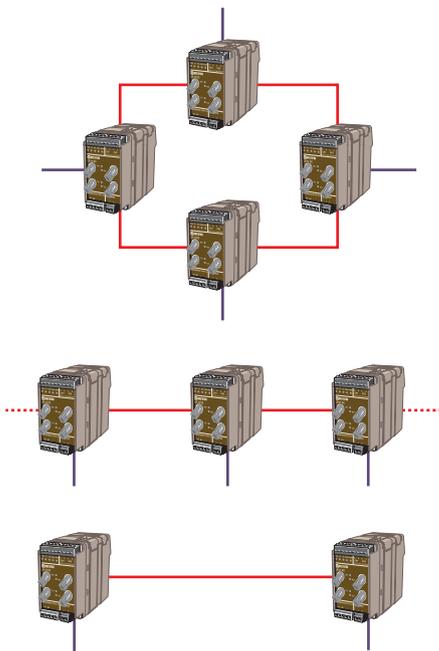


LONWORKS® LR-11/LR-11PP

Fibre optic router for TP/FT-10

The LR-11 router offers an easy way to extend the distance between LONWORKS® 78 kbit/s TP/FT network segments using a high-speed 1.25 Mbit/s backbone fibre optic network link. LR-11 is based on Echelon's RTR-10 standard router core module, this allowing standard configuration and installation with tools as LonBuilder® and LonMaker™. The LR-11 is equipped with either one (PP-version) or two pairs of fibre optic receivers and transmitters. This allows the user to build either a point to point-, bus- or redundant ring topology. In a fibre ring, one of the LR-01 units will be configured as a "ringmaster" ensuring that data is not sent around the ring uncontrolled. There are also digital alarm outputs that can control e.g. a relay to indicate that a fibre link failure has occurred.



- ⌘ LONWORKS®, 78 kbit/s TP/FT-10
- ⌘ Point-to-point (LR-11PP)
- ⌘ Multidrop or redundant ring
- ⌘ Router function (based on Echelon's router module RTR-10)
- ⌘ Re-generated optical signal
- ⌘ Transmission range up to 25 km (15.5 mi) on the fibre channels
- ⌘ 1.25 Mbit/s on the fibre channels
- ⌘ Multimode / Single-mode fibre cable
- ⌘ Alarm outputs for indication of fibre link failure
- ⌘ AC-/DC-supply
- ⌘ Reliable performance and function
- ⌘ Handles high levels of interference and exposed locations



LONWORKS®-Series

Technical data

Power	
Rated voltage AC	230 VAC
Rated voltage DC	24 VDC
Operating voltage	12 to 36 VDC 207 to 265 VAC*
Rated current	25 mA @ 230 VAC 125 mA @ 24 VDC
Rated frequency	DC: – AC: 48 to 62 Hz
Isolation to power	AC: 3000 V DC: 1500 V
Transient protection	Power: Yes Line: Yes
Connection FT-10	Detachable screw terminal
Connection Fibre	2 x ST-connectors LR-01PP and LR-11PP 4 x ST-connectors LR-01 and LR-11
Connection alarm	Detachable screw terminal. Alarm for CH1 and CH2. Maximum allowed voltage/current is 30 V / 80 mA
Data rate FT-10	78 kbit/s
Data rate Fibre	78 kbit/s (1.25 Mbit/s LR-11)
Weight, kg	AC: 0.6 DC: 0.3

ST-connectors	
Multimode	Up to 5 km (3.1 mi)
Singlemode	Up to 24 km (14.9 mi)

To consider in LONWORKS® installations

The use of LR-01 requires no specific LONWORKS® installation. The LR-01 units acts as physical repeaters on the TP/FT-channel.

Except the physical limitation on the fibre optic cable there may also be a logical protocol specific limitation that needs to be considered. The extension of the TP/FT-networks over a fibre optic channel will impose a certain propagation delay across the network segments. Imposing a propagation delay on a standard TP/FT-10 channel will affect the LonTalk® Layer 1 timing and the over-all channel media access. Significant propagation delay could result in packet collisions and packet retransmission, and thus network performance will decrease.

So therefore in some situation it could be appropriate to add a delay to the channel properties in order to tune the transport layer timers. The delay is added with the network management tool.