

NodeBuilder® 3.1/FT-10 Development Tool, Classroom Edition Model 10020-31-34P



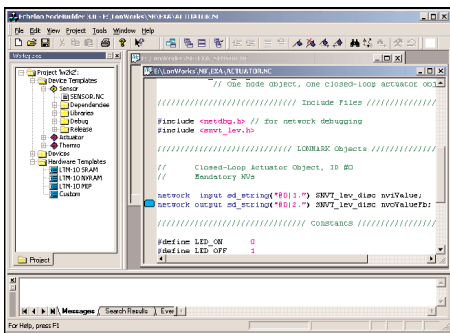
Description

The NodeBuilder Development Tool, Classroom Edition is a hardware and software platform used to develop applications for Neuron Chips and Echelon Smart Transceivers in a classroom environment. The NodeBuilder tool includes a complete suite of device development software for Microsoft Windows®, and a hardware platform used for running and testing lab examples.

The Classroom Edition includes the following components:

- ▼ NodeBuilder Software
- ▼ LonMaker Integration Tool Standard Edition
- ▼ LNS DDE Server Demo Edition
- ▼ LTM-10A Platform
- ▼ i.LON® 10 Ethernet Adapter

NodeBuilder Software



The NodeBuilder software provides the software tools required to develop a LONWORKS® device based on a Neuron Chip or Echelon Smart Transceiver. Device applications are written in Neuron C Version 2.1, a high-level programming language based on ANSI C with extensions to simplify network communication, hardware I/O, and event-driven processing.

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- ▼ LTM-10A Platform supports classroom lab application development and testing
 - ▼ Resource editor displays available functional profiles, network variable types, and configuration property types, and can be used to create new functional profiles and types.
 - ▼ Neuron® C Version 2.1 compiler supports many new language features for LONMARK® compliant applications
 - ▼ Code wizard automatically generates Neuron C code to implement a LONMARK standard device interface
 - ▼ Code editor provides easy editing of device application source code
 - ▼ Project manager builds applications and downloads them to the LTM-10A Platform or to any custom device
 - ▼ LonMaker™ 3.1 Integration Tool Standard Edition installs development and production devices into networks, simplifying network integration and testing
 - ▼ LNS® Device Plug-in Wizard generates Visual Basic code for a complete plug-in that makes a device much easier to install and configure
 - ▼ LNS development components support development of LNS device plug-ins
 - ▼ LNS DDE Server 2.1 Demo Edition demonstrates a high-performance I/O server for use with third-party Human-Machine Interface (HMI) applications
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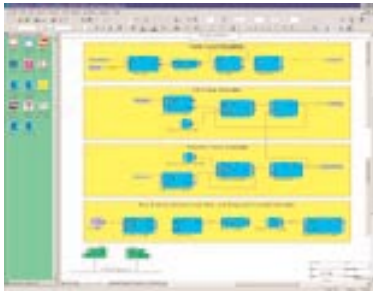
This easy-to-use integrated software for Windows includes the following tools:

- ▼ *NodeBuilder Resource Editor* – A tool for viewing standard types and functional profiles, and for defining custom types and functional profiles. Types are stored in LONMARK resource files that are used by the resource editor, code wizard, Neuron C compiler, LonMaker Integration Tool, and plug-in wizard. This ensures all tools have a consistent view of types and profiles, reducing development time. A new unsupported tool for creating Web-based resource file reports is included.
- ▼ *NodeBuilder Code Wizard* – A tool for defining a device's network interface using a simple drag and drop editor and then automatically generating Neuron C code that implements the device interface. The code wizard saves days of development for every new device and makes students productive in their first day of class.
- ▼ *NodeBuilder Project Manager* – A tool for editing source code for a project; for compiling, building, and downloading application images to the LTM-10A platform or to custom hardware; and for debugging applications running on the LTM-10A platform or custom hardware. When used for debugging, the project manager provides

a Neuron C source-level view of the application as it executes, reducing the time required to identify any problems in the source code.

- ▼ *LNS Device Plug-in Wizard* – A tool for automatically writing a Visual Basic application that can be used to configure a device developed with the NodeBuilder tool. The plug-in wizard saves days to weeks of development for every new device and can be used to teach the basics of the LNS network operating system. The NodeBuilder tool includes the LNS components required to develop, test, and produce LNS plug-ins. LNS is the standard network operating system for LONWORKS networks.

LonMaker Integration Tool Standard Edition

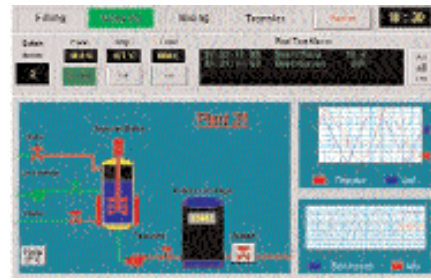


The LonMaker Integration Tool Standard Edition is a software application for designing, installing, and maintaining multi-vendor, open, interoperable LONWORKS networks. Based on the LNS network operating system, the LonMaker tool combines a powerful client-server architecture with an easy-to-use Microsoft Visio® 2002 user interface. The result is a tool that is sophisticated enough to be used to design, commission, operate, and maintain a LONWORKS network yet economical enough to be left behind as an operation and maintenance tool.

