

IQLROUTER/..



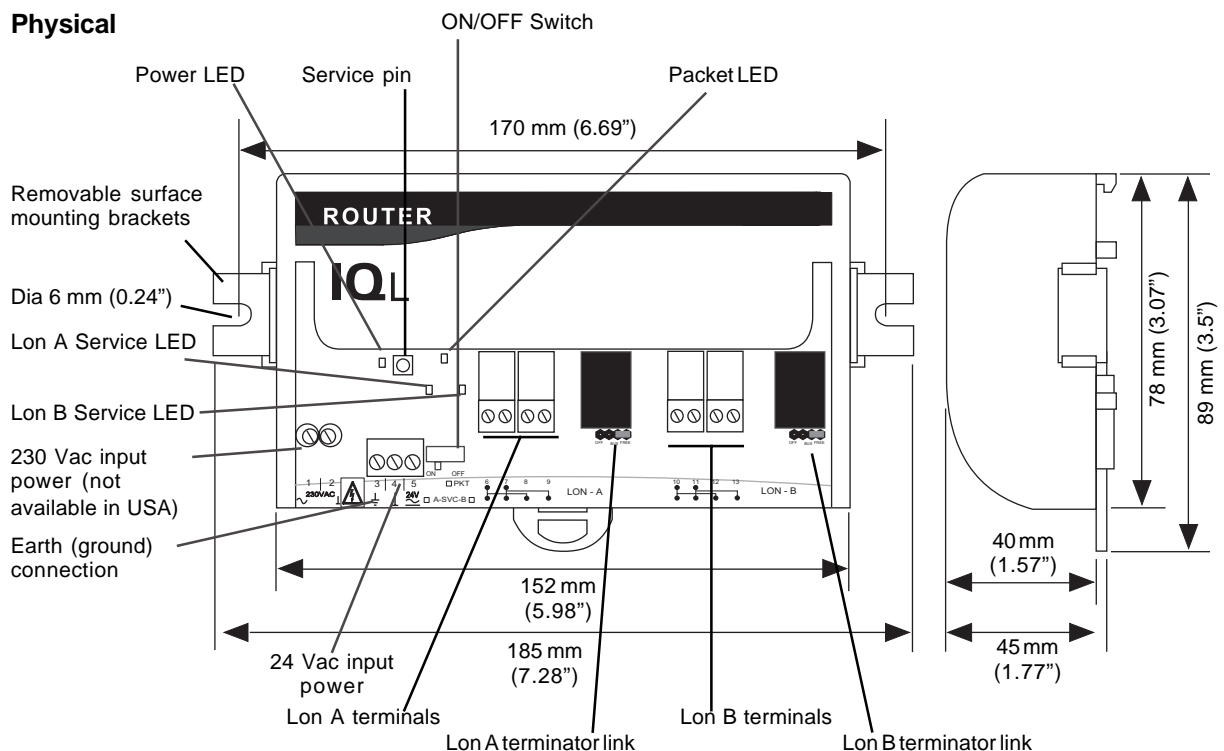
Description

The IQL Router (for use with IQ System Devices only) allows the connection of two communication channels and the routing of LonTalk messages between them. It improves system reliability by physically isolating one channel from another, and by strategic positioning, can reduce the network traffic in selected channels. It can be DIN rail or surface mounted and can self-install to allow IQ System Lonworks devices to operate across the channels. The router operates as a learning router by default but this can be changed to a configured router, repeater, or bridge. It is available in two variants the 230V (not available in USA), and 24V.

Features

- Compact DIN rail or surface mounting.
- 230 Vac (not available in USA), or 24 Vac powered.
- Service pin LEDs for both sides of router.
- Provides physical isolation.
- FTT-10A to FTT-10A (78kb/s).
- Can act as learning router, configured router, repeater, or bridge.

Physical



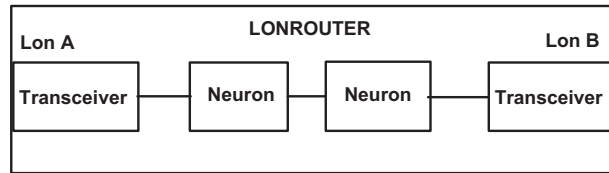
FUNCTIONALITY

The functionality of the IQL Router can be divided into two areas, System, and Hardware.

SYSTEM

The IQL Router consists of two neuron processors (one for each channel) back to back, with a transceiver either side.

By default it is configured to be a learning router which allows a domain (IQ System) to span the router. It discards corrupt data and physically isolates one channel from another providing increased bus cable length and an increased number of nodes. If required the IQL router's configuration can be changed using a Lonworks network management tool to be a bridge, configured router, or repeater.



