Company Overview

RLH Industries Inc. has been a leader in fiber optic isolation technology since 1988. Based in the heart of Southern California, we engineer products and solutions designed to meet the unique demands of our customers.

Our products are manufactured to exceptionally high performance requirements, meeting or exceeding industry standards. We stand with total confidence in the quality of our products.

Utilities, service providers, telco and networking contractors throughout North America utilize RLH products for their communication needs.

RLH has a strong business foundation built on product quality and customer service with 24x7 service personnel ready to provide support when you need it.

Industry Solutions

- Telecommunications
- High Voltage Isolation
- Utilities, Power Transmission and Generation Facilities
- Lightning Protection
- Critical Communications Systems
- Automatic Meter Reading (AMR/AMI)
- Automation and Control
- Wide Area Networks (WAN)
- Wireless/PCS
- Public Safety
- Government
- Military/Defense
- Educational Institutions
- Local Area Networks
- Security and Monitoring
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Fiber Optic Isolation Systems

RLH Fiber Optic Isolation Systems are substation grade, hardened copper-to-fiber media converters, designed for harsh environments, outside plant and power station installations. They are designed to provide electrical isolation within environments susceptible to GPR events, EMI and lightning strikes.

Individual fiber optic link cards are installed into RLH wall or rack mount card housings, and several powering options are available.

Please refer to the product data sheets obtainable from our web site, or contact one of our sales engineers for more detailed information.

**TYPICAL SPECIFICATIONS * **

<table>
<thead>
<tr>
<th>Transmission Method</th>
<th>Frequency modulated light via optical fibers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector Type</td>
<td>ST or SC</td>
</tr>
<tr>
<td>Wavelength</td>
<td>Multimode fiber 850 nm</td>
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<tr>
<td></td>
<td>Single-mode fiber 1310 nm</td>
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<tr>
<td>Fiber Type and Distance</td>
<td>Multimode (62.5/125 µm): 1.8 mi./3 km</td>
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<tr>
<td></td>
<td>Single-Mode (9/125 µm): 9 mi./15 km</td>
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<td></td>
<td>Single-Mode Long Haul: 37 mi./60 km</td>
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<tr>
<td>Operating temperature</td>
<td>-40 °F to +158 °F (-40 °C to +70 °C)</td>
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<tr>
<td>Operating humidity</td>
<td>95% non-condensing</td>
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<tr>
<td>Physical Dimensions</td>
<td>Fiber Link Card - 7” x 4” x 1”</td>
</tr>
<tr>
<td>Limited Lifetime Warranty</td>
<td>(Standard RLH Fiber Card Form Factor)</td>
</tr>
</tbody>
</table>

* Typical specifications only. Please refer to the product data sheets for specific product specifications.

**Fiber Optic Isolation Systems - Product line**

- 2 Wire POTS
- 2 Wire POTS Enhanced
- POTS - 2 and 4 Channels
- 2 Wire DID
- 4 Wire Analog Data
- 4 Wire Data with E&M
- 4 Wire 9.6 kbps DDS
- 4 Wire 56 kbps DDS
- 4 Wire T1/E1
- T1 - 1, 2, and 4 Channels
- 2 Wire Data
- RS-232
- RS-232 & RS-485/422
- 10/100 & 10/100/1000 Ethernet
- Contact Closure - 4 & 8 Channel
- HDSL (Universal)
- 2 Channel ADSL
- 2 Wire Digital Phone
- DS3 (T3/E3)

**Card Housings, Cabinets & Enclosures**

- Card housings - Rack, DIN and Wall
- Pedestal Enclosures
- Cabinets - Aluminum and Fiberglass
- D-Pad Isolation Safety Accessory

**System Power Accessories**

- 2/4 Wire Data Power Coupler
- 2 Wire POTS Power Coupler
- AC/DC and DC/DC power supplies
- Power Over Fiber System (PoF)
- 20, 55, and 100 Watt Solar Power
Fiber Optic Isolation Systems

2 Wire POTS
The 2 wire POTS (Plain Old Telephone Service) system provides transmission of standard analog phone, telemetering, or PBX loop start signals over two optical fibers. The system transmits signals in the voice-frequency or audio range (300 Hz–3.4 kHz) while providing ringing and off-hook detection.

Common applications include telephone, faxes, and dial-up modems.

- FXO/CO cards are line powered
- Provides ringing and off-hook detection
- Critical, high voltage, or remote locations operating 24/7/365
- UL listed & NEBS Level 3 approved
- Made in USA

2 Wire POTS Enhanced
The 2 wire POTS (Plain Old Telephone Service) Enhanced system provides transmission of standard analog POTS, telemetering, or PBX loop start signals over two optical fibers. The system transmits signals in the voice-frequency or audio range (300 Hz–3400 Hz) while providing ringing and off-hook detection, and supports caller ID and forward disconnect.

Common applications include telephone, faxes, and dial-up modems.

- FXO/CO cards are line powered
- Provides ringing and off-hook detection
- Supports Caller ID and forward disconnect
- Made in USA

2 Channel POTS
The 2 Channel POTS (Plain Old Telephone Service) system is hardened for substation and critical applications. Common applications include extending analog lines over fiber for the benefit of electrical isolation, to achieve long distances, or through noisy environments to reduce EMI. These cards are fully compatible with all traditional POTS services, dial-up modems, meters, & fax machines.

- Operating temperature range is -40 °F to +158 °F (-40 °C to +70 °C)
- Uses 24–48VDC local power
- Supports Caller ID and Call-Forward Disconnect
- Ringdown Function (FXS to FXS Hotline Phone)
- Made in USA

4 Channel POTS
The 4 Channel POTS (Plain Old Telephone Service) system is hardened for substation and critical applications. Common applications include extending analog lines over fiber for the benefit of electrical isolation, to achieve long distances, or through noisy environments to reduce EMI. These cards are fully compatible with all traditional POTS services, dial-up modems, meters, & fax machines.

- Operating temperature range is -40 °F to +158 °F (-40 °C to +70 °C)
- Uses 24–48VDC local power
- Supports Caller ID and Call-Forward Disconnect
- Ringdown Function (FXS to FXS Hotline Phone)
- Made in USA

2 Wire DID
The 2-Wire DID system provides a fiber optic transmission of a Telco DID TRUNK line to a PBX (loop start) over two optical fibers.

The system transmits signals in the voice-frequency or audio range (300 Hz–3.4 kHz) while providing reverse battery signaling to communicate call status.

- Compatible with 2 wire DID systems
- Sub (PBX) side card uses line power
- CO (Trunk) side uses 24/48VDC power
- Uses reverse battery technology
- Made in USA

4 Wire Analog Data
The 4 Wire Analog Data system provides a transmission of 2/4-wire data signal over two optical fibers, and supports full duplex constant transmission in voice-frequency or audible tone range of 300 Hz–3.4 kHz. 2-wire data is half duplex, and 4-wire data is full duplex.

Common applications include SCADA and protective relay systems.

- Dual power capable, line or local 24/48VDC
- Line power output option to power SUB equipment
- 4 Wire analog audio-tone 300 Hz–3.4 kHz
- UL Listed & NEBS Level 3 approved
- Made in USA
Fiber Optic Isolation Systems

4 Wire Data with E&M
The 4 wire data E&M system provides simultaneous transmission of 4-wire data and single or bidirectional E&M over two optical fibers, providing point-to-point isolation of Telco or 4-wire PABX trunk lines using E&M leads. The 4-wire data supports full duplex constant transmission up to 9600 bps in voice frequency range (300 Hz–3.4 kHz). The E&M card interfaces with an E&M input and provides a contact closure on the far end.

4 Wire 9.6 Kbps DDS
The 4 wire 9.6 Kbps DDS system processes incoming bipolar signals (3.2V P-P Max) within a bandwidth of 1 kHz to 300 kHz at a data rate range of 19.2 kbps to 64 kbps. This is an excellent fit for 56 kbps systems, and compatible down to 19.2 kbps.

4 Wire 56 Kbps DDS
The 4 wire 56 Kbps DDS system processes incoming bipolar signals within a bandwidth of 1 kHz to 300 kHz at a data rate range of 19.2 kbps to 64 kbps. This is an excellent fit for 56 kbps systems, and compatible down to 19.2 kbps.

4 Wire T1/E1 - NEBS
The 4-Wire T1/E1 system processes incoming bipolar signals (9.0V P-P Max) within a bandwidth of 100 kHz to 10 MHz T-1 (1.544 Mbps) or (CCITT 2.048 Mbps), optically transmits these signals via fiber optic cable, and converts the signal to the original electrical signal with minimal gain or loss.

Single Channel T1
The Single Channel T1 system converts electrical/copper T1(DS1) signals and transport them over optical fiber. The T1 card has the unique ability to operate from T1 span power (60 mA) or local 24 or 48VDC power. The system is hardened to work in extreme conditions and is ideal for high voltage isolation, utility communications, wireless backhaul, and military communications.

2 Channel T1 Mux
The 2 Channel T1 system converts 2 channels of electrical/copper T1(DS1) signals and transport them over optical fiber. The T1 card has the unique ability to operate from T1 span power (60 mA) or local 24 or 48VDC power. The system is hardened to work in extreme conditions and is ideal for high voltage isolation, utility communications, wireless backhaul, and military communications.
Fiber Optic Isolation Systems

4 Channel T1 Mux
The 4 Channel T1 Mux system transports up to four T1 lines over two strands of fiber. Features include B8ZS and AMI compatibility, NEBS Level III approved, LED status indicators for convenient system monitoring, and the ability to power the CO side card from two T1 lines carrying span power.
- Four T1 lines over two strands of fiber
- Dual power capable, line or 24–48VDC
- 1.544 Mbps or CCIT 2.084 Mbps
- UL Listed & NEBS Level 3 approved
- Made in USA

2 Wire Data
The RLH 2 Wire Data system provides 2-wire analog data service in voice frequency of 300 Hz–3.4 kHz for AC data transmission services that do not require ringing. Such services may include 2-wire on-line modems, SCADA systems, and audio-tone protective relaying systems. This system provides a constant bidirectional transmission path in the VF range.
- Can utilize 24-48VDC CO power
- CO side is simplex powered
- 2 Wire Analog audio-tone
  300 Hz-3.4 kHz
- Constant bidirectional transmission
- Made in USA

RS-232
The RS-232 Fiber Link Card system transports a full 9-Pin RS-232 copper signal over fiber optic cable, providing long distance communication up to 74 mi. (120 km).
- 24-48VDC powering required
- Supports baud rates of 50 bps to 1 Mbps
- 9-Pin RS-232 Signal - DCD, RXD, TXD, DTR, GND, DSR, RTS, CTS, RI
- Dual and single (Bi-directional) fiber models available
- Made in USA

RS-232 & 485/422
The Serial Data system transports two active channels of copper serial data over fiber optic cable, allowing for both RS-232 and RS-485/422 to be used at the same time.
- 24-48VDC powering required
- Supports baud rates of 50 bps to 921.6 kbps baud
- Supports 2 & 4 Wire RS-485 operation
- On/Off Termination Resistor Dip Switch for RS-485/422
- Made in USA

10/100 Ethernet
The RLH 10/100 Ethernet system converts a copper 10/100 Ethernet circuit to an optical signal for transmission over either multimode or singlemode fiber optic cable. This product is IEEE 802.3 10Base-T, 100Base-Tx and 100Base-Fx compliant, and is interoperable with other 10/100Base-T and Base-FX devices. Both dual fiber (single direction) and single fiber (bidirectional) models are available.
- Utilizes 24-56VDC power source
- Dual and Single (bi-directional) fiber models available
- DIP switches for duplex & speed control
- Supports IEEE 802.3 10Base-T UTP, 100Base-TX, and 100Base-FX
- Made in USA

10/100/1000 Ethernet
The RLH 10/100/1000 Ethernet system converts a copper 10Base-T or 100/1000Base-TX circuit to a 1000Base-SX/LX fiber optical signal for transmission over either multimode or singlemode fiber optic cable. The Gigabit Ethernet over fiber card may be used as a system, with a card at each end, or the fiber optic cable may be connected directly to any 1000Base-SX/LX compatible device.
- Utilizes 24-56VDC power source
- Connects directly to RJ45 connector
- Bidirectional communication over a single fiber is available
- On board LED status display
- Made in USA
Fiber Optic Isolation Systems

4 Channel Contact Closure
The 4 Channel Contact Closure system provides a transmission of up to four independent contact closure signals over one optical fiber. The system comprises a transmitter card and a receiver card.

- Utilizes 24-56VDC power
- 4 channels over a single fiber
- RX side includes alarm contact for status monitoring
- Convenient LED status indicators
- Made in USA

8 Channel Contact Closure
The 8 Channel Contact Closure system provides a transmission of up to eight independent contact closure signals over one optical fiber. The system comprises a transmitter card and a receiver card. Both cards are powered by a 24-56VDC source and the receiver card provides LED indicators to display relay conditions, power, and fiber carrier receive status.

- Utilizes 24-56VDC power
- 8 channels over a single fiber
- RX side includes alarm contact for status monitoring
- Convenient LED status indicators
- Made in USA

HDSL (Universal)
The HDSL (Universal) system interfaces with any HDSL technology. The system interfaces one 2-pair HDSL1 or HDSL4 line, or up to two 1-pair HDSL2 lines.

- CO side is simplex powered
- Universal HDSL compatibility
- HDSL1, HDSL2 or HDSL4 compatible
- NEBS Level 3 approved
- Made in USA

2 Channel ADSL
The 2 Channel ADSL system supports two channels of ADSL copper service over a single pair of singlemode or multimode fiber optic cable. This environmentally hardened system converts the copper signals into an optical signal over fiber, then converts the fiber optic signal back into 2 Wire DSL copper service for customer use.

- 44-56VDC 100 mA local power source at each end
- Each card can accept 2 ADSL lines
- DSL download data rates of up to 2.75 Mbps
- Supports ITU G.992.1, ITU G.992.2
- Made in USA

2 Wire Digital Phone
The 2 Wire Digital Phone system processes incoming bipolar signal connecting a digital phone set (TEL) and switch or PBX. The Digital Phone card has an informative LED display for status monitoring. This system is compatible with most commonly used systems.

- Utilizes 24-56VDC power source
- Processes digital phone signals
- Critical, high voltage, or remote locations operating 24/7/365
- Made in USA

DS3 (T3/E3)
The DS3 T3/E3 system converts standard T3 (44.736 Mbps) or E3 (34.368 Mbps) coax for transmission over fiber optic cable, and can be used by telco service providers and enterprise level users to connect communication devices such as Utility, Wireless, PBX, Multiplexers, Routers and video servers over fiber optic cable.