The LonMaker tool is an integral part of the NodeBuilder tool. The LonMaker tool can be used for every phase of network design, installation, commissioning, maintenance, and operation. It is used to install development devices into networks and test the new devices as part of a network. The LonMaker tool includes powerful network browsing features that make it easy to observe the network behavior of devices built with the NodeBuilder tool. The same LonMaker tool can be used to install, maintain, and operate devices in the field, simplifying the transition from development to production.

LNS DDE Server Demo Edition Software

The LNS DDE Server Demo Edition, is a fully functional version of the LNS DDE Server that stops functioning after every hour of use. This version may be used for classes, or it may be optionally upgraded to an unlimited version by purchasing an LNS DDE Server Application Key.



The LNS DDE Server is an I/O driver for human-machine interface (HMI), supervisory control and data acquisition (SCADA), operator interface, and visualization applications. The LNS DDE Server is not required by the NodeBuilder software, but it provides an easy and high-performance way to teach how to access LONWORKS networks and devices from applications that support a DDE, Fast DDE, or SuiteLink interface such as Wonderware® InTouch®, Intellution Fix, or National Instrument BridgeView and LabView.

LTM-10A Platform



The LTM-10A Platform is a complete LONWORKS device with downloadable flash memory and RAM that can be used for application and prototype I/O hardware testing.

The LTM-10A Platform includes an LTM-10A Flash Control Module that features a Neuron Chip, 64Kbyte flash memory, 32Kbyte static RAM, 10MHz crystal oscillator, and custom Neuron firmware. The custom firmware allocates the memory to the Neuron Chip 64Kbyte address space and automatically initializes the transceiver interface for standard transceivers.

The NodeBuilder tool can load application images into the RAM or flash memory of the LTM-10A module, and the NodeBuilder Project Manager can then be used to debug the applications running in the LTM-10A Platform.

The LTM-10A Platform also includes an SMX™ transceiver. The Standard Modular Transceiver (SMX) standard is an open, documented interface standard that OEMs can use with a variety of OEM products including the LTM-10A Platform and the PCLTA-20/SMX PC Interface Card.

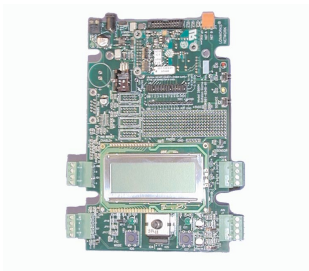
i.LON 10 Ethernet Adapter



The *i*.LON 10 Ethernet Adapter is a low-cost, high-performance interface that connects LONWORKS based everyday devices to the Internet, a LAN, or a WAN. Through the *i*.LON 10 adapter, appliances, meters, load controls, lights, security systems, pumps, and valves in a home, factory, or office can be connected to the Internet via a 10BaseT broadband connection. A local or remote service center running Echelon's LNS server can then configure, monitor and control the devices - from across the room or across the world.

The *i*.LON 10 can be used to allow a classroom PC to communicate over a LAN with the LTM-10A platform and other LONWORKS devices.

NodeBuilder Gizmo 4 I/O Board (Option)



The NodeBuilder Gizmo 4 I/O Board is a collection of I/O devices that can be used with the LTM-10A Platform for developing prototype devices and I/O circuits, developing special-purpose devices for testing, or running, the NodeBuilder examples.

The Gizmo 4 I/O Board is not included with the Classroom Edition, but with its rich set of I/O devices, is an ideal complement for supporting more complex labs

You can also plug a TP/FT-10 or TP/FT-10F Control Module into the Gizmo 4 to create a self-contained LONWORKS device. This requires the separate purchase of the TP/FT-10 or TP/FT-10F Control Module.

The Gizmo 4 includes the following I/O devices:

- ▼ 4-line x 20-character LCD display
- ▼ Two 10-bit resolution analog inputs with screw terminal connector
- ▼ Two 8-bit resolution analog outputs with screw terminal connector
- ▼ Two digital inputs with screw terminal connector and pushbutton inputs
- ▼ Two digital outputs with screw terminal connector and LED outputs
- ▼ Digital shaft encoder
- ▼ Piezoelectric transducer
- ▼ Real-time clock
- ▼ Temperature sensor

A Gizmo 4 I/O library is included with the NodeBuilder software and provides easy-to-use high-level functions for accessing the display, analog I/O, piezo transducer, real-time clock, and temperature sensor.

