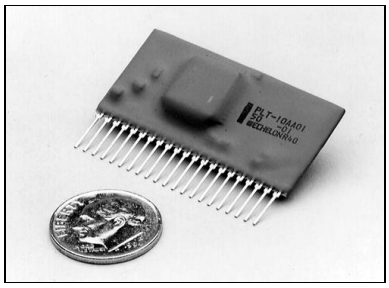
PLT-10A POWER LINE TRANSCEIVER
MODEL 50080-02



FEATURES

- Direct sequence spread spectrum 100kHz-450kHz power line transceiver for LONWORKS® control networks
- 10 kilobits per second network bit rate — ideal for transportation and industrial applications
- Miniature Single In-line Package (SIP)
- Uses OEM's own power supply and coupling circuit for custom applications
- Packet detect output to drive a status indicator LED
- –40 to +85°C operating temperature range
- UL, CSA, VDE Recognized. Complies with FCC regulations for power line carrier transmitters
- LONMARK™ certifiable

DESCRIPTION

The PLT-10A Power Line Transceiver provides a simple, cost-effective method of adding LONWORKS power line technology to any transportation or industrial control system. Network data are broadcast through the power mains, eliminating the need for dedicated wiring and greatly reducing installation costs. The PLT-10A transceiver is designed to be used with an OEM's own power supply, coupling circuit, crystal, and Neuron® Chip.

Intermittent noise sources, impedance changes, and attenuation conspire to make the power line a hostile signal path. To make the PLT-10A transceiver operate reliably, new signal processing and error correction algorithms were developed to permit operation in the presence of motor noise, electronic ballasts, dimmers, and other typical sources of interference on the power line. These innovations include:

- Low-overhead error correction technique enables the system to receive corrupted packets while maintaining a high throughput; this technique requires only six percent overhead for error correction;
- Automatic sensitivity adjustment algorithm dynamically changes the receiver sensitivity based on noise levels;
- Oversampling correlation filter and adaptive data recovery algorithm synchronize instantaneously to incoming packets;
- Tri-state power amplifier/filter combination provides a powerful output signal with a minimum number of components, and with minimal current consumption.

The PLT-10A transceiver uses an external coupling circuit and can communicate over virtually any AC or DC power mains — even unpowered twisted pair. Typical coupling circuits are shown later in the User's Guide.

The PLT-10A transceiver is a miniature Single In-Line Package (SIP) containing Echelon's spread spectrum power line integrated circuit, receive front end, and transmitter amplifier and filter. The PLT-10A transceiver can be mounted on or inside an OEM product, directly adjacent to the Neuron Chip with which it is used. The transceiver must be connected to an external crystal, typically 10MHz in North America and other values internationally. When operated at 10MHz the CKOUT pin can supply either a 1.25, 2.5, 5, or 10MHz clock signal for the Neuron Chip, eliminating the need for a separate Neuron Chip crystal.

When operated at 10MHz, the PLT-10A transceiver communicates at a raw bit rate of 10kbps, and a net bit rate of 9.4kbps after accounting for error correction overhead. The transceiver has a maximum throughput of 55-60 packets per second.

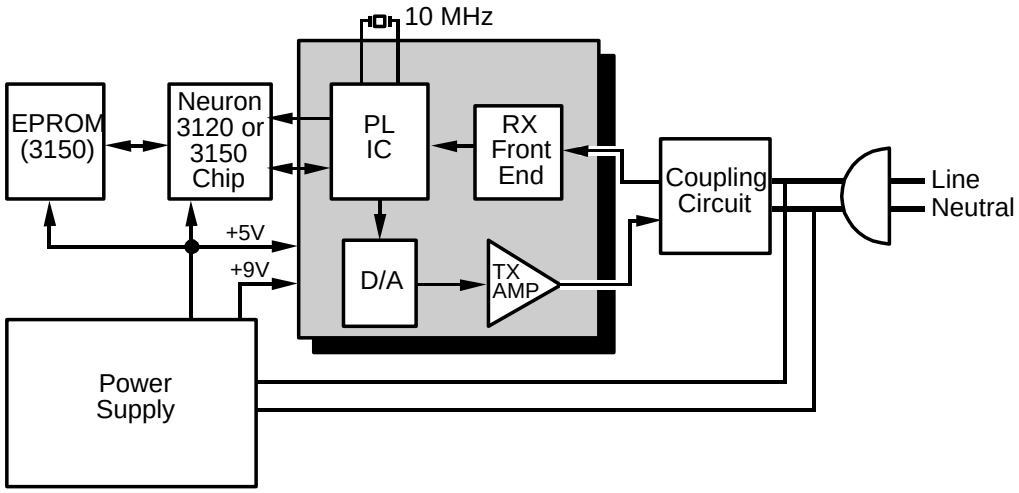
The transceiver requires +9VDC @ 275mA and +5VDC @ 35mA maximum while transmitting. If a battery-backed power supply is used, the transceiver will continue signaling even during a power failure on the power mains.

Using the PLT-10A transceiver can save years of development time compared with designing a custom transceiver. The transceiver is FCC compliant, and UL, CSA, and VDE recognized, minimizing time consuming and expensive

laboratory transceiver testing. The transceiver also meets LONMARK interoperability guidelines, 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 and commissioning products using the PLT-10A transceiver. Technical support for the transceiver is available through Echelon's LonSupport™ Premier technical assistance program.

PLT-10A Power Line Node Block Diagram (PLT-10A Transceiver shown in shaded area)



SPECIFICATIONS

Microprocessor	Requires external Neuron 3120® or 3150® Chip
FCC Compliance	Compliant with FCC power line carrier requirements for conducted emissions
Listings	UL 1950, CSA C22.2 No. 950, VDE EN60950
Bit Rate	10kbps raw bit rate, 9.4kbps net bit rate, at 10MHz
Transmission Technique	Direct sequence spread spectrum, 31 chips per bit
Frequency Band	100 kHz to 450 kHz (at 10MHz clock input)
Collision Resolution	Yes
Input Voltage	+9VDC +15% -0% @ 275mA +5VDC ±5% @ 35mA
Connector Pins	0.27mm (0.011") x 0.5mm (0.020") on 1.8mm (0.071") centers
Operating Temperature	-40 to +85°C
Non-operating Temperature	-40 to +85°C
Operating Humidity (non-condensing)	25-90% RH @ 70°C, non-condensing
Non-operating Humidity (non-condensing)	95% RH @ 70°C, non-condensing
Dimensions	41mm L x 22mm H x 10mm W (1.6" x 0.85" x 0.4")
Enclosure	Phenolic coated single in-line package

ORDERING INFORMATION

Product & Echelon Model Number

PLT-10A Power Line Transceiver	50080-02
LONWORKS PLT-10A Power Line Transceiver User's Guide (order separately — not shipped with product)	078-0142-01

1. Refer to the *PLT-10A Power Line Transceiver User's Guide* for transceiver and coupling circuit design information.
2. Refer to the *Neuron Chip Data Book* from Motorola or Toshiba for Neuron Chip specifications and design information.

* Neuron Chips and PLT-10A transceivers 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 PLT-10A transceivers in such applications.

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