- Utilizes 24-56VDC power source
- T3 (DS3) or E3 coax fiber converter
- Supports B3ZS for T3 (DS3) and HDB3 for E3 codes
- Meets ANSI, ETSI and ITU specifications
- Made in USA
### Fiber Optic Card Housings

RLH fiber optic isolation cards are designed to be installed into card housings that provide protection and allow for system mounting in a variety locations. They are sized to hold from 1 to 12 cards, depending on mounting style, powering options, and accessories.

Housings are available in wall, DIN rail or rack mount configurations, with models designed both for outdoor or indoor use.

Please refer to the product listing below.

#### Fiber Link Card Housings

RLH Fiber Link Card Housings feature a powder coated steel housing with card guides designed for housing fiber optic cards of any combination, secured by quick release retainer clips. A steel framed door with acrylic window allows you to view the cards at a glance without having to open it. Fiber Link Card Housings are also available with an integrated power supply which may be used with an optional external UPS battery pack.

- Available in 5, 8, or 12 card capacities
- EIA 19/23” Rack or wall mount
- Optional plug-in 24 or 48VDC switching power supply
- UL Listed & NEBS Level 3 certified
- Made in USA

#### 1RU SlimLine Rack Mount Housing

The RLH SlimLine Rack Mount Housing is a single space (1RU) unit for use in telco, 2-post relay racks, or standard front rail 19 or 23 inch equipment racks. It is designed to hold two fiber optic cards, or one fiber optic card with either a 24VDC or 48VDC power adapter. The power adapter can accept either AC or DC power.

- Slide-out, front access to cards and fiber
- Single rack space (1RU) 19 or 23 inch rack profile
- Available with 24VDC or 48VDC power supplies
- Made in USA

#### 2RU Rack Mount Housing

The RLH 2RU Rack Mount Housing is a two space (2RU) rack mount unit for use in telco, 2-post relay racks, or standard front rail EIA 19 or 23 inch equipment racks. The standard version without a power supply holds up to 4 fiber optic cards stacked in retainer rails. The housing may also be configured with either a 24VDC or 48VDC power adapter that can accept either AC or DC power. This option limits the capacity to 2 fiber optic cards.

- Holds up to 4 Fiber Link Cards
- Sliding tray access to cards and fiber
- Two rack space (2RU) 19 inch rack profile
- Available with 24VDC or 48VDC power supplies
- Made in USA

#### Single Fiber Optic Card Housing

The RLH Single Fiber Optic Card Housing is designed to hold a single card for mounting to a DIN rail or wall.

The housing is constructed of powder coated 16-gauge steel, and includes hardware and wall mount brackets for flexible mounting options.

- Compatible with most RLH fiber optic cards
- Slide-out, front access to cards and fiber
- Includes adjustable mounting ears and DIN rail clip
- Made in USA

#### Dual Card Indoor/Outdoor Housing

The RLH Dual Card Indoor/Outdoor Housing provides a weatherproof mounting for 2 fiber optic cards. The dual card housing is a durable plastic enclosure that may be mounted to a wall or pole.

The standard housing is vented and allows for storage of fiber slack. The hinged door closes securely with 2 snap latches, and may be secured with the 3/8” hex bolt.

- Compatible with all RLH fiber optic cards
- 2 locking card slots
- Wall or pole mount design
- Vented weatherproof plastic construction
- Available with power supply
- Made in USA
Power Accessories

RLH Fiber Optic Isolation Systems may be powered several different ways depending on the product requirements, either with line (span) power or local DC power. DC/DC converter cards and couplers are compact card style solutions designed to fit card housings. The Power over Fiber system can transmit power using fiber optic cable and is ideal for high voltage isolation applications. RLH Solar Power Supplies are complete power supply systems that include a high efficiency solar panel with solar charge controller and battery pack.

DC/DC Converter Card

The DC/DC Converter Card provides an isolated 24VDC or 48VDC output designed to power up to 12 fiber optic link cards. Engineered for industrial telecom applications, these converters provide an isolated and regulated DC output from station batteries or other widely fluctuating DC sources. The converter card fits into any RLH fiber optic link card housing, and can be combined with additional converters for a high density DC power solution.

- High Quality DC/DC converter with isolated and regulated output
- Fits all RLH card housings
- Convenient status LED’s
- Power up to 12 RLH Fiber Link Cards
- Made in USA

2 Wire / 4 Wire Data Power Coupler

The 2-Wire/4-Wire Power Coupler inserts DC power onto “dry” pairs used in SCADA service and Audio Tone Protective Relaying lines in order to power (1 or 2) 2-Wire Data CO cards or a single 4-Wire Data CO card via a 24-56VDC supply. This coupler is designed to boost voltage on the signaling pairs when telco provided voltage is too low.

- Provides Line Power to RLH 2 Wire and 4 Wire Data Fiber Link Cards
- Fits all RLH card housings
- Convenient status LED
- Operates on 24-56VDC power
- Made in USA

2 Wire POTS Power Coupler

The 2-Wire POTS Power Coupler uses a local 24V DC supply to power a single 2-Wire POTS CO card while isolating the 2-Wire line from the 24V or 48V supply. This coupler boosts voltage on the voice pair when telco provided line and ring voltage is low, and is used in cases when line power is insufficient for a fiber optic link card housing.

- Powers one RLH POTS CO Card
- Fits all RLH card housings
- Convenient status indicators
- 24V or 48V models
- Features Ring Detect Mode
- Made in USA

Power Over Fiber System (PoF)

Our patented Power Over Fiber (PoF) system provides power transmission over three multimode (62.5/125) optical fibers. The PoF system is able to provide true isolated power to a remote location utilizing laser light at the transmitter, and a photovoltaic power converter at the remote location. The PoF receiver card converts laser light into electricity, and is ideal for high voltage isolation applications, and may be installed into any RLH fiber optic card housing.

- Uses 24-48VDC, 75 watts max.
- Provides up to 1 watt of 24 volts DC
- 2RU rack mounted transmitter
- Eliminates copper wire running into a High Voltage Environments and Lightning prone locations
- Made in USA

20W 24V Solar Power Supply

The RLH 20W Solar Power kit is a complete power supply system that includes a 20 W 24VDC solar panel with 12 Ah regulated battery pack and charge controller. Includes lightweight and strong RLH Easy-Mount bracket system with quick-tilt angle adjustment for rapid mounting to pole or wall. All mounting hardware is included. The PV panel is mounted with anti-tamper hardware.

- Heavy duty, efficient, 20 watt photovoltaic array
- Weatherproof 7 Ah battery pack with integrated charge controller
- 20 W 24VDC output
- Easy-Mount aluminum frame with quick-tilt support arm
- Arm and frame may be padlocked
55W 24V Solar Power Supply

The RLH 55W Solar Power kit is a complete power supply system that includes a 55 W 24VDC solar panel with 34 Ah regulated battery pack and charge controller. Includes lightweight and strong RLH Easy-Mount bracket system with quick-tilt angle adjustment for rapid mounting to pole or wall. All mounting hardware is included. The PV panel is mounted with anti-tamper hardware.

- Heavy duty, efficient, 55 watt photovoltaic panel
- Weatherproof 34 Ah battery pack with integrated charge controller
- 55 W 24VDC output
- Easy-Mount aluminum frame with quick-tilt support arm
- Arm and frame may be padlocked

100W 24V Solar Power Supply

The RLH 100 W Solar Power kit is a complete power supply system that includes a 100 W 24VDC solar panel with 52 Ah regulated battery pack and charge controller. Includes lightweight and strong RLH Easy-Mount bracket system with quick-tilt angle adjustment for rapid mounting to pole or wall. All mounting hardware is included. The PV panel is mounted with anti-tamper hardware.

- Heavy duty, efficient, 100 watt photovoltaic panel
- Weatherproof 52 Ah battery pack with integrated charge controller
- 100 W 24VDC output
- Easy-Mount aluminum frame with quick-tilt support arm
- Arm and frame may be padlocked
Fiber Optic Isolation Systems

Enclosures

RLH manufactures and stocks metallic and fiberglass cabinets and dielectric pedestals that are ideally suited for our Fiber Optic Isolation systems when outdoor installation is required.

All cabinets and pedestals feature plywood backboards treated with fire retardant paint for durability and easy field installation.

For a full listing of our outdoor enclosures please see the Cabinets and Enclosures section. Any of our enclosures can be configured and customized to your applications requirements.

Semi-Buried Pedestal (Type-02)

The RLH Type-02 pedestal is a small footprint, semi-buried pedestal. It is constructed of all-dielectric plastic and includes a plywood backboard, lockable covers with hex head self-locking system, and a padlock hasp. The pedestal base is approx. W14" x D16" and stands approx. 36" tall when installed. No mounting stakes or platforms are required. Available with pre-installed card housings for rapid deployment.

Semi-Buried Pedestal (Type-03)

RLH Type-03 Semi-Buried Pedestal enclosures include plywood backboard, lockable covers with hex head self-locking system and padlock hasp. The pedestal stands approx. 36" tall when the base is buried. No mounting stakes or platforms are required for installation. These Type-03 pedestals have enough room to install a 12-card Fiber Link housing.

Semi-Buried Pedestal (Type-07)

RLH Type-07 Semi-Buried Pedestal enclosures include plywood backboard, lockable covers with hex head self-locking system and padlock hasp. The pedestal stands approx. 36" tall when the base is buried. No mounting stakes or platforms are required for installation. These Type-03 pedestals have enough room to install a 12-card Fiber Link housing.

D-Pad Fiberglass Platform

The RLH D-Pad platform is placed in front of or near RLH Pedestals, cabinets, or other high voltage apparatus to provide personal protection for workers.

Available in 2 sizes, it is made from outdoor rated fiberglass material, 4" thick, and has a slip resistant surface to enhance traction.

- Lightweight fiberglass construction
- Non-Skid surface
- Available in 2 sizes
- One day installation
Industrial Media Converters

RLH Industrial Media Converters are utility grade, temperature hardened, copper-to-fiber converters designed for harsh environments where performance is paramount. They are designed for stand alone, single or multiple line applications, providing electrical isolation and long distance extension of service over fiber optic cable.

Fiber Link DIN products are intended to be mounted on standard T35 DIN rails, and some models may also be wall or panel mounted with included wall mount hardware. Please refer to the product data sheets obtainable from our web site, or contact one of our sales engineers for additional information.

TYPICAL SPECIFICATIONS *

| Connector Type | ST, SC or LC |
| Wavelength | ST, SC or LC |
| Multimode fiber 850/1310 nm | Single-mode fiber 1310/1550 nm |
| Single-mode fiber 1310/1550 nm | Multimode (50/125 μm & 62.5/125 μm): 1.25 mi./2 km range Single-Mode (9/125 μm): up to 74 mi./120 km |
| Fiber Type and Distance | -40 °F to +158 °F (-40 °C to +7 °C) |
| Operating temperature | 95% non-condensing |
| Operating humidity |

Industrial Media Converters - Product Line

- Contact Closure - Single Channel
- Bi-directional Contact Closure
- 4 Channel Contact Closure
- 8 Channel Contact Closure
- 4 Channel Contact Closure - SFP
- 8 Channel Contact Closure - SFP
- 4 Channel Contact Closure - SFP Bi-directional
- Analog Signal 4-20mA - Single Channel
- Analog Signal 0-10VDC - Single Channel
- Analog Signal 4-20mA - 4 Channel
- Analog Signal 0-10VDC - 4 Channel
- Analog Phone POTS
- 2 Channel POTS
- 2 Channel POTS with I/O
- 2 Channel POTS with Ethernet
- 4 Wire Data with E&M system
- 2 Channel 4 Wire Data with E&M
- 2 Channel 4 Wire Data with E&M and I/O
- 2 Channel T1 Fiber Mux
- Serial Data RS-232 & RS-485/422
- Serial Data RS-232 with DB-9 Port
- 10/100 Enhanced Ethernet
- 10/100 SlimLine Ethernet
- Industrial Gigabit Ethernet

Compatible SFP Transceivers

- 155 Mbit SFP Transceiver
- 1.25 Gbit SFP Transceiver
- 2 Channel 4 Wire Data with E&M and I/O

DIN Rail Mounting Accessories

- DIN Rail Housing
- 19 Inch Rack Mount DIN Rail Bracket
- DIN Rail Housing
- 19 Inch Rack Mount DIN Rail Bracket
### Contact Closure

This Contact Closure Fiber Link system provides transmission of the contact closure signal over one optical fiber. Applications include alarm event triggering, building automation, environmental control systems, fire & alarm systems, gate control, traffic signal control equipment, and more.

- Input will sense a dry contact closure
- Alarm contact for status monitoring
- Output relay is rated to support 60 watts
- DIN rail or wall mount
- Made in USA

### Bi-Directional Contact Closure

This Bi-Directional Contact Closure Fiber Link system provides two-way transmission of a contact closure signal over optical fiber. Applications include alarm event triggering, building automation, environmental control systems, fire & alarm systems, gate control, traffic signal control equipment, and more.

- Input will sense a dry contact closure
- Output relay is rated to support 60 watts
- Bi-directional alarm transmission
- DIN rail or wall mount
- Made in USA

### 4 Channel Contact Closure

The RLH 4 Channel Contact Closure Fiber Optic Link system provides transmission of up to four independent contact closure signals over one optical fiber. The system comprises a transmitter module and a receiver module, each in a compact DIN mount housing.

- Convenient LED status indicators
- Receiver includes alarm contact for status monitoring
- Available with ST or SC optics
- DIN rail or wall mount
- Made in USA

Fiber optic cable is immune to RF noise, high voltages, and provides a transmission range of up to 29 mi./48 km.

### 8 Channel Contact Closure

The RLH 8 Channel Contact Closure DIN Fiber Link system provides transmission of up to eight independent contact closure signals over one optical fiber.

- Convenient LED status indicators
- Receiver includes alarm contact for status monitoring
- Available with ST or SC optics
- DIN rail or wall mount
- Made in USA

The system comprises a transmitter module and a receiver module, each in a compact DIN mount housing.

### 4 Channel Contact Closure SFP

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.

- Powered by 24-48VDC (12VDC and 125VDC power options available)
- Output relay is rated for 60 watts. (Available with NO or NC relays)
- SFP transceiver interface
- DIN rail or wall mount
- Made in USA

Fiber optic cable is immune to RF noise, EMI, high voltages, and may extend the signal up to 100 km.

### 8 Channel Contact Closure SFP

The system provides transmission of eight (8) 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, high voltages, and extends the signal transmission range up to 100 km.