Software Specifications

PC requirements	Windows XP, Windows 2000, or Windows 98; Minimum hardware: Pentium 200; 128MB RAM; CD-ROM drive; Super VGA (800x600) or higher-resolution display with 256 colors; mouse or other Windows-compatible pointing device; 440MB available hard drive space; IP network interface required; Recommended configuration: Windows XP or Windows 2000, Pentium III 400, 256MB RAM, and 1024x768 256-color display minimum
Neuron C I/O Objects	Bit, byte, nibble input/output Bitshift input/output Dallas Touch input/output Dual slope input (for low-cost A/D) Edge divide input/output Edge divide input/output Edgelog input (new single timer/counter option) Frequency output Infrared input Infrared pattern output (new) FC input/output (enhanced; requires license) Level detect input Magcard bitstream input (new) Magcard track 1 and 2 input (for ISO 7811 input) Muxbus input/output (multiplexed address/data) Neurowire input/output (National Semiconductor Microwire and Motorola SPI compatible) Oneshot output, ontime input, period input, pulsewidth output Parallel input/output Pulsecount input/output

Quadrature input
SCI (UART) Serial input/output* (new)
SPI serial input/output* (new)
Serial input/output
Totalcount input
Touch input/output (enhanced)
Triac output
Triggeredcount output
Wiegand input

*For Smart Transceivers and Neuron Chips with hardware SCI and SPI support only.

Neuron C Network Communication Extensions	Functional Blocks
	Network Variables
	Configuration Properties
	Application and Foreign-Frame Messages

LTM-10A Platform Specifications

Function	Description
Processor	Neuron 3150 Chip
Processor Input Clock	10MHz
Processor Memory	64Kbyte flash memory and 32Kbyte RAM mapped to 64Kbyte Neuron Chip memory space in 3 memory configurations
Operating Input Voltage	
LTM-10A Platform	+9 to 12VDC unregulated or +5VDC \pm 5% regulated
Power Supply	100 to 120VAC or 200 to 240VAC; 50 or 60Hz (depending on power option)
LTM-10A Module Operating Input Current	+5V 160mA max
External I/O Power	+5VDC @ 100mA typical
ESD Tolerance	15kV max
Temperature	
Operating	0 to +55°C with enclosure 0 to +70°C in free air
Non-operating	-20 to +65°C
Dimensions	198mm x 145mm x 53mm
EMI Compliance	FCC Level A, En55022B

i.LON 10 Ethernet Adapter Specifications

Channel Type	TP/FT-10 free topology twisted pair
Network Connector	Screw terminals
Operating Input Voltage	9 VDC for use with Echelon 780x0 power supplies
Input Voltage Connector	2.1mm (inside) barrel connector
Operating Input Current	270mA
Controls	Service switch
Indicators	Power On/Wink Ethernet link Connect Service
Ethernet Port	10BaseT
Ethernet Connector Type	RJ-45
Temperature	
Operating	0 to +50°C
Non-operating	0 to +50°C
Humidity (non-condensing)	
Operating	25 to 90% RH @ 50°C
Non-operating	95% RH max @ 50°C
Dimensions	H: 1.11", W: 6.04", D: 3.13"
EMC	FCC Part 15 Class B, EN50065-1 Class B
Agency Listings	UL 60950, cUL C22.2 No. 60950-00, TÜV EN60950, CE, C-Tick.

Documentation (Option)

Printed documentation is not included with the Classroom Edition. All documentation is available on-line as Adobe Acrobat PDF files. The documentation provides an overview of the development of LONWORKS applications for the Neuron Chip and Echelon Smart Transceiver and of the development of LNS device plug-ins for configuring applications. Printed copies may be ordered separately. The following documents are the printed versions of the on-line documentation:

Document	Echelon Part Number
Gizmo 4 User's Guide	078-0191-01
LNS DDE Server User's Guide	078-0170-01
LNS Plug-in Programmer's Guide	078-0178-02
LTM-10A User's Guide	078-0132-01
LonMaker User's Guide	078-0168-02
NodeBuilder User's Guide	078-0141-01
Neuron C Programmer's Guide	078-0002-01
Neuron C Reference Guide	078-0140-01

Ordering Information

The NodeBuilder Development Tool is available with four power supply options. Support and training are not included, but are available separately. Contact your local Echelon representative or distributor for details.

A Gizmo 4 I/O Board is not included with the NodeBuilder Classroom Edition, but makes a great addition due to its rich set of I/O devices that can be used with the LTM-10A platform. Gizmo 4 Neuron C examples and a Gizmo 4 Neuron C library are included with the NodeBuilder Classroom Edition.

Product	Echelon Model Number
NodeBuilder 3/FT-10 Development Tool, Classroom Edition	10020-31-34P
Gizmo 4 I/O Board	28004

Select P from the following power supply options.

1. U.S. power supply
2. European power supply
3. U.K. power supply
4. Japan power supply

An upgrade to the NodeBuilder 3.1 software is available for licensed owners of the NodeBuilder 3 Classroom Edition.

Product	Echelon Model Number
NodeBuilder 3.1 Upgrade	10030-31

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