Default Configuration

The default configuration of the IQL Router is a learning router with the domain and message buffer length suitable for IQ System Lonworks devices (domain 1=255, buffer length=146 bytes). This ensures that when IQ System Lonworks devices (e.g. IQL, LINC, and LERN) are installed either side of the IQL Router, they will be able to communicate with each other.

Subnets and hence IQ System Lans cannot cross routers. LINC's version >=3.23 can span routers, however earlier versions cannot without configuration using a Lonworks network management tool. The IQ System internetwork can span a router as it is not limited to one subnet.

Configuration by Lonworks Management Tool

In an IQ System-only Lonworks solution, a Lonworks network management tool is not required because the IQ System LonWorks products self-install a set of default network management parameters.

The use of a Lonworks network management tool enables IQ strategy modules to be bound to LonWorks devices (e.g. Lonworks sensors or valves) or to allow LINC's pre-version 3.23 to straddle a router.

It can be used to change the router from its default as a learning router to be a bridge, a configured router, or a repeater.

Note that a Lonworks network management tool should only be used by an installer with LonWorks engineering expertise.

Routing Algorithms

Using a Lonworks network management tool, the routing algorithm may be set to Bridge, Router (Learning or Configured), or Repeater.

Note that all these devices will give physical isolation, increasing the length of wire that can be used (doubling it if the transmission medium stays the same), and increasing the number of nodes.

Bridge: A bridge will forward all valid packets that match its domain address from one transceiver to the other. It thus bridges this domain and separates others.

Router: A router will route LonTalk messages according to its internal routing tables based on subnet and domain address. It allows network traffic to be reduced by filtering out local traffic from passing through the router. The learning router will learn which subnets are connected to either of its two transceivers and set up the routing tables accordingly. The configured router needs the actual distribution of the subnets to be configured into its routing tables using a Lonworks network management tool. *Note that a subnet cannot span a router.*

Repeater: The repeater passes all valid packets from one transceiver to the other.

Transceiver

The transmission medium both sides of the router is FTT-10A. This medium uses twisted pair cable with transformer coupling in each node to isolate the data bus from the transceivers. It supports free topology, so it may be wired as star, bus, or loop, or a mix of these, with a single terminator at one point.

A description of FTT-10A is given in the 'LonWorks FTT-10A Free Topology Transceiver User's Guide (078-0156-01D)'.

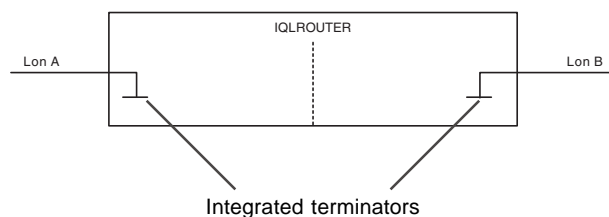
FTT-10A nodes may also be connected to a Link powered bus (LPT-10). In this type of medium, power is supplied to the bus by a Link Power Interface (LPI-10), and taken from the bus by the LPT-10 nodes, so these nodes do not have to be separately powered. The bus is normally grounded at the LPI-10, and the LPT-10 nodes must not be grounded. Since nodes often will have to control I/O which is grounded locally for functional or safety reasons, FTT-10A nodes which are separately powered and grounded are used. The distance constraints on an LPT-10 bus are different, see 'LPT-10 Link Power Transceiver User's Guide (078-0105-01C)'.

Cable/Cable Length/Node to Node distance: The table below assumes maximum wire temperature of 55 °C (131 °F) (cable length is the total length of cable used including stubs - the short lengths of cable to junction boxes, if used).

Recommended Cables	Max bus length	Max node to node
Belden 85102	500 m (545 yds)	500 m (545 yds)
Trend TP/1/0/16/HF/200 (Belden 8471)	500 m (545 yds)	400 m (430 yds)
UL Level IV, 22 AWG	500 m (545 yds)	400 m (430 yds)
JY(St) Y2 x 2 x 0.8	500 m (545 yds)	320 m (350 yds)
TIA568A Cat. 5, 24 AWG	450 m (490 yds)	250 m (270 yds)

Number of Nodes: 64 nodes per segment maximum.

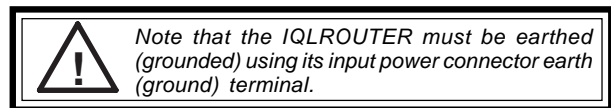
Bus Termination: Each Lonworks segment must be terminated at one point; this is facilitated by the IQL Router's Lon terminator links.