- Powered by 24-48VDC
- Output relays are rated for 60 watts. (Available with NO or NC relays)
- Inputs can accept a DC voltage signal from 12-48 volts (Custom voltage ranges available)
- SFP transceiver interface
- Made in USA
Industrial Media Converters

4 Channel Bi-Di Contact Closure SFP
The system provides transmission of four (4) independent input signals on each end over fiber optic cable in both directions. Applications include alarm event triggering, building automation, environmental control systems, fire & alarm systems, gate control, traffic signal control equipment, and more. A complete system requires two (2) units, a 24-48VDC power source on each end, and two (2) matching SFP Transceivers.

- Redundant power inputs, polarity reversal protection
- Output relays are rated for 60 watts. (Available with NO or NC relays)
- Inputs accept 12-48VDC (Custom voltage ranges available)
- SFP transceiver interface
- Made in USA

Analog Signal DIN Fiber Link System
The Analog Signal DIN Fiber Link system transmits an analog signal, 4-20 mA or 0-10VDC, over one optical fiber. This system is designed to provide highly accurate signal transmission at a high sample rate. Compatible with most PLC’s, Sensors (2, 3, or 4 wire), and other types of equipment where a precise current or voltage measurement needs to be taken and transmitted over fiber.

- Accepts a 24-48VDC power source to operate the unit
- Update rate of 1.3 kHz
- Precision measurement, High degree of accuracy
- DIN rail or wall mount
- Made in USA

4 Channel Analog Signal DIN Fiber Link System
The 4 Channel Analog Signal DIN Fiber Link system transmits up to 4 analog signals, either 4-20 mA or 0-10VDC, over one optical fiber. This system is designed to provide highly accurate signal transmission at a high sample rate. Compatible with most PLC’s, Sensors (2, 3, or 4 wire), and other types of equipment where a precise current or voltage measurement needs to be taken and transmitted over fiber.

- Accepts a 24-48VDC power source to operate the unit
- High speed update rate of 78 kHz
- Precision measurement, High degree of accuracy
- DIN rail or wall mount
- Made in USA

Analog Phone (POTS) System
The RLH Plain Old Telephone Service (POTS) DIN Fiber Link system transports the analog phone line over fiber optic cable. The system will operate over a wide temperature range and has been designed to provide reliability in harsh environments.

The system is compatible with all traditional analog phone services, dial-up modems, meters, and fax machines.

- Redundant power capable, 24-56VDC or 125VDC
- Supports Caller ID
- Supports Call-Forward Disconnect (Hook Flash)
- Supports Ringdown Function (FXS to FXS Hotline Phone)
- Made in USA

2 Channel (POTS) System
The RLH 2 Channel Plain Old Telephone Service (POTS) DIN Fiber Link system transports two analog phone lines over fiber optic cable. The system will operate over a wide temperature range and has been designed to provide reliability in harsh environments.

The system is compatible with all traditional analog phone services, dial-up modems, meters, and fax machines.

- Redundant power capable, 24-56VDC or 125VDC
- Supports Caller ID
- Supports Call-Forward Disconnect (Hook Flash)
- Supports Ringdown Function (FXS to FXS Hotline Phone)
- Made in USA

2 Channel (POTS) with I/O System
The RLH 2 Channel Plain Old Telephone Service (POTS) DIN Fiber Link system transports two analog phone lines over fiber optic cable. Each unit also features bi-directional contact closure for remote relay transportation. The system will operate over a wide temperature range and has been designed to provide reliability in harsh environments.

The system is compatible with all traditional analog phone services, dial-up modems, meters, and fax machines.

- Redundant power capable, 24-56VDC or 125VDC
- Supports Caller ID
- Supports Call-Forward Disconnect (Hook Flash)
- Supports Bi-Directional Contact Closure transmission
- Made in USA
Industrial Media Converters

2 Channel (POTS) with Ethernet
The RLH 2 Channel Analog Phone DIN/wall mount Fiber Mux System provides a method of multiplexing 2 analog (POTS) channels and two 10/100Base-T Ethernet ports over a single pair of multimode or singlemode fibers.
This system solves the problem of limited available fiber, reduces equipment space and lowers overall equipment costs.

Can be powered by 24-48VDC
2 FXO ports for connection to PABX or PSTN
2 FXS ports for connection of individual analog phones or faxes
2 integrated 10/100Base-T Ethernet ports for LAN or VOIP
Made in USA

4 Wire Data with E&M system
This industrial fiber optic media converter is designed to extend a 4 Wire Voice Frequency signal over fiber optic cable over long distances up to 120 km. This system transports one circuit of 600 ohm 4 Wire Data and supports E&M signaling, and can be ordered with dual fiber or single fiber transceivers. The 4 wire data supports constant transmission of voice frequency ranging from 300 Hz-3,400 Hz which is suitable for a wide range of radio and SCADA circuits applications.

Power range options: 24-48VDC or 125VDC
Transports voice frequency data 300 Hz to 3,400 Hz
Supports 600 ohm audio standard impedance
Supports E&M signaling
Made in USA

2 Channel 4 Wire Data with E&M System
This industrial fiber optic media converter is designed to extend two 4 Wire Voice Frequency signals over fiber optic cable up to 120 km, and also features bi-directional contact closure. This system transports two circuits of 600 ohm 4 Wire Data and supports E&M signaling, and can be ordered with dual fiber or single fiber transceivers.

Power range options: 24-48VDC or 125VDC
Transports voice frequency data 300 Hz to 3,400 Hz
Bi-Directional Contact Closure
Supports E&M signaling
Made in USA

2 Channel 4 Wire Data with E&M and IO System
This industrial fiber optic media converter is designed to extend two 4 Wire Voice Frequency signals over fiber optic cable up to 120 km. It also features bi-directional contact closure for remote relay or alarm status transportation. This system transports two circuits of 600 ohm 4 Wire Data and supports E&M signaling, and can be ordered with dual fiber or single fiber transceivers.

Power range options: 24-48VDC or 125VDC
Transports voice frequency data 300 Hz to 3,400 Hz
Bi-Directional Contact Closure, transports relay alarms over fiber
Supports E&M signaling
Made in USA

2 Channel T1 Fiber Mux
This 2 Channel T1 DIN unit was designed NEBS Level 3 requirements and is built for harsh environments. It is unique in its ability to be line powered by a NIU. Line (Span or Loop) powering removes the need for powering arrangements when used in remote locations for High Voltage Isolation or T1 Demark Extensions. Compatible with any T1 circuit delivered in North America, It supports DATA, PRI, & MPLS T1 circuits.

Dual power capable, line or 24-56VDC
Simplex 60mA line powered on the drop side from the T-1 span or HDSL NIU/RT unit
Two incoming T-1 4 wire copper lines over one fiber pair
Made in USA

Serial Data RS-232 & RS-485/422
The RLH Serial Data DIN Fiber Link system transports two active channels of copper serial data over fiber optic cable, allowing for both RS-232 and RS-485/422 to be used at the same time. Fiber optics not only provide long distance communication up to 74 mi. (120 km), but also provide immunity to EM/RFI and transient surges. This is ideal for extending serial data communications over long distances, or near large electrical equipment where resistance to EMI is desired.

Dual redundant power inputs with optional 125VDC powering
Simultaneously transmits both RS-232 and RS485/422
Supports baud rates of 50 bps to 921.6 kbps baud
Supports 2 & 4 Wire RS-485
Made in USA
Serial Data RS-232 with DB-9 Port
This Industrial Serial Data media converter transports a full 9-Pin RS-232 copper signal over fiber optic cable. The system supports asynchronous serial data rates from 50 bps to 1 Mbps and has an auto-sensing feature that eliminates the need to manually set serial data rates. Fiber optics provide long distance communication up to 74 mi./120 km and immunity to EMI/RFI and potential transient surges.

10/100 Enhanced Ethernet
The RLH 10/100 Ethernet DIN Fiber Link system is a rugged, full featured media converter. It converts copper Ethernet to fiber, and may be used to extend a copper Ethernet network up to 74 mi. (120 km) over fiber optic cable. It is environmentally hardened to operate in a wide temperature range and is standards compliant. Advanced features include link fault pass thru, IEEE 802.1q VLAN pass thru, and the ability to configure the copper ports speed and duplex settings.

10/100 SlimLine Ethernet Media Converter
The RLH 10/100 Ethernet DIN Fiber Link system is a rugged, full featured media converter. It converts copper Ethernet to fiber, and may be used to extend a copper Ethernet network up to 74 mi. (120 km) over fiber optic cable.

Industrial Gigabit Ethernet Media Converter
The RLH Industrial Gigabit Ethernet media converter is a rugged, full featured media converter. It converts copper 10Base-T or 100/1000Base-T(X) Ethernet to fiber, and may be used to extend a copper Ethernet network up to 62 mi. (100 km) over fiber optic cable. Features include link fault pass thru, auto MDI/MDI-X, auto speed and duplex negotiation, a small footprint, and mounting options including both T-35 DIN rail and wall mounting ears.

- Dual redundant power inputs
- Fiber break alarm contact
- Fiber break alarm contact
- Auto negotiate port speed and duplex settings
- Auto negotiate port speed and duplex settings
- User friendly switch to manually set copper & fiber port speed
- User friendly switch to manually set copper & fiber port speed
- Link Fault Pass Through
- Link Fault Pass Through
- Made in USA
- Made in USA
- Powering requires 12-36VDC 2 A power supply
- Powering requires 12-36VDC 2 A power supply
- Auto sensing for 10/100 Mbps speeds on copper Ethernet connections
- Auto sensing for 10/100 Mbps speeds on copper Ethernet connections
- IEEE 802.3, IEEE 802.3x, IEEE 802.3u compliant
- IEEE 802.3, IEEE 802.3x, IEEE 802.3u compliant
- Provides 801.1q pass-thru
- Provides 801.1q pass-thru
- Accepts a wide range of power 12-48VDC
- Accepts a wide range of power 12-48VDC
- Supports fiber distances up to 62 mi./100 km
- Supports fiber distances up to 62 mi./100 km
- Dual and single (Bi-directional) fiber models available
- Dual and single (Bi-directional) fiber models available
- IEEE802.3u 10/100/1000Base-Tx, 1000Base-Fx compliant
- IEEE802.3u 10/100/1000Base-Tx, 1000Base-Fx compliant
Industrial Media Converters

SFP Transceivers

RLH Industrial Small Form Factor Pluggable (SFP) Optical Transceivers comply with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA) and are certified for use in RLH SFP products. These SFP transceivers are temperature hardened, available in dual fiber and single bi-directional configurations, and are ideal for use in all RLH SFP compatible devices.

155M SFP Transceiver

RLH Industrial Small Form Factor Pluggable (SFP) Optical Transceivers comply with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA) and are certified for use in RLH SFP products. These 155M SFP Transceivers are available in 2 km, 20 km, 60 km, & 100 km transmission ranges for a variety of applications.

1.25Gbit SFP Transceiver

RLH Industrial Small Form Factor Pluggable (SFP) Optical Transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). These 1.25 Gbit SFP Transceivers are available in transmission ranges from 300 m to 60 km for a variety of applications.

DIN Rail Mounting Accessories

RLH DIN rail housing and bracket are ideal ways to mount DIN rail equipment in different types of environments. The RLH DIN Rail Housing not only accommodates our switches, media converters and power supplies, but most industrial electronic equipment that utilizes the standard T35 DIN Rail.

The RLH DIN rail bracket is an open bracket that allows for more room around equipment for fiber routing or cable, and is ideal for telecom open rack environments. All RLH DIN rail equipment is manufactured to the highest standards and are powder coated for durability.

DIN Rail Housing

The DIN Rail Housing is designed to safely and securely house DIN rail mounted equipment for wall and rack mount applications. Access to the inside is easy and secure with a quarter turn latch. Key locking latch is optional. Inside is standard 35mm DIN rail for mounting equipment. Multiple cable openings on the sides and bottom allow for flexible cable routing, and plastic cable guides are provided to manage copper and fiber cables into and out of the housing.

19 Inch Rack Mount DIN Rail Bracket

The RLH Rack Mount DIN Rail Bracket provides a sturdy and secure way to attach a T35 (35mm) DIN rail to a standard EIA 19/23 inch equipment rack.

The bracket uses 2 rack spaces (2RU), and the DIN rail is recessed so that attached DIN devices are recessed from the front of the rack. Rack mount hardware and cable management clips are included.

EIA 19/23” rack or wall mount (hardware included), 2RU
Includes rack mounting hardware and cable management clips
Recessed design provides added component protection
T35 (35 mm) DIN Rail Mount

EIA 19/23” rack or wall mount (hardware included), 5RU
Quarter turn access latch or key locking latch option
Hinged door with acrylic window
Available with pre-wired AC/DC power supply and terminal blocks
Made in USA

EIA802.3ah 100Base-LX10
IEEE802.3ah 100Base-LX10
Hot-pluggable
Hardened to operate in -40 °F to +185 °F (-40 °C to +85 °C)
Single and dual fiber options available
Industrial Ethernet Switches

Our industrial switches robust features and construction meet the demands of a variety of applications, and are an ideal solution for a wide range of utility and automation environments.

All RLH industrial switches are environmentally hardened to operate over a wide temperature range, one of the essential attributes of RLH equipment.

Many of our switches are both DIN and wall mountable, which is ideal for many industrial environments. Our high fiber capacity switches are 1RU and 19 in. rack mountable.

Our line of switches includes PoE, Managed, Unmanaged, Fast Ethernet, Gigabit, DIN form factor, and rack mount.

### Ethernet Switches - Product Line

| 5 Port Switch |
| 5 Port Gigabit Switch |
| 4+1 Fiber Switch |
| 4+2 Fiber Switch |
| 5+2 Gigabit SFP Switch |
| 5 Port PoE+ Switch |
| 4+1 Fiber PoE+ Switch |
| 4+2 Fiber PoE+ Switch |
| 5+2 Gigabit SFP PoE+ Switch |
| 8+2 SFP PoE+ Switch |
| 5+1 Managed Gigabit SFP Switch |
| 8+4 Managed Gigabit SFP Switch |
| 4+2 Managed Fiber PoE+ Switch |

For those models which use SFP transceivers, please refer to the compatible SFP transceivers below for certified compatibility. For detailed technical information please refer to the product data sheets obtainable from our web site, or contact one of our sales engineers.

