iMux

RLH iMux System

MODULAR 16x1 VOICE AND DATA MULTIPLEXED OVER FIBER OPTICS

RLH iMux with dual optics modules

The iMux is a powerful fiber optic modular multiplexer capable of providing up to 16 channels of T1, RS232, 4 wire data/600Ohm audio and analog phone FXO/FXS services, plus four built-in 10/100M Ethernet ports, over a single fiber.

These services are supplied by the modules, up to four, that each offer four lines of communication and may be installed in any combination. Spares or add-on modules may be ordered separately and are field installable.

The optical modules are available in both dual fiber and single bi-directional fiber (WDM), and up to 2 optical modules may be installed, providing 1+1 hot-swappable optical protection and making the best use of fiber availability.

The iMux may be managed through SNMP, web Interface, craft port or LCD/menu keys on the front panel. It also has an external alarm port for alarm input 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 it may be used on a desktop or shelf.

Standard Features
Multiplexes up to 16 voice and data channels plus 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 10/100 Ethernet ports
Aggregated Ethernet throughput up to 100Mbps
Supports VLAN/QOS and port rate control
Optical module auto laser shutdown (ALS), hot swappable 1+1 protection
Alarm relay has major and minor alarms (audible and visible alarm output)
Supports SNMP , HTTP / FTP / TFTP remote software upgradeable
Supports TELNET function to configure and monitor local and remote devices through TCP/IP network
Available with ringdown circuit operation
Redundant 48VDC or AC/DC powering options

iMux back panel showing power, alarm, and 4 modules (16 ports total) installed. T1 and POTS modules are shown.

Module Specifications

Optical Interface Module	
Wavelength	1310/1550 ± 50nm
System Gain	19 ~ 30dB
Fiber connectors	SC or ST
Maximum Fiber Distance	Multimode: 1.25 miles (2 km) Single-mode: 18 miles/30km; 43 miles/70km; 74 miles/120km
Optional: Bi-directional (WDM) Fiber Optic Module	

T1 Interface Module	
Service Capacity	Four (4) channels of T1
Bit Rate	1.544Mbps ± 32ppm
Line Code	B8ZS/AMI
Frame Format	SF, ESF, Unframed
Impedance	100Ω balanced
Electrical Interface	Compliant with ITU-T G.703
Jitter Tolerance	Compliant with ITU-T G.824
Jitter Transfer	Compliant with ITU-T G.743
Connector	RJ-45

RS-232 Interface Module	
Service Capacity	Four (4) channels of RS-232
Bit Rate	Up to 115200 bps TXD/RXD 1.536Mbit/s DTR/DSR 128Kbit/s RTS/CTS 128Kbit/s DCD/RI 64Kbit/s
Supported Loopback	Local and Remote

4 Wire Analog Data (600 Ohm Audio) Module	
Service Capacity	Four (4) channels of 4 wire analog data (600Ohm Audio)
Connector	RJ-11 x 4
Bandwidth	300Hz ~ 3.4KHz
Impedance	600Ohm
Longitudinal Conversion Loss	>60dB
Return Loss	>30dB
Idle Channel noise	75dB
CMRR	>60dB

Analog Phone (POTS) Interface Module	
FXO Module	Four (4) Channels of POTS
FXS Module	Four (4) Channels of POTS
Connector	RJ-11 x 4
Phone functions	Supports caller I.D. and call forwarding

iMux user installable module. Analog POTS module shown.

General Specifications

Alarm Contacts	4 relay contacts (DB-9 connector)
External Alarm	DB-9 connector
Compliance standard	ITUG.703
10/100 Ethernet	IEEE 802.3/802.3u
Modes	10/100M, full/half-duplex, auto-negotiation and auto MDI/MDIX
Frame buffer	329 frames, IEEE 802.3X standard
MAC Table	1024-entry MAC address mapping
Supported functions	VLAN/QOS and Port Rate Control
Connector	(4) RJ-45 ports
Power Requirements	90 ~ 240 VAC (47Hz ~ 63Hz) and 48VDC (36 ~ 75 V)
Power Consumption	20W max, (w/ all ports used)
Operating Temperature	0℃ ~ +50℃ (32℉ ~ 122℉)
Dimensions	W17.3in x D11.2in x H1.75in (440mm x 285mm x 44.5mm)
Included	19"/23" rack ears, serial cable, installation guide, power cord, module and port pre-configuration.

