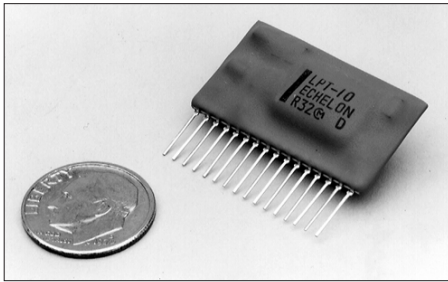


LPT-10 Link Power Twisted Pair Transceiver Model 50040-01



Description

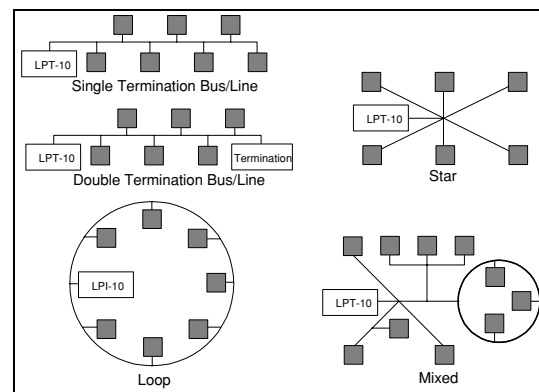
The LPT-10 Link Power Twisted Pair Transceiver provides a simple, cost-effective method of adding a network-powered LONWORKS® transceiver to any Neuron® Chip-based control system. The link power system sends power and data on a common twisted wire pair, and allows the user to install LPT-10 transceivers with virtually no topology restrictions. Power is supplied by a customer-furnished nominal 48VDC power supply, flows through the LPI-10 Link Power Interface Module where it drops to 42.4VDC, and then passes onto the twisted wire pair. The transceiver eliminates the need to use a local power supply at each node since node power is sent from a central power supply over the same twisted wire pair that handles network communications.

The LPT-10 transceiver consists of a Single In-Line Package (SIP) containing a 78kbps differential Manchester coded communication transceiver, a power supply that extracts power from the twisted pair network, and connections for the Neuron Chip Communications Port (CP) lines and twisted pair network.

The LPT-10 transceiver supports free topology wiring, freeing the system installer from the need to wire in a bus topology. Star, bus, and loop wiring are all supported by this architecture. Free topology wiring reduces the time and expense of system installation by allowing the wiring to be installed in the most expeditious manner. It also simplifies network expansion by alleviating the need for the installer to follow strict rules about stub lengths. Should it be necessary to add more nodes or wire runs in excess of 500 meters, link power segments can be interconnected by a physical layer repeater consisting of an LPT-10 transceiver, one or more FTT-10 or FTT-10A transceivers, and a clock oscillator.

- ▼ Complete LONWORKS free topology communication transceiver and power supply in a miniature SIP
- ▼ Receives both network data and power on a single twisted wire pair
- ▼ Polarity insensitive network wiring
- ▼ 78 kilobits per second network bit rate for distances up to 500 meters (free topology) and up to 2200 meters (doubly terminated bus topology) worst case
- ▼ Supports free topology star, bus, and loop wiring
- ▼ Compatible with FTT-10 and FTT-10A Free Topology Transceivers; the LPT-10, FTT-10, and FTT-10A transceivers can coexist on the same twisted pair cable.
- ▼ Supplies 5VDC @ 100mA maximum for node power
- ▼ LONMARK® certifiable

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



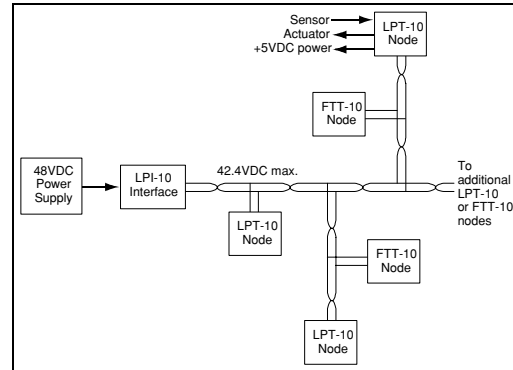
The LPT-10 transceiver includes an integral switching power supply that requires minimal external components to furnish +5VDC at up to 100mA. This current is typically used to power a Neuron Chip and application electronics, sensors, actuators, and displays. The high current capability of the LPT-10 transceiver can eliminate the need for local power supplies at each node, resulting in equipment and labor cost savings.

