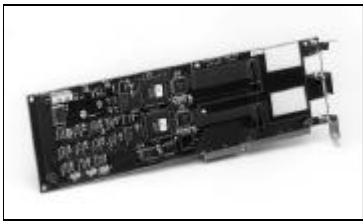


# PCLTA PC LONTALK ADAPTER MODEL 73100



## FEATURES

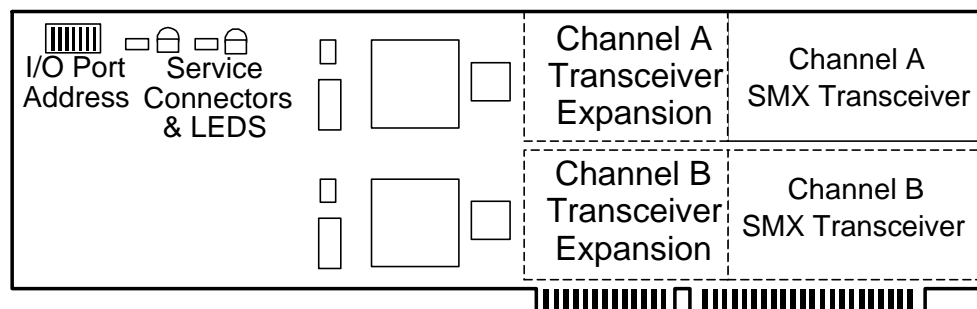
- ISA-bus card
- SMX transceiver connector for each channel
- Built-in transceiver parameters for standard transceiver types
- Up to 480 packets per second per channel maximizes network throughput for centralized monitoring and control applications
- Dual channel version doubles packet throughput for sending or receiving up to 960 packets per second
- 32Kbyte RAM per channel
- A standard LONWORKS network driver for DOS, with a Windows 3.1x interface, is available. A windows NT driver is also available.
- Application-independent design can be used with any host application
- Host can have up to 4096 network variables each consisting of an unlimited number of network variables (no limits on the number of network variables that can be written or polled)
- 625kHz to 10MHz input clock
- Host controlled interrupt selection from 6 interrupt request (IRQ) lines allows the network driver to control the interrupts; no jumpers to change on the PCLTA
- Service pin connector supports external service buttons and LEDs for PC-based LONWORKS nodes

## DESCRIPTION

The PCLTA PC LonTalk® Adapter provides an ISA-bus PC with a high-performance interface to a LONWORKS® network. The PCLTA can also be used to develop high performance gateways to other networks and systems.

The PCLTA uses LONWORKS SMX™ transceivers to provide a flexible solution for interfacing to any LONWORKS communications media.

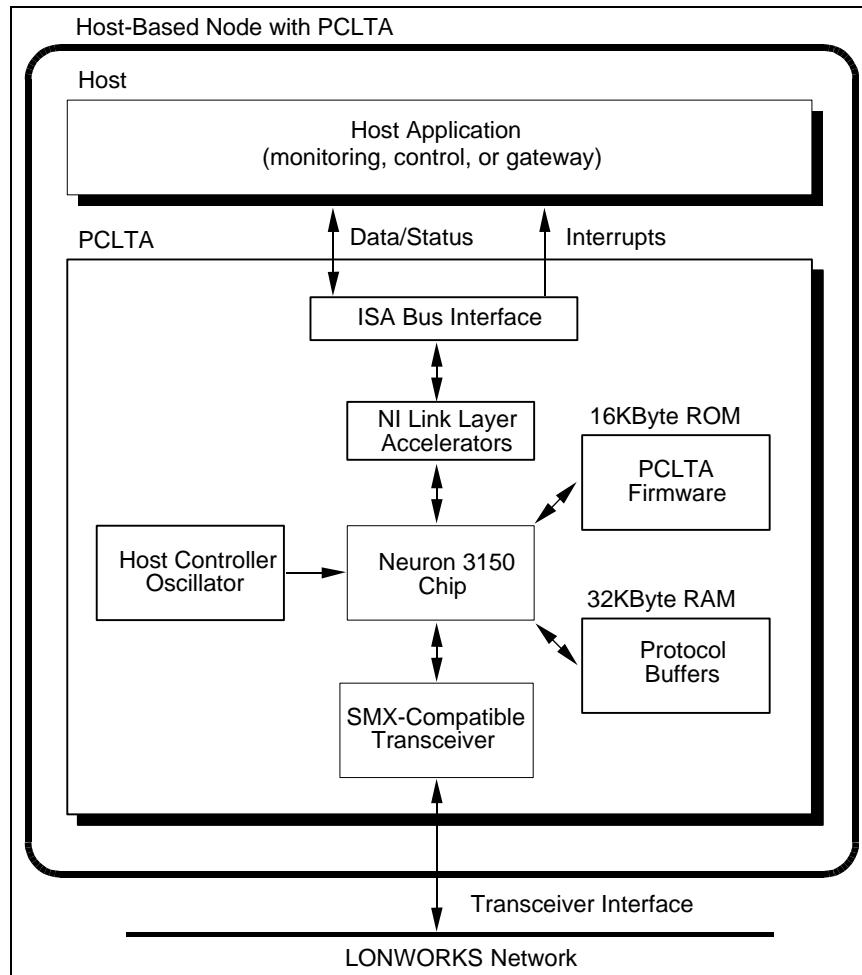
The following figure illustrates the functional layout of the dual-channel PCLTA.