### Compatible SFP Transceivers

| 155 Mbit SFP Transceiver |
| 1.25 Gbit SFP Transceiver |
| 4+4 Managed Gigabit SFP PoE+ Switch |
| 20+4 Ethernet Fiber Switch |
| 16+8 Ethernet Fiber Switch |
| 12+12 Ethernet Fiber Switch |
| 8+16 Ethernet Fiber Switch |
5 Port Switch
RLH industrial switches are engineered to provide reliable network performance in harsh environments, the 5 port switch comes standard with redundant power inputs and fault alarm. It is environmentally hardened to operate in a wide temperature range, which is the standard for RLH equipment.
- 12-48VDC redundant power inputs with built-in alarm
- 5 ports of Fast Ethernet
- Auto MDI/MDI-X
- Store-and-forward switching architecture
- UL Listed

5 Port Gigabit Switch
RLH industrial switches are engineered to provide reliable network performance in harsh environments. This 5 port gigabit switch comes standard with redundant power inputs and fault alarm. It is environmentally hardened to operate in a wide temperature range, which is the standard for RLH equipment.
- 12-48VDC redundant power inputs with built-in alarm
- 5 ports of Gigabit Ethernet
- Auto MDI/MDI-X
- Store-and-forward switching architecture
- UL Listed

4+1 Fiber Switch
RLH industrial switches are engineered to provide reliable network performance in harsh environments. The 4+1 Fiber switch provides both copper and fiber Ethernet access. It is environmentally hardened to operate in a wide temperature range, which is the standard for RLH equipment.
- 12-48VDC redundant power inputs with built-in alarm
- 4 ports of Fast Ethernet
- 1 Fiber 100Base-FX port
- Auto MDI/MDI-X
- Store-and-forward switching architecture
- UL Listed

4+2 Fiber Switch
RLH industrial switches are engineered to provide reliable network performance in harsh environments. The 4+2 Fiber switch provides both copper and fiber Ethernet access. It is environmentally hardened to operate in a wide temperature range, which is the standard for RLH equipment.
- 12-48VDC redundant power inputs with built-in alarm
- 4 ports of Fast Ethernet
- 2 Fiber 100Base-FX port
- Auto MDI/MDI-X
- Store-and-forward switching architecture
- UL Listed

5+2 Gigabit SFP Switch
RLH industrial switches are engineered to provide reliable network performance in harsh environments. The 5+2 Gigabit SFP switch provides both copper and fiber Gigabit Ethernet access. It is environmentally hardened to operate in a wide temperature range, which is the standard for RLH equipment.
- 12-48VDC redundant power inputs with built-in alarm
- 5 Ports of Gigabit Ethernet
- 2 Dual Rate SFP ports - 100 Mbps & 1 Gbps
- Auto MDI/MDI-X
- UL Listed

5 Port PoE+ Switch
This 5 port switch provides Ethernet access along with PoE+ powering, and is environmentally hardened to operate over a wide temperature range. The PoE+ ports provide up to 30 watts of power to end devices following the IEEE 802.3af/at standard. The unique Flex Power feature allows the device to maintain a consistent PoE+ voltage to end devices regardless of the DC powering voltage provided.
- 12-55VDC redundant power inputs with built-in alarm
- Four PoE+ ports with up to 30 watts per port
- PoE Mode A (End Span)
- IEEE 802.3af/at Power over Ethernet
- UL Listed
**4+1 Fiber PoE+ Switch**

The 4+1 Fiber PoE+ switch provides four Ethernet ports providing PoE+ power to networked equipment and one fiber port, and is environmentally hardened to operate in a wide temperature range. The PoE+ ports provide up to 30 watts of power to end devices following the IEEE 802.3af/at standard. The unique Flex Power feature allows the device to maintain a consistent PoE+ voltage to end devices regardless of the DC powering voltage provided.

- 12-55VDC redundant power inputs with built-in alarm
- 4 PoE+ ports with up to 30 watts per port
- One Fiber 100Base-FX port
- PoE Mode A (End Span)
- Auto MDI/MDI-X
- UL Listed

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**4+2 Fiber PoE+ Switch**

The 4+2 Fiber PoE+ switch provides four Ethernet ports providing PoE+ power to networked equipment and two fiber ports, and is environmentally hardened to operate in a wide temperature range. The PoE+ ports provide up to 30 watts of power to end devices following the IEEE 802.3af/at standard. The switch also comes with redundant power inputs and fault alarm relay for reliability.

- 12-55VDC redundant power inputs with built-in alarm
- 4 PoE+ ports with up to 30 watts per port
- 2 Fiber 100Base-FX ports
- PoE Mode A (End Span)
- Auto MDI/MDI-X
- UL Listed

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**5+2 Gigabit SFP PoE+ Switch**

The 5+2 Gigabit SFP PoE+ switch provides both copper and fiber Gigabit Ethernet access, along with PoE+ powering capabilities, and is environmentally hardened to operate in a wide temperature range. The PoE+ ports provide up to 30 watts of power to end devices following the IEEE 802.3af/at standard. The unique Flex Power feature allows the device to maintain a consistent PoE+ voltage to end devices regardless of the DC powering voltage provided.

- 12-55VDC redundant power inputs with built-in alarm
- 4 PoE+ ports with up to 30 watts per port
- Dual Rate SFP Ports - 100 Mbps & 1 Gbps
- PoE Mode A (End Span)
- UL Listed

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**8+2 SFP PoE+ Switch**

The 8+2 SFP PoE+ switch provides both copper and fiber Ethernet access, along with PoE+ powering capabilities. It is environmentally hardened to operate in a wide temperature range. The PoE+ ports provide up to 30 watts of power to end devices following the IEEE 802.3af/at standard. The unique Flex Power feature allows the device to maintain a consistent PoE+ voltage to end devices regardless of the DC powering voltage provided.

- 12-55VDC redundant power inputs with built-in alarm
- 8 PoE+ ports with up to 30 W/port
- 2 Combo Ports - Either Gigabit RJ-45 or SFP Ports
- Auto MDI/MDI-X
- PoE Mode A (End Span)
- UL Listed

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**5+1 Managed Gigabit SFP Switch**

The 5+1 Managed Gigabit SFP switch provides both copper and fiber Gigabit Ethernet access.

This environmentally hardened layer 2 switch is manageable and offers a wide array of configuration and monitoring options.

- Redundant power inputs with built-in alarm
- 5 Ports of Gigabit Ethernet
- Dual Rate SFP ports - 100 Mbps & 1 Gbps
- Configuration via Web, Serial, Telnet, & SSH
- Supports SNMPv3

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**8+4 Managed Gigabit SFP Switch**

RLH managed industrial switches are engineered to provide reliable network performance in harsh environments. The 8+4 Managed Gigabit SFP switch provides both copper and fiber Gigabit Ethernet access.

This environmentally hardened layer 2 switch is manageable and offers a wide array of configuration and monitoring options.

- Redundant power inputs with built-in alarm
- 8 Ports of Gigabit Ethernet
- 4 Dual Rate SFP ports - 100 Mbps & 1 Gbps
- Configuration via Web, Serial, Telnet, & SSH
- Supports SNMPv3
## Industrial Ethernet Switches

### 4+2 Managed Fiber PoE+ Switch

The 4+2 Managed Fiber PoE+ switch provides both copper and fiber Ethernet access, along with PoE+ powering capabilities. This environmentally hardened layer 2 switch is manageable and offers a wide array of configuration and monitoring options. The PoE+ ports provide up to 30 W to end devices following the IEEE 802.3af/at standard. Unique Flex Power maintains a consistent PoE+ voltage to end devices regardless of the DC powering voltage provided.

- 12-55VDC redundant power inputs with built-in alarm
- 4 PoE+ ports with up to 30 W/port
- 2 Fiber 100Base-FX ports
- Configuration via Web, Serial, Telnet, & SSH
- Supports SNMPv3
- PoE Port Control & Monitoring

### 4+4 Managed Gigabit SFP PoE+ Switch

The 4+4 Managed Gigabit SFP PoE+ switch provides both copper and fiber Gigabit Ethernet access, along with PoE+ powering capabilities. This environmentally hardened layer 2 switch is manageable and offers a wide array of configuration and monitoring options.

The PoE+ ports provide up to 30 watts of power to end devices following the IEEE 802.3af/at standard.

- 48-55VDC redundant power inputs with built-in alarm
- 4 Ports of Gigabit Ethernet w/PoE+
- 4 Dual Rate SFP ports - 100 Mbps & 1 Gbps
- Configuration via Web, Serial, Telnet, & SSH
- Supports SNMPv3

### 20+4 Ethernet Fiber Switch

The RLH Industrial Managed Ethernet Switch offers 20 x 10/100 Mbps RJ-45 ports, 4 x 100Base-FX fiber ports, and supports a wide operating temperature range. The optical ports may be dual fiber or bidirectional single fiber, and can extend Ethernet over Fiber up to 120 km/74 mi. The switch supports web based management as well as support for IEEE802.1Q VLANs, broadcast storm control, port based traffic shaping, QOS, along with many other features.

- Built-in power supply, 115/220VAC
- 20 x 10/100 Mbps ports
- 4 x 100Base-FX fiber ports
- Managed through the web interface
- Available with ST or SC Transceivers
- Port trunking, port mirroring, port priority, IEEE 802.1p priority

### 16+8 Ethernet Fiber Switch

The RLH Industrial Managed Ethernet Switch offers 16 x 10/100 Mbps RJ-45 ports, 8 x 100Base-FX fiber ports, and supports a wide operating temperature range. The optical ports may be dual fiber or bidirectional single fiber, extending Ethernet over Fiber up to 120 km/74 mi. The switch supports web based management as well as support for IEEE802.1Q VLANs, broadcast storm control, port based traffic shaping, QOS, along with many other features.

- Built-in power supply, 115/220VAC
- 16 x 10/100 Mbps ports
- 8 x 100Base-FX fiber ports
- Managed through the web interface
- Available with ST or SC Transceivers
- Port trunking, port mirroring, port priority, IEEE 802.1p priority

### 12+12 Ethernet Fiber Switch

The RLH Industrial Managed Ethernet Switch offers 12 x 10/100 Mbps RJ-45 ports, 12 x 100Base-FX fiber ports, and supports a wide operating temperature range. The optical ports may be dual fiber or bidirectional single fiber, and can extend Ethernet over Fiber up to 120 km/74 mi. The switch supports web based management as well as support for IEEE802.1Q VLANs, broadcast storm control, port based traffic shaping, QOS, along with many other features.

- Built-in power supply, 115/220VAC
- 12 x 10/100 Mbps ports
- 12 x 100Base-FX fiber ports
- Managed through the web interface
- Available with ST or SC Transceivers
- Port trunking, port mirroring, port priority, IEEE 802.1p priority

### 8+16 Ethernet Fiber Switch

The RLH Industrial Managed Ethernet Switch offers 8 x 10/100 Mbps RJ-45 ports together with 16 x 100Base-FX fiber ports and supports a wide operating temperature range. The optical ports may be dual fiber or bidirectional single fiber, and can extend Ethernet over Fiber up to 120 km/74 miles. The switch supports web based management as well as support for IEEE802.1Q VLANs, broadcast storm control, port based traffic shaping, QOS, along with many other features.

- Built-in power supply, 115/220VAC
- 8 x 10/100 Mbps ports
- 16 x 100Base-FX fiber ports
- Managed through the web interface
- Available with ST or SC Transceivers
- Port trunking, port mirroring, port priority, IEEE 802.1p priority
Smart Series - Ethernet IO

RLH Industries has long provided solutions for improving industrial network reliability. The company’s latest release of its Smart Series line of Ethernet I/O products adds DNPv3 TCP support. This innovative platform provides the highest-level performance at a fraction of the cost of alternative methods.

How They Work

The Smart Series product family is Rugged Ethernet I/O that’s packed with a variety of integration options including: SNMPv3, DNPv3 TCP, Modbus TCP, Email Alerting. This functionality allows for standalone operation or integration into network management or distributed control systems. These units can also be paired with one another to allow for point to point IO extension over Ethernet networks. They feature a convenient built in web interface for management and control and are designed and built to operate in harsh environments.

Among the models offered there are multiple powering and IO arrangements. The devices can be powered directly from substation 125VDC battery, 802.11af Power over Ethernet, or 24-48VDC. Sinking or Sourcing inputs are available which allow the device to act as the middleman providing the communication interface into a control system from the desired physical alarm end points. The outputs provided are either Normally Open or Normally Closed high capacity relays which can be remotely monitored and controlled.

The Smart Series brings intelligence to legacy devices by allowing control systems to actively monitor and control using the latest communication protocols. For detailed technical information please refer to the product data sheets obtainable from our web site, or contact one of our sales engineers.
**Smart 4 Input Sensor**

The Smart Input Sensor is an Ethernet IO device with 4 digital inputs. It allows for web based monitoring of the inputs and may be integrated into distributed control and network management systems to allow those systems to alarm and monitor field devices. Each of the Inputs can be individually configured to send customized emails and notifications when an event is recorded. The device supports a wide variety of protocols it is compatible with over PoE.

- System power range options: 24-48VDC, 125VDC, and 12VDC
- Can be powered by any IEEE 802.3af compliant PoE source
- 4 Inputs for device monitoring
- Standalone Integration: SNMP, DNPv3 TCP, Modbus TCP, & SMTP
- Made in USA

**Smart 4 Relay Output**

The Smart Relay Output is an Ethernet IO device with 4 Integrated controllable relays. The device allows for web based control of the relays and may be integrated into distributed control and network management systems to control its Relays. Each of the Relays can be individually configured to send customized emails and notifications when an event is triggered. The device supports a wide variety of protocols it is compatible with over PoE.

- System power range options: 24-48VDC, 125VDC, and 12VDC
- Can be powered by any IEEE 802.3af compliant PoE source
- 4 relay outputs for alarm & control
- Standalone Integration: SNMP, DNPv3 TCP, Modbus TCP, & SMTP
- Made in USA

**Smart Input Sensor**

The RLH Smart Series Input Sensor is designed to transmit Input status over Ethernet to linked relay output devices. The Input sensor can be used in point to point or point to multipoint scenarios. It may also be used as a standalone monitoring and alarming device. Integration options are: SNMPv1,2c,3, SNMP Traps (SNMP 1, 2vc), Modbus TCP featuring addressable registers, and DNPv3 TCP for integration with utility and other automation control systems.

- System power range: 24-56VDC
- 8 Inputs for multiple device monitoring
- Standalone Integration: SNMP, DNPv3 TCP, Modbus TCP, & SMTP
- Made in USA

**Smart Relay Output**

This Smart IO device is an Ethernet device with 4 Integrated controllable relays and 4 integrated digital inputs. The device allows for web based control and monitoring of it’s relays and inputs and may be integrated into distributed control and network management systems. Supported integration protocols: SNMPv1,2c,3, SNMP Traps (SNMP 1, 2vc), Modbus TCP featuring addressable registers, and DNPv3 TCP for integration with utility and other automation control systems.