HARDWARE

Unit: The IQL Router is a small router designed for surface or DIN rail mounting. It has a plastic housing with a hinged clear polycarbonate terminal cover.

Input Power: The 24V version requires 24Vac input power. The 230V version (not available in USA) requires 230 Vac +15% -10%, 50/60 Hz input power. Both versions have a consumption of 2 VA.



The input power earth (ground) terminal is isolated from the input power neutral, and must be separately earthed (grounded) locally.

Service Button: This is used if the router is to be installed using a Lonworks network management tool. During the installation process, the tool will request to be informed of the presence of the router on a channel; this is done by pressing the Service button. This will be requested for each channel.

Lonworks: The integral Lonworks transceiver uses FTT (or LPT) which has the following features:

- (1) Use of free bus topology enabling star, bus, or loop wiring simplifies installation and facilitates network expansion.
- (2) The bus uses two wires (twisted pair) which are polarity independent with no need for screen.
- (3) The FTT runs at 78 k baud.
- (4) The FTT Lonworks may already be present in a building, so the IQ system is able to make use of an existing building bus and hence reduce installation cost.

Lon Terminator Links: The Lon terminator links enable the Lonworks network to be terminated. There is a separate link for each side of the router. Each can be set to one of two positions, OFF, or Free. When set to OFF there is no termination, and the network must be terminated elsewhere. When set to Free the network is terminated at that point with a 50 Ω termination.

Connectors: Two part connectors for 0.5 to 2.55 mm² (14 to 20 AWG) cross section area cable are used for the Lon connections. Single part connectors for 0.5 to 2.55 mm² (14 to 20 AWG) cross section area cable are used for both the 230 V and 24 V power connections.

ON/OFF Switch: The ON/OFF is used to provide a power up reset to the unit. A reset may be required if the addressing of other IQ System devices on the network is changed.

Indicators: The IQL Router has four LED indicators:

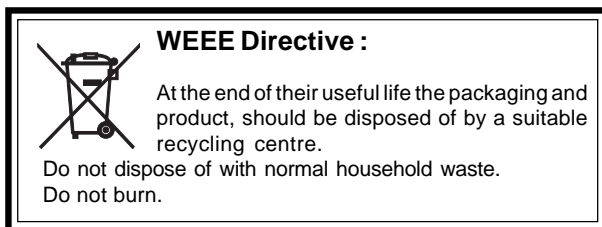
- Packet LED** Flashes on when traffic is passing through the router.
- Power LED** On when power is on
- Service A LED** Flashes on when the Lonworks Network Management tool is requesting the Service button be pressed for side A of the router.
- Service B LED** Flashes on when the Lonworks Network Management tool is requesting the Service button be pressed for side B of the router.

DISPOSAL

COSHH (Control of Substances Hazardous to Health - UK Government Regulations 2002) ASSESSMENT FOR DISPOSAL OF IQL ROUTER. No parts affected.

RECYCLING.

All plastic and metal parts are recyclable. The printed circuit board may be sent to any PCB recovery contractor to recover some of the components for any metals such as gold and silver.



ORDER CODES

Non USA Order Code	USA Order Code	
IQLROUTER/230	Not available in USA	IQL Router with 230 Vac power option (not available in USA).
IQLROUTER/USA/UL24VAC	882001300	IQL Router 24 Vac UL Listed.