Ordering Information

Base Systems

Part Number	Description	Power 1	Power 2	Dimensions (1RU)
RLH-IMUX-V-2	iMUX BASE SYSTEM Dual DC Input Power	48VDC	48VDC	W17.3in x D11.2in x H1.75in (440mm x 285mm x 44.5mm)
RLH-IMUX-A-2	iMUX BASE SYSTEM AC and DC Input Power	115/220VAC	48VDC	

- ▶ Optics and service port modules are ordered separately.
- ▶ Modules ordered with the base system will be pre-installed.
- ▶ System is pre-configured before shipping for quick and easy operation.
- ▶ 2 multiplexers are required for a complete system.
- ▶ Bidirectional single fiber models require an A side unit and a B side unit for a complete system.
- ▶ Please contact your RLH sales representative for pricing and delivery information.

iMux 4 Channel Service Port Modules

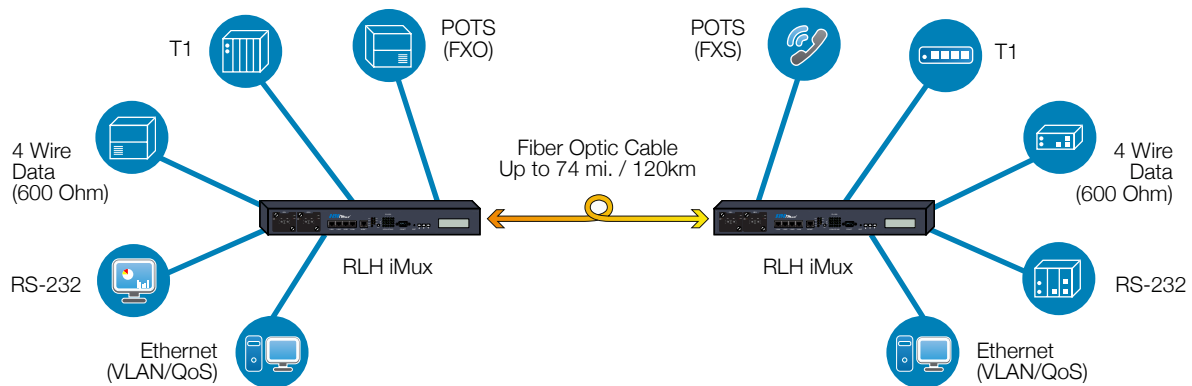| Part Number	Description
RLH-MM-T1	T-1 MODULE - 4 Channels
RLH-MM-D1	R-232 MODULE - 4 Channels
RLH-MM-AO	2 WIRE (POTS) FXO/CO MODULE - 4 Channels
RLH-MM-AS	2 WIRE (POTS) FXS/SUB MODULE - 4 Channels
RLH-MM-D2	4 WIRE ANALOG DATA (600 Ohm AUDIO) MODULE - 4 Channels

▶ Service port modules are ordered at same time as base system and are pre-installed.

▶ System is pre-configured before shipping for quick and easy operation.

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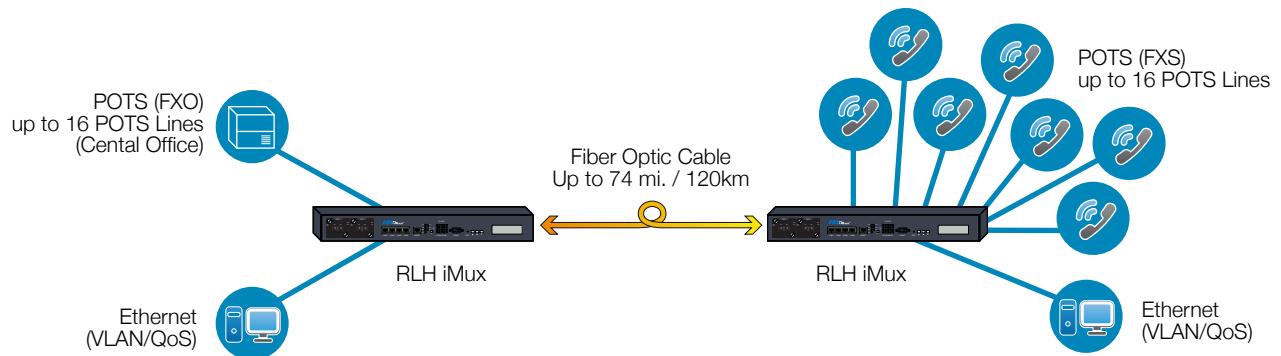
iMux Optics