- System power range: 24-56VDC
- 8 Independent relays - NO or NC
- Ethernet Relay Control & Contact Closure over Ethernet
- Secure web interface configurator
- Standalone Integration: SNMP, DNPv3 TCP, Modbus TCP, & SMTP
- Made in USA

**Smart IO**

This Smart IO device is an Ethernet device with 4 Integrated controllable relays and 4 integrated digital inputs. The device allows for web based control and monitoring of it’s relays and inputs and may be integrated into distributed control and network management systems. Supported integration protocols: SNMPv1,2c,3, SNMP Traps (SNMP 1, 2vc), Modbus TCP featuring addressable registers, and DNPv3 TCP for integration with utility and other automation control systems.

- System power range: 24-56VDC
- 8 Independent relays - NO or NC
- Bi-Directional contact closure over Ethernet
- Secure web interface configurator
- Standalone Integration: SNMP, DNPv3 TCP, Modbus TCP, & SMTP
- Made in USA
iMux Modular Multiplexer System

The iMux is a powerful fiber optic modular multiplexer capable of providing up to 16 channels of T1, RS232, 4 wire data/600 Ohm audio and analog phone FXO/FXS services, including a built-in, four port, managed Gigabit Ethernet switch, over a single fiber.

Each of these services are supplied by our communication modules, each module will transport up to 4 channels of the specified service and may be installed in any combination. Spares or add-on modules may be ordered separately and are field installable.

Gigabit SFPs are used for the back-haul fiber transport of the communication services. Each iMux accepts 2 SFPs for redundancy. The SFPs are hot swappable and automatically fail over in case of a failure in the primary fiber path.

The iMux may be managed through SNMP, web interface, or menu keys on the front panel. It also has an external alarm port for alarm monitoring, as well as 4 programmable alarm contacts. The system provides local/remote loopback functions that are ideal for network testing and maintenance.

The iMux takes up 1RU and comes complete with EIA19” and 23” rack ears, or if not rack mounted it may be used on a desktop or shelf.

Key Features

- Multiplexes up to 16 voice and data channels plus Gigabit Ethernet over a single fiber
- Up to 4 modules (each with 4 channels) may be used in any combination to mix and match services
- Convenient front LED status indicators
- T1, RS232, POTS, & 4 Wire Data service modules
- 4 built-in Gigabit Ethernet ports
- Aggregated Ethernet throughput up to 800 Mbps
- Supports VLAN, QoS, and Port Rate control
- SFPs are hot swappable & provide 1+1 redundancy
- Ethernet Ports can be configured to be Isolated Channels or Shared
- Supports SNMP, HTTP / FTP / TFTP remote software upgradeable
- HTTP and SNMP Monitoring and Configuration
- The POTS modules support phone extensions as well as ring down
- Redundant DC and dual AC and DC powering options available
Fiber Optic Cable Assemblies, Patch Cords & Accessories

We offer a wide variety of fiber optic cable, cable assemblies, patch cords, and other passive fiber optics accessories to meet the demands of a rapidly expanding fiber industry. We stock fiber cable and we manufacture many of our fiber distribution products right here in the USA.

Our Custom Fiber Cable Assemblies are built to your specifications at our production facility located in Orange County, California. We build the cable to your provided specifications and ship the cable on a spool, ready for installation at the job site.

The RLH fiber configuration tool and our standard ordering matrix are available to help guide you through the different selections we offer.

If any Assistance is needed in selecting a solution please contact our customer service team, our product experts are ready to put together a solution based on the requirements of the job.

We take on jobs of any size, from low volume highly specialized cable designs requiring specialized CAD drawings to simple fiber cable assemblies. If you don’t see your desired option in our configuration tool or product matrix, be sure to contact us. With over 30 years of experience working with fiber cable we’re confident we can meet your needs.

Fiber Cable & Distribution - Product Line Overview

- Bulk Fiber Cable
- Outdoor & Indoor Fiber Cable Assemblies
- Fiber Optic Patch Cords
- Splice on Pigtail Packs
- ADSS Storage and Mounting Brackets
- Fiber Marker Tape, Posts, and Balls
Bulk Fiber Cable

We stock various types of fiber cable at our production facilities, for stocked cable we can offer a fast turn around for getting the length of cable on a spool and out to the job site.

The most common types of cable we carry are Loose Tube and Tight buffer, in Single-mode and Multimode with varying strand counts and jacket types including ADSS and Armored.

Outdoor & Indoor Fiber Cable Assemblies

Our Custom Fiber Cable Assemblies are built to your specifications at our production facility located in Orange County, California. We will build the cable to your provided specifications and ship the cable on a spool, ready for installation at the job site.

The RLH fiber configuration tool and our standard ordering matrix are available to help guide you through the different selections we offer.

Fiber Optic Patch Cords

RLH pre-made multimode jumpers are made with Corning glass, are riser or plenum rated, and have a 2.0 mm or 3.0 mm thick. Lengths typically stocked are 1, 2, 3, 5, & 10 meters.

All our jumpers measure less than 0.30dB insertion loss per connector to ensure proper operation upon installation. Each connector is conveniently labeled with an A or B.

Custom Patch Cords

Jumpers that are not standard can be custom made with a fast factory turn around. RLH maintains many different connector types and fiber types to be able to fulfill customer requirements on a timely basis.

Please refer to the ordering matrix available online below to specify the fiber type, jacket diameter & rating, connector type, and length of the custom patch cord to meet your needs.

Splice on Pigtail Packs

Our ready to splice fiber optic pigtail packs are available in sets of 6 or 12 fibers. Connectors are color coded to TIA Standards, and ends are factory polished with typical insertion loss less than 0.30 dB. They are available in Single-mode and Multimode (OM1, OM2, OM3, OM4) with ST, SC, LC, or FC connectors. Standard pigtail packs are 3 meters long, but can be ordered in any length. Each pigtail pack includes a spiral wrap or is jacketed depending on part number.

RLH typically carries and distributes fiber cable the following manufacturers:

- Corning
- AFL
- Superior Essex
- Prysmian

New! Online Configuration Tool

- Stocked fiber cable for fast delivery times
- Wide range of Cable Types available: Outside Plant, Outdoor, Indoor, Armored, ADSS, and more
- All Cables are thoroughly inspected and include dB Loss test results

Available in several lengths up to 10 meters

- Low Loss Single-mode and Multimode OM1 - OM4 cables
- Measure less than >0.30 dB insertion loss per connector
- Made with Corning glass
- Custom cables available

Built to order

- Individually tested
- Wide variety of fiber types, jackets, connectors, simplex or duplex.
- Fast turn around time

6 Strand & 12 strand color coded fiber pigtail packs

- Standard pigtail packs are 3 meters in length
- Factory polished for low insertion loss
- Offered both jacketed and spiral wrapped.
Fiber Cable Assemblies

Fiber Optic Cable Accessories

Fiber optic cable markers and ADSS hardware is also available to help ensure that your cable installation has all the accessory fiber equipment on-hand to help you complete the installation with minimum down time and hassle.

We stock commonly used fiber markers, and cable installation hardware and can supply them with your cable orders. Please contact one of our sales professional for products not shown in this section.

- **ADSS Support Bracket**

  The Support Bracket is used to support ADSS fiber optic cable on mid-span poles. The bracket is installed by simply bolting to pole.

  For aerial fiber optic applications in electrically hazardous environments it is recommended to use ADSS (All-Dielectric Self Supporting) cable. ADSS fiber cable contains an aramid strength member eliminating the need to lash to a messenger.

  - Accepts 9/16" Bolt
  - Can accept fiber diameters from 0.38 inches up to 0.75 inches
  - Secures cable with pressure clamp

- **ADSS Dead End Support**

  The is used for riser poles, or two dead ends can be used for mid-span poles with more than 15 degrees of bend in the cable span direction. Ram hook hardware included with each dead end. For aerial fiber optic applications in electrically hazardous environments it is recommended to use ADSS (All-Dielectric Self Supporting) cable. ADSS fiber cable contains an aramid strength member eliminating the need to lash to a messenger.

  - Maintains tension on aerial fiber between poles
  - Uses nylon wedge to secure fiber cable
  - Can accept fiber diameters from 0.38 inches up to 0.75 inches
  - Includes Ram Hook hardware for pole mounting

- **ADSS Mid-Span Storage Bracket**

  ADSS mid-span storage brackets eliminate the need for slack storage vaults and allow for ADSS slack to be stored aerially. The brackets also act as a safeguard, protecting the minimum bend radius of the fiber cable.

  - Eliminates need for storage vaults
  - Prevents micro bends in fiber optic cable
  - Plastic design makes bracket non-conductive
  - Minimizes infringement of pole space

- **Marker Tape**

  3" x 1000' roll Marking Tape, both Non-Detectable & Detectable tape is available. The orange tape is marked "CAUTION FIBER OPTIC CABLE BURIED BELOW", providing a strong visual signal that continued digging will damage the lines below.

  - Detectable and non-detectable versions available
  - High visibility orange
  - Buried 12-24" below grade

- **Marker Post**

  The RLH 6 foot Fiber Marker Post's are an easy, effective way to protect underground fiber optic cable facilities. The Marker post is made out of 0.125" thick heavy duty UV treated polyethylene. This is an important tool for fiber damage protection.

  We also carry marker posts with a 5 position test station and offer custom printing for the cap.

  - Industry standard design
  - 360° visibility
  - UV treated polyethylene
  - Standard 6 foot length
  - Orange is standard but any color is available
  - Replaceable caps are available
Marker Ball

Buried all-dielectric fiber optic cable cannot be located without the use of markers. Marker balls are ideal for marking fiber cable in high voltage environments. When excited by any standard marker locator, the marker ball produces a 5 foot spherical RF field, identifying the presence of fiber cable below.

- Passive device produces 5-foot spherical RF field
- Industry standard 101.4 kHz frequency
- Tough, weatherproof construction
- Fits into standard 4 inch trench with no extra digging
- Use with any locator
Fiber Optic Patch Panels & Accessories

We offer a wide variety of fiber patch panels and accessories to meet the demands of the rapidly expanding fiber industry. We carry patch panels and adapter plates designed to accommodate just about any size job, from our compact DIN rail and wall mountable SlimLine products, to high capacity rack mount models, and outdoor rated NEMA 4 patch enclosures.

To accommodate the variety of fiber connectors used with patch panels, we have a large selection of stocked fiber adapter plates available with ST, SC, LC, FC, MTRJ, or MTP adapters. We also offer options that include fiber pigtails ready to be spliced into your fiber cable infrastructure for ease of installation.

We manufacture and stock many of our fiber distribution products in the USA at our production facility located in Orange County, California.

If any assistance is needed in selecting a solution right for your application, please contact our customer service team. Our product experts are ready to put together a solution based on the requirements of the job. With over 30 years of experience working with fiber cable we’re confident we can meet your needs.

Fiber Patch Panels & Accessories - Product Line Overview

- Optimum 2RU Fiber Patch Panel
- High-Density 1RU Fiber Patch Panel
- 1RU Economy Fiber Patch Panel
- 2RU Economy Fiber Patch Panel
- Rack Mount 3 Adapter Plate Holder
- Rack Mount 12 Adapter Plate Holder
- SlimLine Nano Fiber Patch Panel
- SlimLine Fiber Patch Panel
- SlimLine 2 Plate Fiber Patch Panel
- Indoor Wall Mount Patch Panel
- Outdoor Wall Mount Patch Panels
- Mini Wall Mount Fiber Patch Panels
- Toro Fiber Adapter Plate Bracket
- Fiber Adapter Plates
- MTP/MPO Fiber Cassettes
- Fiber Adapters
- Splice Trays
- Rack Mount Cable Managers
### Optimum 2RU Fiber Patch Panel
The user friendly design makes the Optimum series the superior solution for fiber patching and/or splicing optical fiber in a 19/23” rack. It holds up to 4 fiber adapter plates (up to 96-fibers), 4 splice trays, and is ideal for installation in a wide variety of environments including substations, equipment rooms, central offices, and outdoor enclosures.

- Installer friendly built-in cable management & splice tray storage
- Holds 4 adapter plates, up to 96 fiber capacity
- Splice friendly, has an optional strain relief kit
- Made in USA

### High-Density 1RU Fiber Patch Panel
This 1RU High-Density Rack Mount Patch Panel allows for patching up to 96 fibers in a single rack space. Patch panels come pre-loaded with your choice of adapters. It is constructed of durable powder coated steel with removable front connector panel and cover for easy access to fiber optic cables. Self sealing rubber grommets and internal fiber cable spools are included to provide convenient installation.

- RLH - H1.75” x W17” x D8.0”
- Includes 19” and 23” rack ears
- SC, ST, LC, MTRJ, or FC Adapters Available
- Removable front and top panels
- Internal cable management spools
- Made in USA

### 1RU Economy Fiber Patch Panel
RLH 1RU Economy Fiber Patch Panels are designed for fiber optic patching and splicing applications in 19" or 23" equipment racks. They accept 2 RLH Fiber adapter plates, and any LGX foot print adapter plates are supported. Up to 24 fibers per adapter plate are supported, totaling 48 Fibers maximum capacity. The housing can also accept either 12 or 24 position fiber splice trays.

- 1RU EIA 19”/23” rack mount
- Compatible with RLH Fiber Adapter Plates and LGX foot print adapter plates
- Holds 2 Fiber Adapter Plates, up to 48 fibers
- Hinged, swing out panel design
- Made in USA

### 2RU Economy Fiber Patch Panel
RLH 2RU Economy Fiber Patch Panels are designed for fiber optic patching and splicing applications in 19" or 23" equipment racks. They accept 4 RLH Fiber adapter plates, and any LGX foot print adapter plates are supported. Up to 24 fibers per adapter plate are supported, totaling 96 Fibers maximum capacity. The housing can also accept either 12 or 24 position fiber splice trays.

- 2RU EIA standard 19” rack mount
- Compatible with RLH Fiber Adapter Plates and LGX foot Print Adapter Plates
- Holds 4 fiber adapter plates, up to 96 fiber
- Durable, powder coated steel
- Made in USA

### Rack Mount 3 Adapter Plate Holder
The RLH Rack Mount 3 Adapter Plate Holder offers a compact, cost effective way to breakout fiber in a rack mount environment where splicing is not necessary.

- 1RU EIA standard 19” rack mount
- Compatible with RLH Fiber Adapter Plates and LGX foot Print Adapter Plates
- Holds 3 fiber adapter plates, up to 72 fibers
- Durable, powder coated steel
- Made in USA

### Rack Mount 12 Adapter Plate Holder
The RLH Rack Mount 12 Adapter Plate Holder offers a compact, cost effective way to breakout fiber in a rack mount environment where splicing is not necessary.