Each channel includes an SMX transceiver connector so that the PCLTA can be used with a wide variety of SMX transceivers. The SMX standard defines two form factors: standard and extended. Standard length SMX transceivers include free topology and twisted pair devices. Extended length transceivers require more board area and include power line transceivers, which require power supply voltage converters. The PCLTA accommodates both standard length and extended SMX transceivers.

The PCLTA comes preconfigured with many common LONWORKS transceiver parameters. Five transceiver identification (XID) pins on the PCLTA are set by the transceiver to select the appropriate transceiver type for the PCLTA. The transceiver ID inputs simplify installation by automatically configuring the PCLTA for most transceivers. A special transceiver ID is reserved for programming any custom type.

The following block diagram shows a node based on the PCLTA.



The PCLTA includes an input clock generator for each channel that can be controlled by the host application. A 10MHz input clock setting is used with most transceivers. This provides maximum throughput and supports direct-mode transceivers with network bit rates of 1.25Mbps to 10kbps, as well as any special purpose mode transceiver such as the PLM-10, PLM-21, or PLM-30 transceivers. Input clock settings of 625kHz, 1.25MHz, 2.5MHz, and 5MHz are used with slower direct-mode transceivers operating at network bit rates of 5kbps down to 610bps.

The PCLTA uses hardware-assisted micro-processor interface firmware that accelerates the throughput between the PC and the Neuron Chip on each channel of the PCLTA. This minimizes the overhead of the network interface link layer and provides improved performance over any other LONWORKS network interface.

Each channel of the PCLTA has 32KBytes of RAM used primarily for application and network buffers. This large buffer space makes the PCLTA suitable for bursty network traffic that would overload network interfaces with smaller buffer memory.

## PROTOCOL PROCESSING

PC applications that use a PCLTA split LonTalk protocol processing between the host PC and the PCLTA. Each channel of the PCLTA handles layers 1 through 5 of the LonTalk protocol. This significantly reduces overhead in the host PC since the PC application does not have to deal with lower layer network services such as media access control, collision avoidance, acknowledgments, retries, duplicate message detection, message validation, authentication, and priority processing. The host PC is left to run the application program and handle the layer 6 and 7 protocol services, i.e., network variable processing and explicit message processing. Using these services, the host PC can easily send and receive network variable updates and explicit messages.

Separating the upper two layers of the LonTalk protocol from the lower five layers has the added benefit of making a PCLTA independent of its host application. The host application including its network variables can be changed at any time without modifying the PCLTA. This lowers development and maintenance costs since a PCLTA does not have to be tailored to an application.

Nodes based on the PCLTA can have up to 4096 network variables, each consisting of potentially over 32,000 network variables on other nodes. This limit is higher than the Neuron Chip-hosted node limit of 62 bound network variables because the network variable configuration is managed by the host PC instead of the Neuron Chip inside the PCLTA. The use of bound network variables reduces network loading and increases system capacity by allowing values to be

updated over the network only when necessary and eliminating the need for constant polling. As with any node, there is no limitation on the number of network variables that can be explicitly written or polled.