Part Number	Description	Side	Distance	Fiber	Part Number
Multimode ST	iMux Optical Module	-	2 km/1.2 mi	62.5 µm	RLH-OM-04-1
Bi-Directional Single-mode SC	iMux Optical Module	A	20km/12.4mi.	8~9 µm	RLH-OM-10-1
	iMux Optical Module	B	20km/12.4mi.	8~9 µm	RLH-OM-11-1
	iMux Optical Module	A	60km / 37mi.	8~9 µm	RLH-OM-14-1
	iMux Optical Module	B	60km / 37mi.	8~9 µm	RLH-OM-15-1
Single-mode SC	iMux Optical Module	-	20km/12.4mi.	8~9 µm	RLH-OM-40-1
	iMux Optical Module	-	60km / 37mi.	8~9 µm	RLH-OM-41-1
	iMux Optical Module	-	120km / 74 mi.	8~9 µm	RLH-OM-42-1
Single-mode ST	iMux Optical Module	-	20km/12.4mi.	8~9 µm	RLH-OM-50-1

▶ Optics Modules ordered at same time as base system and are pre-installed.

▶ System is pre-configured before shipping for quick and easy operation.

▶ Bidirectional single fiber models require an A side unit and a B side unit for a complete system

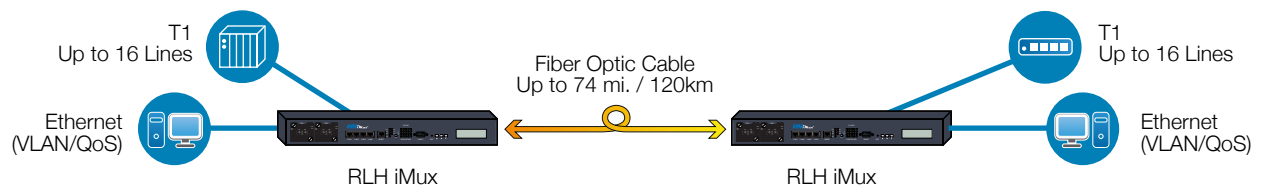▶ Please contact your RLH sales representative for pricing and delivery information

Application Diagrams

T1

POTS (FXO)

POTS (FXS)

T1

4 Wire Data (600 Ohm)

Fiber Optic Cable Up to 74 mi. / 120km

4 Wire Data (600 Ohm)

RS-232

RS-232

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Ethernet (VLAN/QoS)

Ethernet (VLAN/QoS)

Multiple Service Example

POTS (FXO) up to 16 POTS Lines (Cental Office)

Fiber Optic Cable Up to 74 mi. / 120km

POTS (FXS) up to 16 POTS Lines

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Ethernet (VLAN/QoS)

Ethernet (VLAN/QoS)

16 Channels of POTS Example

T1 Up to 16 Lines

Fiber Optic Cable Up to 74 mi. / 120km

T1 Up to 16 Lines

Ethernet (VLAN/QoS)

Ethernet (VLAN/QoS)

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16 Channels of T1 Example

Warranty

RLH is recognized throughout the U.S. in the telecommunications industry for our experience and we stand with total confidence in our quality. This product is warranted to be free of defects in material and workmanship.

RLH Industries, Inc. will repair or replace these products that fail provided the defective part is returned to RLH freight prepaid.

To make a warranty claim, or schedule repair or replacement of your RLH product, please contact us for an RMA number. You will be promptly assisted by one of our warranty specialists. All returns must have an RMA number before we can receive any items.

Technical Support

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

Contact Information

Corporate Headquarters:	RLH Industries, Inc.
	936 N. Main Street
	Orange, CA 92867 USA
Phone:	(714) 532-1672
	Toll Free 1-800-877-1672
	Toll Free 1-866-DO-FIBER
Fax:	(714) 532-1885
Email:	info@fiberopticlink.com
Web site:	www.fiberopticlink.com

RLH Industries, Inc.
936 N. Main Street, Orange, CA 92867 USA
T: (714) 532-1672
F: (714) 532-1885

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Specifications subject to change without notice.