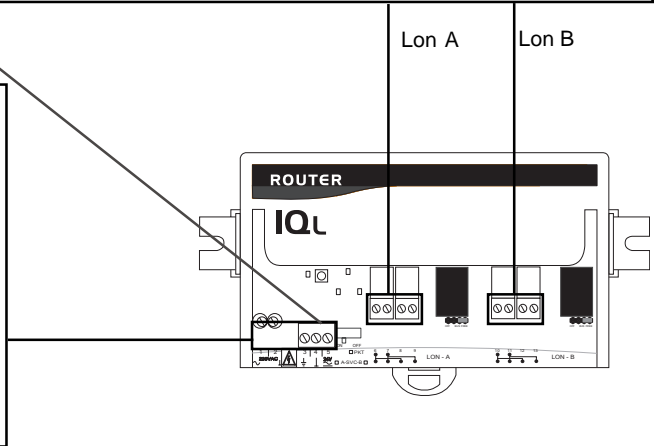
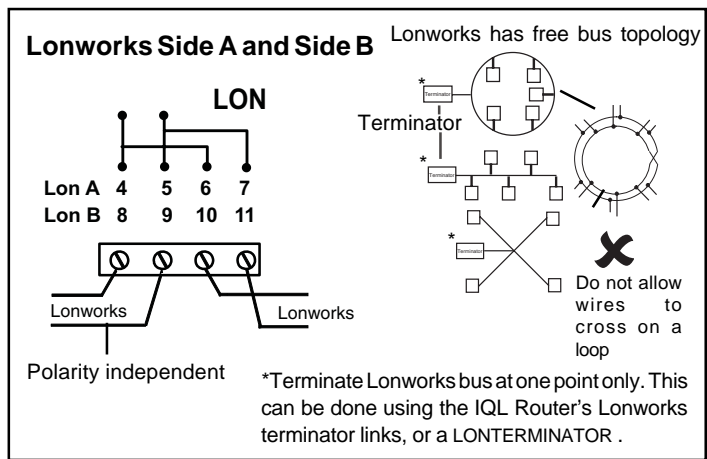
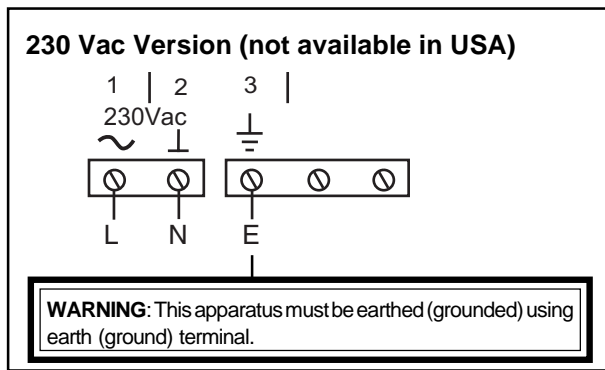
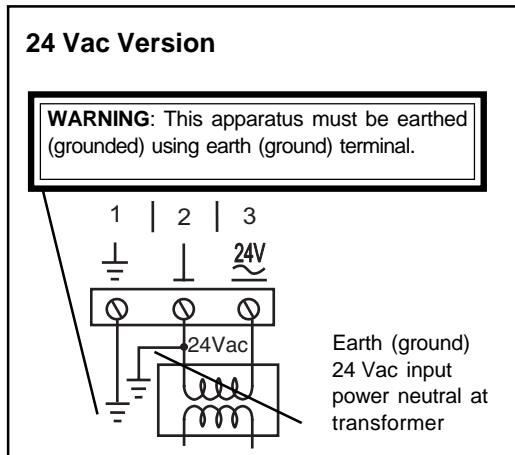
INSTALLATION

Both versions must be installed inside a protective case. The IQLROUTER/24VAC is UL rated as 'UL916 listed open energy management equipment'. The unit can be mounted either on DIN rail or flat surface. The installation involves the following procedure:

- Mount the unit in position
- Connect input power (do not switch on)
- Earth (ground) unit
- Connect LonWorks network
- Switch on power to unit
- Set up with Lonworks Management Tool if required
- Checking LEDs
- Configure rest of system
- Test system

Note: If installation on a Lonworks Management Tool is required, the installer must have LonWorks engineering expertise.

CONNECTIONS



SPECIFICATIONS

Electrical

Input Power
/230 (not USA) :230 Vac -10% +15%, 50/60 Hz
/24 :18 to 30 Vac

Consumption :2 VA

Processor :2 Neuron 3150 chips (RTR10)

Delay :2.5 ms maximum

Lon :FTT - Free topology, 78 k baud, transformer isolated. Single termination (RC network).

Lon FTT databus :Maximum bus length, node to node distance depends on cable type.

Recommended Cables	Max bus length	Max node to node
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Version

This data sheet refers to firmware v1.0, board LA105677 v1

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Mechanical

Dimensions :170mm (6.69") x 89mm (3.5") x 45 mm (1.77")

Material
Box :Flame retardant ABS
Terminal Cover :Clear polycarbonate flap

Weight
/230 (not USA):262g (9.94 oz)
/24 :182g (6.42 oz)

Connectors
Lon :Two part connectors for 0.5 to 2.55 mm² (14 to 20 AWG) cross section area cable.
Power :Single part connectors for 0.5 to 2.55 mm² (14 to 20 AWG) cross section area cable.

Environmental

EJ
EMC Emission :EN61000-6-3:2001, EN61000-3-2:2000,
EMC Immunity :EN61000-3-3:1995, EN61000-3-3:1995.
Safety :EN61010-1:2001
USA/Canada :/24VAC only. UL rated as 'UL916 listed open energy management equipment'.
Canada :CSA22.2 No. 205-M1983 - Signal Equipment.

Ambient limits
storage : -10 °C (+14 °F) to 50 °C (122 °F)
operating : 0 °C (32 °F) to +45 °C (113 °F)
humidity : 0 to 95 %RH non-condensing
Protection :IP20, NEMA1