## USAGE

The PCLTA does not have the network services interface (NSI) functionality required for use with the NSS for Windows network services server, preventing LNS-based network management applications from using the PCLTA. Thus, the primary use of a PCLTA in a network installed with a tool based on the LNS Developer's Kit for Windows is to create a microprocessor-hosted node with up to 4096 network variables (instead of the 64 network variables allowed a Neuron Chip-hosted node) with the advantage of a PC's processing power. However, in the event that a PC already has an NSI (such as the PCNSI or PCLTA-10) and an open NSS for Windows database, the PCLTA may be used with the LCA Data Server for high-performance monitoring applications requiring more than one network adapter card in the PC. The PCLTA can only be used as the second network adapter, after the NSI.

The PCLTA can be used with legacy applications such as the LonManager LonMaker installation tool, the LonManager DDE Server, and applications based on the LonManger API for DOS or the LonManager API for Windows.

## PCLTA SPECIFICATIONS

Throughput per channel		
Unacknowledged	1-byte data	480 packets/sec (3846bps)
	8-byte data	476 packets/sec (30,476bps)
	32-byte data	400 packets/sec (102,400bps)
	228-byte data	153 packets/sec (279,755bps)
Acknowledged	1-byte data	103 packets/sec (821bps)
	8-byte data	100 packets/sec (6400bps)
	32-byte data	92 packets/sec (23,486bps)
	228-byte data	55 packets/sec (101,053bps)

*Note: Pentium/60; TPM/XF-1250 transceiver, protocol overhead of 9 bytes per message.*

Network Interface Commands	Send Message Local Network Management Command Reset Flush and Flush Cancel Online and Offline
Network Interface Responses	Incoming Message Incoming Response Completion Event Reset Flush Complete
Network Driver Commands	Open Network Interface Read and Write Buffer I/O Control Register Callback Function Close Network Interface
Processor	One Neuron 3150 Chip per channel
Processor Input Clock	10MHz, 5MHz, 2.5MHz, 1.25MHz, or 625kHz (software configurable)
Transceiver Connectors	SMX 10x2 header
Operating Input Voltage	+5VDC $\pm$ 5%
Operating Input Current	500 mA excluding SMX transceiver
PC Bus Interface	16-bit ISA slot, full length (2 adjacent slots are required for the PLM-10, 20, and 30 transceivers)
PC Bus I/O Port Addresses	8 contiguous I/O ports starting at 200 hex to 3F0 hex (selected by DIP switch); default 340 hex
PC Bus Interrupts	5, 9, 10, 11, 12, or 15 (software configurable)
Temperature	
Operating	0 to +70°C
Non-operating (12 hour)	-45 to +85°C
Humidity (non-condensing)	
Operating	5 to 95%RH @70°C
Non-operating (12 hour)	5 to 95%RH max @85°C
Dimensions	334mm x 108mm x 18mm (13.13" x 4.25" x 0.69")

EMI Compliance FCC Europe	Part 15 Class A; complies with Class B EN55022 Class B
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## DOCUMENTATION

The *LONWORKS PCLTA User's Guide* is included with the Connectivity Starter Kit and describes how to install the PCLTA and use it with LONWORKS network driver-compatible applications.

Document & Echelon Model Number

LONWORKS PC LonTalk Adapter User's Guide	078-0122-01A
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## ORDERING INFORMATION

The Connectivity Starter Kit should be ordered with the initial PCLTA.

Single Channel PCLTA OEM Board	73100-11
Dual Channel PCLTA OEM Board	73100-12

A LONWORKS SMX transceiver is required for each PCLTA channel; two SMX transceivers are required for the dual channel version. The following SMX transceivers are available from Echelon:

Product & Echelon Model Number

TPM/XF-78 Twisted Pair Modular Transceiver <sup>1</sup>	77010
TPM/XF-1250 Twisted Pair Modular Transceiver <sup>1</sup>	77030
FTM-10 Free Topology Modular Transceiver	77040
TPM/RS485 Twisted Pair Modular Transceiver	77050
PLM-10 Power Line Modular Transceiver	77090
PLM-21 Power Line Modular Transceiver	77160
PLM-30 A-Band Power Line Modular Transceiver	77180

<sup>1</sup> TPM/XF-78 and TPM/XF-1250 transceivers are not LONMARK approved.

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