file a claim immediately with the carrier, then contact RLH customer service. The Fiber Link 2-wire DID Cards can be installed into any RLH card housing. All electrical and fiber optic connections are made directly onto the card.

Connect fiber optic cable

Fiber Link Cards are equipped with two optical connectors. Connect fibers to the transmitter and receiver marked "TX" and "RX". For example, if fiber #1 is connected to "TX" on the CO Card, fiber #1 must be connected to "RX" on the Sub Card. Fiber cable should always be routed loosely avoiding tight bends.



2-Wire DID CO (Trunk) Card Connectors



2-Wire DID Sub (PBX) Card Connectors

Connect 2-wire copper pair

Connect the copper pair from the PBX to the green PBX screw-down terminal on the Sub Card, the card will power up in 5 seconds. The connector is polarity sensitive, so if the Yellow RING/BR LED comes on, reverse the leads from the PBX.

Connect Power

Connect a 24-56VDC (150mA minimum) power source to the black AUX. P.S. screw-down terminal on the CO card. The power input is polarity sensitive and marked with positive and negative.

Once the connection is complete, use following test procedures to verify correct system operation.

Testing

1. At the CO side, use a telephone (butt-set) connected to the TRUNK terminal to go off-hook. When you go off-hook, you should see the Orange LED come ON followed by the Green LED, and then the Yellow LED should wink ON once.
2. You can dial a 4-digit extension to call in. The Yellow LED will be ON when the call is answered.
3. From a different line, call the full 7 digit number for a DID extension. If the DID system does not function correctly, reverse Tip and Ring to the CO Trunk Card.

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

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

Each 2 Wire DID card is identified with the part number.

Optics	Distance	Fiber	Description	Part Number
Multimode ST	1.5 mi / 2.4km	62.5µm	CO (Trunk) Card	8806-1264-05
			SUB (PBX) Card	8806-1274-05
Multimode SC	1.5 mi / 2.4km	62.5 µm	CO (Trunk) Card	8805-1264-05
			SUB (PBX) Card	8805-1274-05
Single-mode ST	9 mi / 15km	8~9 µm	CO (Trunk) Card	8806-1262-03
			SUB (PBX) Card	8806-1272-05
Single-mode SC	9 mi / 15km	8~9 µm	CO (Trunk) Card	8805-1262-03
			SUB (PBX) Card	8805-1272-05
Long Haul Single-mode ST	37 mi / 60km	8~9 µm	CO (Trunk) Card	8806-1262-03-LH
			SUB (PBX) Card	8806-1272-05-LH
Long Haul Single-mode SC	37 mi / 60km	8~9 µm	CO (Trunk) Card	8805-1262-03-LH
			SUB (PBX) Card	8805-1272-05-LH

- ▶ 62.5µm multimode fiber compatibility is standard, add **-50** to part number for 50µm fiber compatibility.
- ▶ Please contact your RLH sales representative for pricing and delivery information.

General Specifications

Transmission method	Frequency modulated light via two optical fiber
	Multimode: 850nm (Tx level: -26dB ± 1dB)
	Single-mode: 1310nm (Tx level: -29dB ± 1dB)
	SM Long Haul: 1310nm (Tx level: -6dB ± 2dB)
Maximum Fiber Loss / Distance*	Multimode: 10dB / 1.5 miles (2.5km)
	Single-mode: 8dB / 9 miles (15km)
	SM Long Haul: 26dB / 37 miles (60km); minimum 8dB
	*Note: Distances equated using industry standard fiber and connector attenuation of 3dB/Km. Fiber condition, splices and connectors may affect actual range.
Fiber Type	Multimode: 62.5/125µm, 50/125µm ; Single-mode: 9/125µm
Fiber Connector Types	ST or SC
Wire Connector	Screw clamp, 12-26 AWG
Frequency Response	300 Hz to 3.4 KHz+0.5dB to -2.0dB (Terminated 600 Ohms)
DID Signaling	Reverse battery from the PBX is reflected on the CO Trunk Card
DC Resistance Limits	1600 Ohms loop (including CO)
Insertion Loss	0dB +/- 0.5dB each direction
Surge Protection	PTC thermistors, zeners, diodes, thyristors and varistors
Power Requirements	CO (Trunk) Card: 24-56VDC, on-hook 45mA maximum, off-hook 120mA maximum
	Sub (PBX) Card: 12-56VDC (card will limit current to 24±2mA)
Powering Method	CO (Trunk) Card: Local isolated DC power source
	Sub (PBX) Card: Line current from PBX
Operating Temperature	-40° to +158° F (-40° to +70° C), 95% non-condensing
Dimensions	7"x4"x1", Standard RLH 4RU Plug-in Card
Warranty	Limited Lifetime <i>Visit www.fiberopticlink.com for warranty details</i>

Technical Support

Normal technical support: (Mon - Fri 6am - 6pm PST)	Local (714) 532-1672 Toll Free (800) 877-1672 Toll Free (866) DO-FIBER
24/7 Technical support:	(714) 396-8982 (714) 457-5740



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

Specifications subject to change without notice.