- 3RU EIA standard 19” rack mount
- Compatible with RLH Fiber Adapter Plates and LGX foot print adapter plates
- Holds 12 fiber adapter plates, up to 288 fibers
- Durable, powder coated steel
- Made in USA
### Fiber Patch Panels

**Slimline Nano Patch Panel**
The Slimline Nano Plate Patch Panel is an ultra compact wall or DIN mount patch panel for patching and splicing. Fiber adapter plates are available separately. It includes an adhesive splice holder, fiber splice protection sleeves, distribution chart, and tie-downs for cable. Fiber cable enters the enclosure through self-sealing removable 3/4” grommets on the top and bottom.

- Holds one adapter plate
- Supports ST, SC, FC, LC, MTRJ, UPC, APC style adapters
- Splice holder and fiber splice protection sleeves included
- Optional heavy duty DIN-Rail clip for DIN Mounting Applications
- Made in USA

**Slimline Patch Panel**
The Slimline 1 Plate Patch Panel is a compact wall or DIN mount patch panel for patching and splicing. Fiber adapter plates are available separately. It includes an adhesive splice holder, fiber splice protection sleeves, distribution chart, and tie-downs for cable. Fiber cable enters the enclosure through self-sealing removable 3/4” grommets on the top and bottom.

- Holds one adapter plate
- Supports ST, SC, FC, LC, MTRJ, UPC, APC style adapters
- Splice holder and fiber splice protection sleeves included
- Optional heavy duty DIN-Rail clip for DIN Mounting Applications
- Made in USA

**Slimline 2 Plate Patch Panel**
The Slimline 2 Plate Patch Panel is a compact wall or DIN mount patch panel for patching and splicing, and holds 2 fiber adapter plates (available separately). It includes an adhesive splice holder, fiber splice protection sleeves, distribution chart, and tie-downs for cable. Fiber cable enters the enclosure through self-sealing removable 3/4” grommets on the top and bottom.

- Holds two adapter plates
- Supports ST, SC, FC, LC, MTRJ, UPC, APC style adapters
- Splice holder and fiber splice protection sleeves included
- Optional heavy duty DIN-Rail clip for DIN Mounting Applications
- Made in USA

**2 Plate Indoor Wall Mount Patch Panel**
RLH wall mount 2 plate fiber patch panels provide a secure and convenient way to connect multiple fiber optic cables.

- Holds 2 RLH or LGX foot print fiber adapter plates, up to 48 fibers total
- Strain reliefs and anchor points to secure fiber cable
- Splice trays and fiber splice reinforcements included
- Wall mountable with dual door design for easy access

**4 Plate Indoor Wall Mount Patch Panel**
RLH wall mount 4 plate fiber patch panels provide a secure and convenient way to connect multiple fiber optic cables.

- Holds 4 RLH or LGX foot print fiber adapter plates, up to 96 fibers total
- Strain reliefs and anchor points to secure fiber cable
- Splice trays and fiber splice reinforcements included
- Wall mountable with dual door design for easy access

**12 Plate Indoor Wall Mount Patch Panel**
RLH wall mount 12 plate fiber patch panels provide a secure and convenient way to connect multiple fiber optic cables.

- Holds 12 RLH or LGX foot print fiber adapter plates, up to 288 fibers total
- Strain reliefs and anchor points
- Splice trays and fiber splice reinforcements included
- Wall mountable with dual door design for easy access

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The Slimline Nano Plate Patch Panel is an ultra compact wall or DIN mount patch panel for patching and splicing. Fiber adapter plates are available separately. It includes an adhesive splice holder, fiber splice protection sleeves, distribution chart, and tie-downs for cable. Fiber cable enters the enclosure through self-sealing removable 3/4” grommets on the top and bottom.

- Holds one adapter plate
- Supports ST, SC, FC, LC, MTRJ, UPC, APC style adapters
- Splice holder and fiber splice protection sleeves included
- Optional heavy duty DIN-Rail clip for DIN Mounting Applications
- Made in USA

The Slimline 1 Plate Patch Panel is a compact wall or DIN mount patch panel for patching and splicing. Fiber adapter plates are available separately. It includes an adhesive splice holder, fiber splice protection sleeves, distribution chart, and tie-downs for cable. Fiber cable enters the enclosure through self-sealing removable 3/4” grommets on the top and bottom.

- Holds one adapter plate
- Supports ST, SC, FC, LC, MTRJ, UPC, APC style adapters
- Splice holder and fiber splice protection sleeves included
- Optional heavy duty DIN-Rail clip for DIN Mounting Applications
- Made in USA

The Slimline 2 Plate Patch Panel is a compact wall or DIN mount patch panel for patching and splicing, and holds 2 fiber adapter plates (available separately). It includes an adhesive splice holder, fiber splice protection sleeves, distribution chart, and tie-downs for cable. Fiber cable enters the enclosure through self-sealing removable 3/4” grommets on the top and bottom.

- Holds two adapter plates
- Supports ST, SC, FC, LC, MTRJ, UPC, APC style adapters
- Splice holder and fiber splice protection sleeves included
- Optional heavy duty DIN-Rail clip for DIN Mounting Applications
- Made in USA

RLH wall mount 2 plate fiber patch panels provide a secure and convenient way to connect multiple fiber optic cables.

- Holds 2 RLH or LGX foot print fiber adapter plates, up to 48 fibers total
- Strain reliefs and anchor points to secure fiber cable
- Splice trays and fiber splice reinforcements included
- Wall mountable with dual door design for easy access

RLH wall mount 4 plate fiber patch panels provide a secure and convenient way to connect multiple fiber optic cables.

- Holds 4 RLH or LGX foot print fiber adapter plates, up to 96 fibers total
- Strain reliefs and anchor points to secure fiber cable
- Splice trays and fiber splice reinforcements included
- Wall mountable with dual door design for easy access

RLH wall mount 12 plate fiber patch panels provide a secure and convenient way to connect multiple fiber optic cables.

- Holds 12 RLH or LGX foot print fiber adapter plates, up to 288 fibers total
- Strain reliefs and anchor points
- Splice trays and fiber splice reinforcements included
- Wall mountable with dual door design for easy access
Fiber Patch Panels

4 Plate Outdoor NEMA 4 Wall Mount Patch Panel
RLH 4 plate outdoor wall mount fiber patch panels are designed for fiber optic patching and splicing when a weatherproof enclosure is required. Each fiber patch panel includes a gasketed door for maximum sealing, fiber management spools, and built-in strain relief lugs for securing fiber cable. Self-sealing rubber grommets and liquid tight strain relief cable grips accommodate multiple cable entrances and exits.

- Holds 4 RLH or LGX foot print fiber adapter plates, up to 96 fibers total
- Strain reliefs and anchor points
- Splice trays and fiber splice reinforcements included
- Wall mountable with a single water tight door for outdoor installations

12 Plate Outdoor NEMA 4 Wall Mount Patch Panel
RLH 12 plate outdoor wall mount fiber patch panels are designed for fiber optic patching and splicing when a weatherproof enclosure is required. Each fiber patch panel includes a gasketed door for maximum sealing, fiber management spools, and built-in strain relief lugs for securing fiber cable. Self-sealing rubber grommets and liquid tight strain relief cable grips accommodate multiple cable entrances and exits.

- Holds 12 RLH or LGX foot print fiber adapter plates, up to 288 fibers total
- Strain reliefs and anchor points
- Splice trays and fiber splice reinforcements included
- Wall mountable with a single water tight door for outdoor installations

1 Plate Mini Wall Mount Fiber Patch Panel
This compact thermoplastic, weatherproof enclosure, accepts 1 RLH Fiber adapter plate or any LGX foot print adapter plate.

This patch panel features a screw down hex nut and pad lock hasp on the door to provide added network security, and includes a fiber management spool, self sealing grommets, and strain reliefs for securing entry fiber cable.

- Holds 1 RLH or LGX foot print fiber adapter plates, up to 24 fibers total
- Pad lock hasp for securing the patch panel in high traffic locations
- Fiber cable spool for cable slack management
- Durable thermoplastic construction

2 Plate Mini Wall Mount Fiber Patch Panel
This compact thermoplastic, weatherproof enclosure, accepts 2 RLH Fiber adapter plate or any LGX foot print adapter plate.

This patch panel features a screw down hex nut and pad lock hasp on the door to provide added network security, and includes a fiber management spool, self sealing grommets, and strain reliefs for securing entry fiber cable.

- Holds 2 RLH or LGX foot print fiber adapter plates, up to 48 fibers total
- Pad lock hasp for securing the patch panel in high traffic locations
- Fiber cable spool for cable slack management
- Durable thermoplastic construction

Toro Fiber Adapter Plate Bracket
This heavy duty steel bracket holds 2 LGX style fiber adapter plates and can accommodate up to 48 Fibers. Fiber Adapter plates are ordered separately and are available with a wide range of connector options and fiber counts. The bracket can be wall mounted with the included hardware or it can be DIN rail mounted when ordered with the accessory DIN clip. It can be ordered together with adapter plates pre-installed for quick installation in the field.

- Holds 2 RLH or LGX foot print fiber adapter plates, up to 48 fibers total
- Low profile less than 3 inches deep
- Wall mounting hardware included
- Durable steel construction
- Optional heavy duty DIN-Rail clip available
## Fiber Patch Panels

### Fiber Adapter Plates

Fiber Adapter Plates can be ordered individually or pre-installed into select RLH fiber optic patch panels. RLH Adapter Plates utilize a common LGX foot print installation mounting format, and may be mixed and matched as needed in compatible patch panels. This provides maximum flexibility when populating a patch panel with fiber adapters. Our Fiber adapter plates are compatible with all RLH fiber patch panels except for the Optimum Series. They are also compatible with many other vendor’s patch panels that support the common LGX foot print type adapter plate mounting.

#### ST Fiber Adapter Plate

- Compatible with any Fiber Patch Panel that supports LGX foot print adapter plates
- Singlemode and multimode
- Up to 12 fibers per plate
- Available in Light Grey and Black
- Constructed out of light weight aluminum

RLH ST Fiber Adapter Plates can be ordered individually or pre-installed into select RLH fiber optic patch panels.

RLH ST adapter plates utilize a common installation mounting format, typically referred to as a LGX foot print, so they may be mixed and matched as needed in compatible wall or rack mount patch panels.

#### SC Fiber Adapter Plate

- Compatible with any Fiber Patch Panel that supports LGX foot print adapter plates
- Singlemode and multimode
- Up to 12 fibers per plate
- Available in Light Grey and Black
- Constructed out of light weight aluminum

RLH SC Fiber Adapter Plates can be ordered individually or pre-installed into select RLH fiber optic patch panels.

Available in Standard, APC and Aqua, RLH SC adapter plates utilize a common installation mounting format, typically referred to as a LGX foot print, so they may be mixed and matched as needed in compatible wall or rack mount patch panels.

#### LC Fiber Adapter Plate

- Compatible with any Fiber Patch Panel that supports LGX foot print adapter plates
- Singlemode and multimode
- Up to 24 fibers per plate
- Available in Light Grey and Black
- Constructed out of light weight aluminum

RLH LC Fiber Adapter Plates can be ordered individually or pre-installed into select RLH fiber optic patch panels.

Available in Standard, APC and 10G, RLH LC adapter plates utilize a common installation mounting format, typically referred to as a LGX foot print, so they may be mixed and matched as needed in compatible wall or rack mount patch panels.

#### FC Fiber Adapter Plate

- Compatible with any Fiber Patch Panel that supports LGX foot print adapter plates
- Singlemode and multimode
- Up to 12 fibers per plate
- Available in Light Grey and Black
- Constructed out of light weight aluminum

RLH FC Fiber Adapter Plates can be ordered individually or pre-installed into select RLH fiber optic patch panels.

RLH FC adapter plates utilize a common installation mounting format, typically referred to as a LGX foot print, so they may be mixed and matched as needed in compatible wall or rack mount patch panels.

#### MTRJ Fiber Adapter Plate

- Compatible with any Fiber Patch Panel that supports LGX foot print adapter plates
- Up to 12 fibers per plate
- Available in Light Grey and Black
- Constructed out of light weight aluminum

RLH MTRJ Fiber Adapter Plates can be ordered individually or pre-installed into select RLH fiber optic patch panels.

RLH MTRJ adapter plates utilize a common installation mounting format, typically referred to as a LGX foot print, so they may be mixed and matched as needed in compatible wall or rack mount patch panels.
**Fiber Patch Panels**

**MTP/MPO Fiber Cassettes**
RLH MTP Fiber Cassettes are specially designed to reduce installation time and cost for an optical network infrastructure in the premises environment. The Cassette is compact in size with SC or LC duplex port adaptors at the front and MPO/MTP adaptor(s) at the back. This system enables a multi fiber MTP trunk cable connection break-out into simplex- or duplex-style connectors.

- Can be loaded with Wall or Rack LGX enclosures
- Cable terminated in high density MTP/MPO connectors
- Available in 12 fiber and 24 fiber configurations
- Singlemode or Multimode Fiber Types are available

**Fiber Patch Panel Accessories**

Couplers, splice trays and cable managers are just some of the fiber cable and patch panel accessories that will help ensure a complete installation with minimum down time and hassle.

We stock commonly used fiber adapters and can supply them preinstalled in our adapter plates or patch panels. Please contact one of our sales professional for products not listed here.

**ST Fiber Couplers**
ST-ST Fiber Adapters also commonly called fiber couplers can be ordered individually. They are typically pre-installed in our adapter plates or patch panels.

- ST-ST connector style
- May be individually ordered
- Panel mountable and adapter plate compatible
- Simplex
- Singlemode or Multimode
- Low loss connection

They provide a low loss connection between fiber cables where traditional patching solutions won't work due to space or other constraints.

**SC Fiber Couplers**
SC-SC Fiber Adapters also commonly called fiber couplers can be ordered individually. They are typically pre-installed in our adapter plates or patch panels.

- SC-SC connector style
- May be individually ordered
- Panel mountable and adapter plate compatible
- Simplex or Duplex
- Singlemode or Multimode
- Low loss connection

They provide a low loss connection between fiber cables where traditional patching solutions won't work due to space or other constraints.

**LC Fiber Couplers**
LC-LC Fiber Adapters also commonly called fiber couplers can be ordered individually. They are typically pre-installed in our adapter plates or patch panels.

- LC-LC connector style
- May be individually ordered
- Panel mountable and adapter plate compatible
- Duplex or Quad
- Singlemode or Multimode
- Low loss connection

They provide a low loss connection between fiber cables where traditional patching solutions won't work due to space or other constraints.

**FC Fiber Couplers**
LC-LC Fiber Adapters also commonly called fiber couplers can be ordered individually. They are typically pre-installed in our adapter plates or patch panels.

