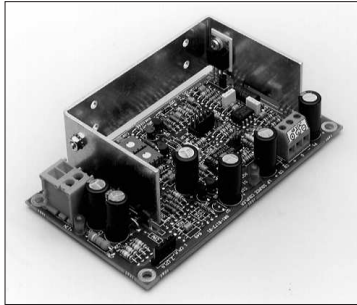


## LPI-10 Link Power Interface Module Model 56210-01



### Description

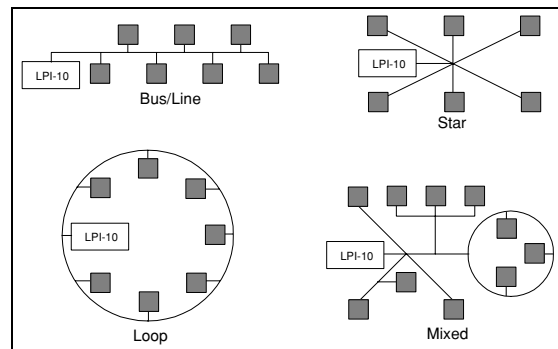
Echelon's link power system sends power and data on a common twisted wire pair, and allows the user to wire link power nodes with virtually no topology restrictions. Power is supplied by a customer-furnished nominal 48VDC power supply, and flows through the LPI-10 Link Power Interface Module onto the twisted wire pair. The LPI-10 module couples power to the system wiring, terminates the twisted pair network, isolates the power supply from network wiring faults, and prevents the network voltage from exceeding 42.4VDC to comply with U.L. low voltage requirements.

LPT-10 Link Power Transceivers located along the twisted wire pair include integral switching power supplies that convert the network 42.4VDC to regulated +5VDC at currents up to 100mA. The +5VDC power can be used for Neuron® Chips as well as sensors, actuators, and displays. If a high current or high voltage device must be controlled, then the +5VDC power can be used to trigger a high current triac, relay, or contactor. The +5VDC power can also be used to power an LPT-10/FTT-10A repeater.

The LPT-10 transceiver's power supply does away with the need for a local AC-to-DC or DC-to-DC power supply, and the related installation and labor expenses. The savings in money and time that results from eliminating local power supplies can account for 20% of a total control system cost: the larger the system, the greater the savings. Moreover, if standby batteries are used, additional savings will be realized throughout the life of the system since only one set of batteries will require service.

- ▼ Couples power from a customer's 48VDC power supply to the link power twisted wire pair
- ▼ Prevents network voltage from exceeding 42.4VDC and protects the power supply from network faults
- ▼ Terminates the link power network
- ▼ Supports free topology star, bus, and loop wiring
- ▼ Screw terminals for power supply and network wiring
- ▼ DIN rail, panel, or bulkhead mounting
- ▼ LED indicators for input and output power
- ▼ UL, CSA, TÜV Recognized component
- ▼ LONMARK® certified for interoperability

Typical Wiring Topologies Supported by the LPT-10 Link Power Transceiver



The link power system uses a single point of ground at the LPI-10 module, and all of the LPT-10 transceivers float relative to ground. Differential transmission minimizes the effects of common mode noise on signal transmission. If grounded sensors or actuators are used, an FTT-10A transceiver may be used to isolate the device from the network.

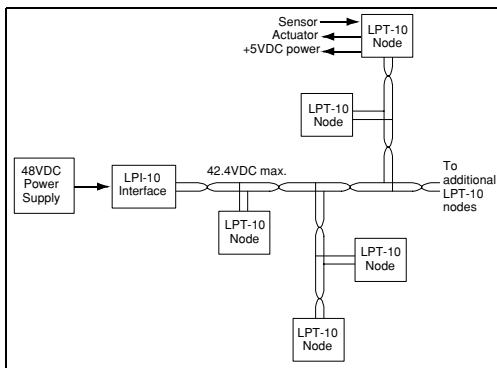
Unlike bus wiring designs, the link power system uses a free topology wiring scheme that supports star, loop, and bus wiring. This design has many advantages:

- The installer is free to select the method of wiring that best suits the installation, reducing the need for advanced planning and allowing last minute changes at the installation site;
- Link power technology can be introduced without requiring retraining if installers have been trained to use one style of wiring for all installations;
- Retrofit installations with existing wiring plants can be accommodated with minimal, if any, rewiring. This capability ensures that link power technology can be adapted to both old and new projects, expanding the potential market for link power-based products;
- Free topology permits link power systems to be expanded in the future by simply tapping into the existing wiring where it is most convenient to do so. This reduces the time and expense of system expansion, and from the customer's perspective, keeps down the life cycle cost of the link power network.