The LPT-10 transceiver includes a comprehensive power management system to reduce node power consumption. A transceiver sleep feature permits the node's Neuron Chip to turn off the LPT-10 transceiver to conserve power. Also, an adjustable sleep timer in the LPT-10 transceiver can periodically trigger a Neuron Chip input, awakening the chip to sample inputs/outputs and communicate with the network. At all other times the Neuron Chip can remain asleep, dramatically reducing node power consumption.

Using the LPT-10 transceiver can save thousands of hours of development time compared with designing a custom transceiver. The transceiver is designed to comply with both FCC and VDE EMI regulations, minimizing time consuming and expensive laboratory transceiver testing. As a UL, CSA, and TÜV Recognized component, the LPT-10 transceiver can be integrated into a product with minimal additional safety testing. The transceiver is small enough to fit into virtually any application, and is economically priced for OEM applications of any volume.

Echelon offers a comprehensive range of development tools, network interfaces, routers, and network services tools to simplify the task of designing products using the LPT-10 transceiver. Technical support for the transceiver is available through Echelon's LonSupport™ Premier technical assistance program.

LPT-10 System Block Diagram



Specifications

Function	Free topology link power twisted pair transceiver with integral +5VDC power convertor
Data Communications Type	Differential Manchester coding
Network Voltage	² 42.4VDC supplied by LPI-10 Link Power Interface Module. Nominal 48VDC input to LPI-10 Interface provided by customer's power supply.
Application Current Output at Node	100mA sustained peak @ 5VDC ± 10%
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 IEC 801-5, Level 3
Listings	UL 1950, CSA C22.2 No. 950, TÜV EN60950
Clock Rates	Selectable 10, 5, 2.5, or 1.25MHz input clock. Clock supplied by external crystal.
Transmission Speed	78 kilobits per second
Maximum LPT-10 Modules Per Channel	128 with LPT-10 output of 5VDC @ 25mA 64 with LPT-10 output of 5VDC @ 50mA 32 with LPT-10 output of 5VDC @ 100mA
Network Cabling	See User's Guide for compatible cables
Network Length in Free Topology ¹	² 1000m (3,280 feet) maximum total wire with one repeater ³ 500m (1,640 feet) maximum total wire with no repeaters ³ 500m (1,640 feet) maximum node-to-node distance
Network Length in Doubly Terminated Bus Topology ¹	² 4400m (14,430 feet) with one repeater ² 2200m (7,210 feet) with no repeaters
Network Bus Polarity	Polarity insensitive
Power-down Network Protection	High impedance when unpowered
Wake-Up Timer	One pulse once every 1 second to once every 100 seconds. Pulse rate set by external capacitor.
Connector	Thru-hole pins (1.8mm spacing)
Network Terminator	Termination in LPI-10 Link Power Interface Module
Operating Temperature	-40 to +85°C
Non-operating Temperature	-40 to +85°C
Operating Humidity (non-condensing)	25-90% RH @ 70°C
Non-operating Humidity (non-condensing)	95% RH @ +70°C
Dimensions	31.5mm L x 19.8mm H x 8.0mm W (1.24" x 0.78" x 0.32")
Packaging	Single In-line Package, phenolic dipped

Ordering Information

Product	Echelon Model Number
LPT-10 Link Powered Twisted Pair Transceiver	50040-01
<i>LONWORKS LPT-10 Link Power Transceiver User's Guide</i> (order separately — not shipped with product)	078-0105-01
<i>LONWORKS LPI-10 Link Power Interface Module User's Guide</i> (order separately — not shipped with product)	078-0104-01

Notes:

1. Network length varies depending on wire type and input clock rate. See *LONWORKS LPT-10 Link Power Transceiver User's Guide* for detailed specifications.
2. For Level 4 wire specifications, see *Junction Box and Wiring Guidelines for Twisted Pair LONWORKS Networks, 005-0023-01 Rev. D or later*.

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, i.LON, 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.

003-0323-01A



www.echelon.com