- FC-FC connector style
- May be individually ordered
- Panel mountable and adapter plate compatible
- Simplex Singlemode or Multimode
- Low loss connection

They provide a low loss connection between fiber cables where traditional patching solutions won't work due to space or other constraints.
Hybrid Couplers
Hybrid Fiber Adapters also commonly called fiber couplers can be ordered individually. They have two different types of adapters on each end and allow for patching together of two different types of fiber connectors. They provide a low loss connection between fiber cables where traditional patching solutions won’t work due to space or other constraints.

Mini 12 Fiber Splice Tray
RLH 12 fiber mini splice trays are compact enough to fit small spaces. Compatible with most RLH enclosures, these mini splice trays provide protection and organization of fiber splices. Splice sleeves and cable ties are included.

12 Fiber Splice Tray
RLH 12 fiber splice trays are universal to the industry. These trays are compatible with most RLH enclosures. The splice trays provide protection and organization of fiber splices. Adhesive backed fiber insert holders and assorted cable ties are included.

24 Fiber Splice Tray
RLH 24 fiber splice trays are universal to the industry. These trays are compatible with most RLH enclosures. The splice trays provide protection and organization of fiber splices. Adhesive backed fiber insert holders and assorted cable ties are included.

1RU Rack Mount Cable Manager
RLH 1RU cable management products extruded from high-grade polymers. These horizontal cable managers are produced to fit on a standard 19” rack and use a single rack space.
Cable managers include both the base and the cover as a set.

2RU Rack Mount Cable Manager
RLH 2RU cable management products extruded from high-grade polymers. These horizontal cable managers are produced to fit on a standard 19” rack and use two rack spaces.
Cable managers include both the base and the cover as a set.
Cabinets & Enclosures

RLH manufactures and stocks metallic and fiberglass enclosures for a variety of applications. All cabinets feature plywood backboards treated with fire retardant paint for durability and easy field installation of varying telecommunications equipment.

Our rugged aluminum cabinets are built to NEMA standards with door seals and padlock rings. Fiberglass cabinets are all-dielectric and easily drilled or modified in the field.

We also offer several options including vents, heaters, thermostats and fans. We can also customize your cabinet with air conditioners, load centers, equipment racks and more. RLH welcomes custom enclosure design opportunities and our design team is eager to take on new challenges.

TYPICAL INFORMATION OR FEATURES*

<table>
<thead>
<tr>
<th>Cabinets</th>
<th>Powder coated aluminum or fiberglass</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Features:</strong></td>
<td>treated plywood backboard, hinged door with seal, document pocket, vents, padlock ring.</td>
</tr>
<tr>
<td><strong>Mounting Options:</strong></td>
<td>molded flange, mounting feet, or pole mount models</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Add-ons</th>
<th>Exhaust Air Fan Kits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Heaters</td>
</tr>
<tr>
<td></td>
<td>Dual Access locks</td>
</tr>
<tr>
<td></td>
<td>Backup battery shelves</td>
</tr>
</tbody>
</table>

* Typical specifications only. Please refer to the product data sheets for specific product specifications.
RLH 18” x 16” x 10” Aluminum Cabinet

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Cone style padlock ring
- Vents and bottom knockouts
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

RLH 24” x 24” x 16” Aluminum Cabinet

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Cone style padlock ring
- Vents and bottom knockouts
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

RLH 24” x 24” x 16” Fiberglass Cabinet

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Quarter turn latch with padlock hasp
- Weatherproof vents
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

18” x 16” x 10” Aluminum Cabinet

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Cone style padlock ring
- Vents and bottom knockouts
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

24” x 24” x 16” Aluminum Cabinet

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Cone style padlock ring
- Vents and bottom knockouts
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

40” x 32” x 15” Aluminum Cabinet

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Cone style padlock ring
- Vents and bottom knockouts
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

18” x 16” x 10” Mini Fiberglass Cabinet

- Molded mounting flanges
- Optional pole mount bracket
- Padlock latches
- Weatherproof vents
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

24” x 24” x 10” Small Fiberglass Cabinet

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Twist latches with padlock hasp
- Weatherproof vents
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

24” x 24” x 16” Fiberglass Cabinet

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Quarter turn latch with padlock hasp
- Weatherproof vents
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

RLH 40” x 32” x 15” Aluminum Enclosures provide long-lasting protection for housing electrical components, and can be used in both indoor and extreme outdoor environments. Powder coated light grey and highly resistant to corrosion, standard enclosures are equipped with a hinged door with padlock ring, door stop, literature pocket, foam gasket door seal, knockouts, vents, mounting feet, hardware, treated and painted plywood backboard.

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Cabinets & Enclosures

30” x 24” x 16” Fiberglass Cabinet
RLH 30” x 24” x 16” Fiberglass Enclosures provide an indoor or outdoor rated all-dielectric housing for Fiber Optic Link and Telco equipment located inside high voltage environments. These fiberglass-reinforced cabinets have excellent temperature and chemical resistance. They are equipped with a hinged door, quarter turn latch, padlock hasp, foam gasket seal, vents, and painted, fire treated 3/4” plywood backboard.

- Frame mounting feet and attaching hardware
- Optional pole mount bracket
- Quarter turn latch with padlock hasp
- Weatherproof vents
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

36” x 30” x 16” Large Fiberglass Cabinet
RLH 36” x 30” x 16” Large Fiberglass Enclosures provide an indoor or outdoor rated all-dielectric housing for Fiber Optic Link and Telco equipment located inside high voltage environments. These fiberglass-reinforced cabinets have excellent temperature and chemical resistance. They are equipped with a hinged door, 3/4 twist latches with padlock hasp, foam gasket seal, vents, and painted, fire treated 3/4” plywood backboard.

- Molded mounting flanges
- Optional pole mount bracket
- Twist latches with padlock hasp
- Weatherproof vents
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

48” x 36” x 16” Large Fiberglass Cabinet
RLH 48” x 36” x 16” Large Fiberglass Enclosures provide an indoor or outdoor rated all-dielectric housing for Fiber Optic Link and Telco equipment located inside high voltage environments. These fiberglass-reinforced cabinets have excellent temperature and chemical resistance. They are equipped with a hinged door, twist latches, padlock locking hasp, foam gasket seal, vents, and painted, fire treated 3/4” plywood backboard.

- Molded mounting flanges
- Optional pole mount bracket
- Twist latches with padlock hasp
- Weatherproof vents
- 3/4” treated and painted plywood backboard
- Optional heater, thermostat & fans

Cabinets and Enclosures Accessories
RLH cabinets and pedestal accessories are available as pre-installed options or add-on packages for specific applications. Heaters, ventilation fan kits and thermostats are common options to help manage the internal temperature of cabinets, extending the life of internal communications equipment or other electronics. For additional accessories tailored to specific installations, please contact one of our sales engineers.

Mini Fan Kits
RLH Mini Fans are available as a single or dual fan kit and are designed to be a direct replacement for the weatherproof enclosure vents provided on all RLH enclosures, and can be installed without any drilling or other modifications.

Factory installation is standard when ordered with RLH enclosures and telco units.

- Compatible with all RLH Enclosures
- Designed to replace passive vents
- Indoor or outdoor applications
- User adjustable thermostat
- 1 or 2 fan models available
- All attaching hardware and accessories are included

Heater & Mini Fan Kit
RLH Heater and Mini Fan Kits are designed to provide heating and venting on all RLH enclosures. Kits come complete with heaters, vent fans, thermostats and all mounting hardware.

RLH heater and fan kits may be factory installed when ordered with RLH enclosures. Installation instructions are included for retrofit applications.

- 50 W Convection Heater
- 1 or 2 Mini Fans
- User adjustable thermostats
- Attaching stainless steel hardware and accessories are included
- Available preinstalled into enclosures
**Auxiliary Fan Kits**

RLH Auxiliary Fan Kits are designed to provide greater active venting on all RLH enclosures. Kits come with a larger passive inlet vent and particulate screen, to match the larger vent fan, Sealing compound for the exterior louver panels, and all mounting hardware.

RLH Auxiliary Fan Kits can be factory installed when ordered with RLH enclosures. Installation instructions are included for retrofit applications.

- Available in 120VAC, 24VDC and 48VDC configurations
- Heavy duty 120 mm (4-3/4") long life fan for durability
- For cabinets from H30"xW24"xD12" up to H40"xW32"xD18"
- User adjustable thermostat
- All hardware included

**Heater Kits**

RLH Heater Kits are designed to provide heat in enclosures that contain electronics sensitive to cold temperatures or prone to condensation. Heater kits are available in sizes from 50W to 100W, and include a thermostat and all mounting hardware.

RLH Heater Kits may be factory installed when ordered with RLH enclosures. Installation instructions are included for retrofit applications.

- 50 W or 100 W
- User adjustable thermostats
- For cabinets from 24" to 36"
- Attaching stainless steel hardware and accessories are included
- Available preinstalled into enclosures

**Heater & Fan Kits**

RLH Combination Kits are designed to provide heating and venting on all RLH enclosures. Kits come complete with heaters, vent fans, thermostats and all mounting hardware.

RLH heater and fan kits may be factory installed when ordered with RLH enclosures. Installation instructions are included for retrofit applications.

- 50 W or 100 W
- User adjustable thermostats
- For cabinets from 24" to 36"
- Attaching stainless steel hardware and accessories are included
- Available preinstalled into enclosures

**Dual Access Lock Assembly**

The Dual-Access Lock Assembly provides a means of using two padlocks on a secured cabinet. Either pad lock can be removed enabling access. Locks plates are manufactured from 10 gauge steel with heavy duty steel center pin. Padlock holes are .38-inch (10mm) in diameter. Padlock is not included.

- Compatible with all RLH Enclosures
- Provides Telco/Subscriber secured access
- 10 gauge steel construction
Power Supplies

Our compact, DIN mount switching power supplies are ideal for most industrial power needs, and available in a wide variety of capacities. Our rack mount and dual output DC-DC converters provide regulated DC power used in many telco and utility applications. Battery charge controllers and UPS battery packs can provide backup power for enhanced reliability.

**AC/DC Power Supplies**
- 500 Series AC/DC 2RU Rack Mount
- AC/DC 2RU Rack Mount
- 30W AC/DC + DC/DC DIN mount
- 80W AC/DC + DC/DC DIN mount
- 120W AC/DC + DC/DC DIN mount
- 240W AC/DC DIN mount
- 480W AC/DC DIN mount
- 115VAC to 48 & 12VDC Dual Output AC/DC DIN mount
- Solo-24 Power Adapter
- AC/DC 24VDC Wall Mount

**DC/DC Converters**
- 500 Series DC/DC Rack Mount
- DC/DC Converter - 1RU Rack Mount
- 48VDC to 48 & 12VDC Dual Output DC/DC Power Supply
- 130VDC to 48 & 12VDC Dual Output DC/DC Power Supply
- 24VDC to 12 or 24VDC DC/DC Converter
- 48VDC to 12 or 24VDC DC/DC Converter
- 130VDC to 12, 24 or 48VDC DC/DC Converter

**Battery Charge Controllers & Battery Packs**
- Integrated 75W AC/DC UPS with Battery Backup
- 48VDC UPS Battery Charge Controller Module
- 24VDC UPS Battery Charge Controller Module
- 24VDC 4.5 Ah Wall Mount Battery Pack (DIN Rail Compatible)
- 24VDC 7.2 Ah Wall Mount Battery Pack
- 24VDC 12 Ah Wall Mount Battery Pack
- 24VDC 20 Ah Wall Mount Battery Pack
- 48VDC 1.2 Ah Wall Mount Battery Pack (DIN Rail Compatible)
- 48VDC 7.2 Ah Wall Mount Battery Pack
- 48VDC 20 Ah Wall Mount Battery Pack
AC/DC Power Supplies

RLH AC/DC Power supplies are available in a wide selection of capacities, voltages and form factors to meet a variety of applications.

Mounting options include: Rack, Wall or DIN rail. Power capacities vary between 30 watts up to 500 Watts.

Rugged construction, wide operating temperature range, and excellent performance are common characteristics our AC/DC power products.

500 Series AC/DC 2RU Rack Mount Power Supply

The RLH 500 Series AC/DC rack mount power supply is an isolated DC power source designed to provide constant power to telecom and industrial equipment. 24VDC and 48VDC output models are available, rated up to 21 A. They have front panel input power circuit breakers and a digital ammeter for monitoring the output current, dual inputs with automatic internal switching for connecting redundant power input sources, and three position output terminals.

- EIA 19” and 23” rack mount, 2 RU
- 24VDC or 48VDC models
- Dual, heavy duty, high cycle life, MIL-STD-202 front breakers.
- Digital LED ammeter display
- 3 output terminal connections
- Alarm contact
- Made in USA

AC/DC 2RU Rack Mount UPS

AC/DC High-Density power supplies are ideal for industrial telecom applications where reliable power is necessary. The power supply operates from a standard AC mains input and transforms to a regulated DC output. Housed in a 2RU form factor, with status indicators on the front panel, and 12 output connections. It is available in either 24 or 48VDC output versions, and optional integrated backup battery system with a full load runtime of 3 hours.

- Standard 19” Rack Mount, 2RU
- Available with or without internal UPS backup batteries
- Batteries are sealed, gel-style industrial grade
- 24VDC or 48VDC models
- 12 output connections
- Made in USA

30W Industrial AC/DC + DC/DC Switching Power Supply

These compact, DIN rail mount power supplies feature a universal input of 85-264VAC or 90-375VDC, and are designed for operation in industrial and residential environments.

They consume very little standby power, and operate with high efficiency to comply with the requirements of the European Eco-design directive.

- Accepts AC and DC Power Input
- Wide range: 110-240VAC 50/60 Hz AC input & 130 - 300VDC input
- 24 and 48VDC output power models
- 30 watt output
- Output voltage adjustable
- UL listed

80W Industrial AC/DC + DC/DC Switching Power Supply

These compact, DIN rail mount power supplies feature a universal input of 85-264VAC or 90-375VDC, and are designed for operation in industrial and residential environments.

They consume very little standby power, and operate with high efficiency to comply with the requirements of the European Eco-design directive.

- Accepts AC and DC Power Input
- Wide range: 110-240VAC 50/60 Hz AC input & 130 - 300VDC input
- 24 and 48VDC output power models
- 80 watt output
- Output voltage adjustable
- UL listed

120W Industrial AC/DC + DC/DC Switching Power Supply

These compact, DIN rail mount power supplies feature a universal input of 85-264VAC or 90-375VDC, and are designed for operation in industrial and residential environments.