The LPI-10 module provides overcurrent protection on the network output. Jumper JP2 is provided for selecting the overcurrent protection level as follows:

Minimum Continuous Input Supply Current	LPI-10 Network Output Current Limit
0.7A	0.5A
1.25A	1.0A
1.8A	1.5A

### Link Power System Block Diagram



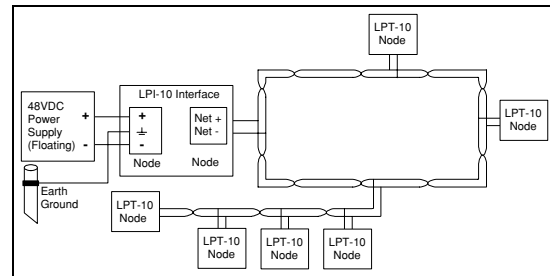
The LPI-10 module can be mounted in one of three ways: DIN rail, panel, or bulkhead. When used with an Altech RS-SP1 DIN rail mounting track, the LPI-10 module can be mounted to 32mm or 35mm DIN rails. DIN rail mounting provides a neat, professional appearance and is especially desirable when other DIN rail-mounted devices will be used in the same enclosure.

Four circuit board mounting holes are provided for mounting the LPI-10 module on an enclosure wall or baseplate panel (Hoffman JIC and NEMA panels or equal), or on another printed circuit board.

A design package (Echelon model number 59010) is available for the LPI-10 module for customers who want to integrate the LPI-10 module circuitry into their power supply. The design package includes schematics, a parts list, and a no-fee license agreement.

The *LPI-10 User's Guide* includes a schematic for an inductor-based version of the LPI-10 module that customers can build themselves. This very low-cost, license-free LPI design is available free of charge from Echelon's literature department.

### LPI-10 Module Pin Connection



## Specifications

Function	Power supply interface
Input Power Supply Type	Floating with respect to earth ground
Input Power Supply Ripple	200mV <sub>pp</sub> max (1kHz < f < 200kHz), 150mV <sub>pp</sub> max (200kHz < f < 1MHz)
Input Power Supply Spike Noise	400mV <sub>pp</sub> max, 50MHz bandwidth
Input Power Supply Zero Load Operation	Required
Input Voltage	48-56VDC
Input Current (Continuous)	0-1.8A
Input Under-Voltage Lockout	34VDC
Input Voltage Indicator	LED
Output Voltage	41.0-42.4VDC
Output Voltage Limiter	42.4VDC
Output Voltage Indicator	LED
Output Current	0 to 1.5A
Output Current Limiting	Current level jumper selectable at 0.5A, 1A, or 1.5A
Output Start-up Time	6 seconds
EMI	Designed to comply with FCC Part 15 Level B and VDE 0871 Level B
ESD	Designed to comply with IEC801-2, Level 4
Radiated Electromagnetic Susceptibility	Designed to comply with IEC801-3, Level 2
Fast Transient Burst Immunity	Designed to comply with IEC801-4, Level 4
Surge Immunity	Designed to comply with IEC801-5, Level 3
Listings	UL 1950, CSA C22.2 No. 950, TÜV EN60950
Wiring Connectors	Weidmüller GS-type
Maximum Wire Gauge	12AWG (2.05 mm)
Operating Temperature	0 to +50°C
Non-operating Temperature	-40 to +85°C
Operating Humidity (non-condensing)	25-90% RH @ 50°C
Non-operating Humidity (non-condensing)	95% RH @ +70°C
Dimensions	12.7cm L x 3.78cm H x 7.24cm W (5.0" x 1.49" x 2.85")
Mounting	DIN rail (Altech RS-SP1), panel, or bulkhead
Packaging	Printed circuit board

## Ordering Information

Product	Echelon Model Number
LPI-10 Link Power Interface Module	56210-01
LONWORKS LPI-10 Link Power Interface Module User's Guide (shipped with product)	078-0104-01
LONWORKS LPT-10 Link Power Transceiver User's Guide (order separately — not shipped with product)	078-0105-01

### Notes:

\* Network length varies depending on wire type and input clock rate. See LONWORKS LPT-10 Link Power Transceiver User's Guide for detailed specifications.

\* Neuron Chips and LPI-10 modules were not designed for use in equipment or systems which involve danger to human health or safety or a risk of property damage and Echelon assumes no responsibility or liability for use of the Neuron Chips or LPI-10 modules in such applications.

Copyright © 2001-2002, Echelon Corporation. Echelon, LON, LONWORKS, LONMARK, LonBuilder, Nodebuilder, LonManager, Digital Home, LonTalk, Neuron, 3120, 3150, the LONMARK logo, and the Echelon logo are trademarks of Echelon Corporation registered in the United States and other countries. LNS, the LNS Powered Logo, LonPoint, SMX, LonResponse, LONews, LonSupport, LonMaker, iLON, Bringing the Internet to Life, Open Systems Alliance, and the Open Systems Alliance logo are trademarks of Echelon Corporation. Other trademarks belong to their respective corporations.

### Disclaimer

Neuron Chips, Free Topology Twisted Pair Transceiver Modules, and other OEM Products were not designed for use in equipment or systems which involve danger to human health or safety or a risk of property damage and Echelon assumes no responsibility or liability for use of the Neuron Chips or Free Topology Twisted Pair Transceiver Modules in such applications. ECHELON MAKES AND YOU RECEIVE NO WARRANTIES OR CONDITIONS, EXPRESS, IMPLIED, STATUTORY OR IN ANY COMMUNICATION WITH YOU, AND ECHELON SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

003-0326-01A