They consume very little standby power, and operate with high efficiency to comply with the requirements of the European Eco-design directive.

- Accepts AC and DC Power Input
- Wide range: 110-240VAC 50/60 Hz AC input & 130 - 300VDC input
- 24 and 48VDC output power models
- 120 watt output
- Output voltage adjustable
- UL listed
240W Industrial AC/DC Switching Power Supply
This high performance 240W industrial DIN-rail power supply is designed for harsh environments and is the best choice for reliable industrial systems and machines. They comply with the latest safety and EMC standards for industrial environments and include ATEX EN 60079 certification for applications in hazardous locations. These power supplies make a compact and reliable UPS system when used with optional charge controllers and battery packs.

480W Industrial AC/DC Switching Power Supply
This high performance 480W industrial DIN-rail power supply is designed for harsh environments and is the best choice for reliable industrial systems and machines. They comply with the latest safety and EMC standards for industrial environments and include ATEX EN 60079 certification for applications in hazardous locations. These power supplies make a compact and reliable UPS system when used with optional charge controllers and battery packs.

115VAC to 48 & 12VDC Dual Output AC/DC Power Supply
The AC/DC Dual Output DIN rail mounted power supply is a compact switching supply designed to convert AC power (115VAC) to regulated 48VDC and 12VDC output to power a wide range of industrial equipment. Each internal regulated power supply section is separate and independent of the other power section, allowing for maximum efficiency and operation. It has low output ripple along with short circuit, overvoltage and overload protection.

Solo-24 Power Adapter
The Solo-24 Power Adapter is a compact, plug-and-play, wall mountable power supply that connects directly to a single RLH Fiber Link module. It has a standard 3 prong AC power input plug to connect to a mains outlet, and a DC power output connector that plugs into the module. It features a universal AC input of 85-264VAC 50/60 Hz, regulated 24VDC output, and is designed for operation in industrial and residential environments.

AC/DC 24VDC Wall Mount Power Supply
The RLH AC/DC wall mount power supply is a compact switching supply that converts AC power to regulated 24VDC power, mounted inside a rugged thermoplastic wall mount housing. It has a 2.1 amp output, and battery charge controller. It is available as a power supply only, or as a kit with either a 7 Ah or 20 Ah external backup battery pack to provide uninterruptible power. Batteries are industrial grade sealed gel style, and are field replaceable.
Power Supplies

DC/DC Converters

RLH DC/DC converters are designed to be used in industrial applications at power plants, sub-stations, telco facilities or other industrial locations where fluctuating DC power needs to be converted to a regulated DC output for use with RLH Fiber Optic Links or other industrial equipment.

Rugged construction, wide operating temperature range, and regulated outputs are common characteristics our DC/DC power products.

500 Series DC/DC Rack Mount Converter

The RLH 500 Series Rack Mount DC/DC Converter is an isolated DC power source designed to provide constant power to telecom and industrial equipment. There are several models available, rated up to 21 A and have front panel input power circuit breakers and a digital ammeter for monitoring the output current. They have dual inputs with automatic internal switching for connecting redundant power input sources, and three position output terminals for multiple devices.

DH/DC Converter - 1RU Rack Mount

DC/DC 19" 1RU rack mount converters for industrial telecom applications. These converters provide an isolated and regulated DC output from station batteries or other widely fluctuating DC sources. A range of input voltages are available.

The RLH DC/DC rack mount converters can provide multiple outputs for powering up to twelve (12) Fiber Optic Link Cards.

48VDC to 48 & 12VDC Dual Output DC/DC Power Supply

The RLH 48VDC to Dual DC Output DIN rail mount power supply is designed to convert 48VDC power (18~75VDC) to a regulated 48VDC and 12VDC output to power a wide range of industrial equipment. Each internal regulated power supply section is separate and independent of the other power section, allowing for maximum efficiency and operation. It has low output ripple along with short circuit, over voltage and overload protection.

24VDC to 12 or 48VDC 100W DC/DC Power Supply

The RLH 24VDC 100W DIN rail mount DC/DC power supply is designed to convert 24VDC power (18~36VDC) to a regulated 12VDC or 48VDC output (depending on model), to power a wide range of industrial equipment. Features include adjustable output voltage and a relay output to indicate power status and alarm conditions, low output ripple along with short circuit, over voltage and overload protection.
**Power Supplies**

**48VDC to 12 or 24VDC 100W DC/DC Power Supply**

The RLH 48VDC 100W DIN rail mount DC/DC power supply is designed to convert 48VDC power (36–72VDC) to a regulated 12VDC or 24VDC output (depending on model), to power a wide range of industrial equipment. Features include adjustable output voltage and a relay output to indicate power status and alarm conditions, low output ripple along with short circuit, over voltage and overload protection.

- 48VDC input with wide 36–72VDC input range
- 12 or 24VDC output models
- ±10% output adjustment range
- Short circuit, overload, over voltage and over temperature protection
- Made in USA

**130VDC to 12, 24 or 48VDC 100W DC/DC Power Supply**

The RLH 130VDC 100W DIN rail mount DC/DC power supply is designed to convert 130VDC power (72–144VDC) to a regulated 12, 24 or 48VDC output (depending on model), to power a wide range of industrial equipment. Features include adjustable output voltage and a relay output to indicate power status and alarm conditions, low output ripple along with short circuit, over voltage and overload protection.

- 130VDC input with wide 72–144VDC input range
- 12, 24 or 48VDC output models
- ±10% output adjustment range
- Short circuit, overload, over voltage and over temperature protection
- Made in USA

**Battery Charge Controllers**

RLH Battery Charge Controllers are compact units designed to work with a DC power supply, such as RLH DIN rail power supplies, and a battery pack to provide uninterruptible power in the event of a power outage. They continuously maintain the correct charge level on the battery and ensure a seamless transition to battery power when needed, making a complete UPS power supply solution. Rugged construction, wide operating temperature range make these ideal for industrial use.

**Integrated 75W AC/DC UPS with Battery Backup**

The RLH 75W AC/DC 24V power supply with integrated battery charger offers a complete power system designed for 24VDC UPS applications. The compact switching power supply has a built-in UPS charge controller, and optional DIN rail mounted 24V 1.2 Ah battery pack. This system is designed to provide regulated 24V power for industrial equipment, while providing battery backup power in the event of a source power interruption.

- 75W 24V power supply accepts AC or DC input power
- Built-in battery test function
- Relay contact signal output and LED indicators for battery and power
- Optional 1.2 Ah 24V DIN battery pack includes front panel fuse
- Made in USA

**48VDC UPS Battery Charge Controller Module**

RLH 48VDC DIN rail mount charge controllers are compact units designed to work with a 48VDC power supply and a 48VDC backup battery pack to provide uninterruptible power in the event of a power outage.

It continuously maintains the correct charge level on the batteries and ensures a seamless power transition to battery power when needed.

- Suitable for 48VDC systems up to 30 A
- Built-in battery test function
- Battery polarity protection
- Relay contact signal output and LED indicators for DC Bus OK, Battery Fail and Battery Discharge
- Made in USA

**24VDC UPS Battery Charge Controller Module**

RLH 24VDC DIN rail mount charge controllers are compact units designed to work with a 24VDC power supply and a 24VDC backup battery pack to provide uninterruptible power in the event of a power outage.

It continuously maintains the correct charge level on the battery and ensures a seamless power transition to battery power when needed.

- Suitable for 24VDC systems up to 15 A
- Built-in battery test function
- Battery polarity protection
- Relay contact signal output and LED indicators for DC Bus OK, Battery Fail and Battery Discharge
- Made in USA

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**Power Supplies**

**UPS Battery Packs**

RLH UPS Battery Packs are designed for use with our Power Supplies and Charge Controllers to provide reserve power to Fiber Optic Links or other industrial equipment. Available in a variety of sizes, mounting options and capacities, these battery packs utilize industrial, sealed gel style batteries with high cycle service and wide operating temperatures.

**24VDC 1.2Ah Wall Mount Battery Pack (DIN Rail Compatible)**

- Ideal for 24VDC UPS applications
- DIN Mount/wall mount design
- Sealed gel batteries
- User replaceable 3A protection fuse
- High 100% discharge cycle service
- Wide -20 °C to +60 °C operating temperature range

The 1.2 AH backup battery pack is a compact sealed battery unit ideally suited for 24VDC UPS applications, or other industrial applications where battery reserve power is required. The battery pack is DIN rail mounted, and the DIN rail is used to mount the battery to a wall or equipment rack. Battery packs connect to a battery charge controller via screw down terminals, and an externally replaceable fuse is included to protect the battery circuit.

**24VDC 4.5Ah Wall Mount Battery Pack (DIN Rail Compatible)**

- Ideal for 24VDC UPS applications
- DIN Mount/wall mount design
- Sealed gel batteries
- User replaceable protection fuse
- High 100% discharge cycle service
- Batteries are field replaceable

The 4.5 Ah backup battery pack is a compact sealed battery unit ideally suited for 24VDC UPS applications, or other industrial applications where battery reserve power is required. The battery pack is DIN rail mounted with 2 included DIN rail clips, and the DIN rail is used to mount the battery to a wall or equipment rack. Battery packs connect to a battery charge controller via screw down terminals, and an externally replaceable fuse is included to protect the battery circuit.

**24VDC 7.2Ah Wall Mount Battery Pack**

- Ideal for 24VDC UPS applications
- Steel enclosure with Quick-Mount mounting system
- Sealed gel batteries
- User replaceable protection fuse
- High 100% discharge cycle service
- Batteries are field replaceable

The RLH 24V 7.2 Ah battery packs consists of two batteries contained within a powder coated steel housing with a hinged door and thumb screws. It has a front panel fuse and screw down terminals for secure connections. The battery pack is designed to be easily mounted, using a quick-mount plate that the battery housing attaches to. It is designed to be used indoors or in a weatherproof housing.

**24VDC 12Ah Wall Mount Battery Pack**

- Ideal for 24VDC UPS applications
- Wall mount design
- Sealed gel batteries
- User replaceable protection fuse
- High 100% discharge cycle service
- Batteries are field replaceable

The RLH 24V 12 Ah battery pack is designed to provide reliable UPS backup power for industrial equipment and is deal for use with RLH UPS systems. The battery pack is a durable, weatherproof, fiberglass housing with four sealed type batteries inside, and is designed to be wall or panel mounted. The pack connects to a battery charge controller via screw down terminals, and has an externally replaceable fuse to protect the battery circuit.

**24VDC 20Ah Wall Mount Battery Pack**

- Ideal for 24VDC UPS applications
- Steel enclosure with Quick-Mount mounting system
- Sealed gel batteries
- User replaceable protection fuse
- High 100% discharge cycle service
- Batteries are field replaceable

The RLH 24V 20 Ah battery pack is a high capacity battery pack with two batteries contained within a powder coated steel housing with a hinged door and thumb screws. It has a front panel fuse and screw down terminals for secure connections. The battery pack is designed to be easily mounted, using the Quick-Mount plate that the battery housing attaches to. It is designed to be used indoors or in a weatherproof housing.
48VDC 1.2Ah Wall Mount Battery Pack (DIN Rail Compatible)

The 48V 1.2 Ah backup battery pack is a compact sealed battery unit ideally suited for 48V UPS use, or in other industrial applications where 48V battery reserve power is required. The battery pack is DIN rail mounted with 2 included DIN rail clips, and the DIN rail is used to mount the battery to a wall or equipment rack. The pack connects to a battery charge controller via screw down terminals, and has an externally replaceable fuse to protect the battery circuit.

- Ideal for 48VDC UPS applications
- DIN Mount/wall mount design
- Sealed gel batteries
- User replaceable protection fuse
- High 100% discharge cycle service
- Batteries are field replaceable

48VDC 7.2Ah Wall Mount Battery Pack

The RLH 48V 7.2 Ah battery pack is designed to provide reliable UPS backup power for industrial equipment and is ideal for use with RLH UPS systems. The battery pack is a durable, weatherproof, fiberglass housing with four sealed type batteries inside, and is designed to be wall or panel mounted. The pack connects to a battery charge controller via screw down terminals, and has an externally replaceable fuse to protect the battery circuit.

- Ideal for 48VDC UPS applications
- Wall mount design
- Sealed gel batteries
- User replaceable protection fuse
- High 100% discharge cycle service
- Batteries are field replaceable

48VDC 20Ah Wall Mount Battery Pack

The RLH 48V 20 Ah battery pack is designed to provide reliable UPS backup power for industrial equipment and is ideal for use with RLH UPS systems. The battery pack is a durable, weatherproof, fiberglass housing with four sealed type batteries inside, and is designed to be wall or panel mounted. The pack connects to a battery charge controller via screw down terminals, and has an externally replaceable fuse to protect the battery circuit.

- Ideal for 48VDC UPS applications
- Wall mount design
- Sealed gel batteries
- User replaceable protection fuse
- High 100% discharge cycle service
- Batteries are field replaceable
Field Services

RLH has over 30 years of experience working on fiber cable within Cell Towers, Power Utilities, and Distribution Facilities. We have a team of experienced professionals and an outstanding field-safety record and are ready for any fiber-services project.

Customer Focus - At a Glance

Turn Key High Voltage Protection Installations

RLH is the pioneer fiber optic isolation equipment manufacturer that has been helping customers navigate the complicated world of isolation for over 30 years. We offer a wealth of experience along with a world class team of project managers.

Our installation team will work with you each step of the way to ensure a trouble free process so that services are ready on time.

With a single point contact, we make complex fiber optic communications simple.

Fiber Optic Cable Services

RLH has over 30 years of experience working on fiber cable within Cell Towers, Power Utilities, and Distribution Facilities.

With a team of professionals and an outstanding field safety record we are ready for any fiber services job our customers may require.

- On-site connector termination
- Fusion Splicing
- OTDR/OLTS diagnosis and repair
- Consulting and Engineering
# Contact Information and Support

## Contact

| By Mail: | Attn: Sales  
RLH Industries, Inc.  
936 N. Main St.  
Orange, CA  92867  USA |
|---|---|
| By Phone: | **Local**  
(714) 532-1672  
**Toll Free**  
(800) 877-1672  
**Toll Free**  
(866) DO-FIBER |
| Sales/Customer Service/ Tech. Support | **Mon.-Fri. 6am - 6pm PST** |
| By email: | info@fiberopticlink.com |
| By Fax: | (714) 532-1885 |

## Support

<table>
<thead>
<tr>
<th>Email:</th>
<th><a href="mailto:support@fiberopticlink.com">support@fiberopticlink.com</a></th>
</tr>
</thead>
</table>
| 24/7 Technical support: | **Toll Free 1-855-RLH-24X7**  
**Toll Free 1-855-754-2497** |