Models 72101R-350, 72101R-358, 72102R-350, 72102R-358, 72103R-350, 72103R-358, 72110-350, and 72160

Description

Whether you're using LonWorks® networks, ModBus, M-Bus, or local I/O, the *i*.LON 100 e3 plus server offers exceptional features, solid construction, and great value, plus the flexibility to monitor equipment from anywhere. No matter which interface you choose—built-in Web pages, custom Web pages, Web services (SOAP/XML), all via Ethernet, analog modem, or external GSM/GPRS modem—the *i*.LON 100 e3 plus will reach you.

The *i*.LON 100 e3 plus offers streamlined monitoring and control of all your control networks and devices. You can access devices from a local network, a virtual private network, or the Internet—and user authentication makes sure only authorized users can access your network.

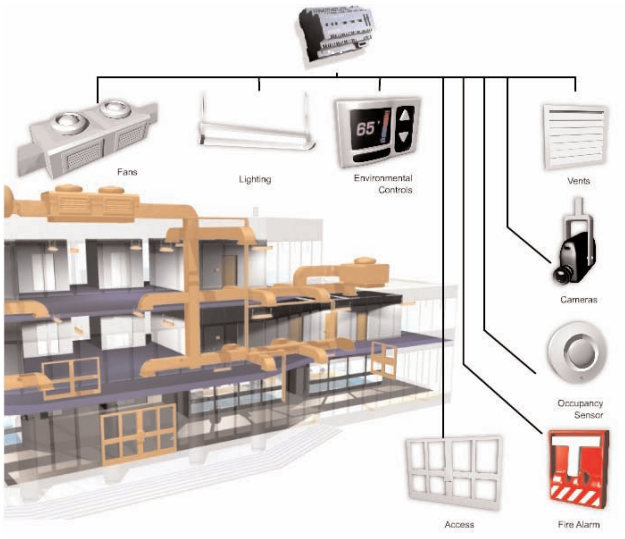
All models of the *i*.LON 100 e3 plus server are compliant with the European Directive 2002/95/EC on the restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment.

The *i*.LON 100 e3 plus can serve as a gateway for a variety of devices types, including LonWorks, ModBus, M-Bus, and digital I/O devices, and pulse meters. It provides universal connectivity for the devices attached to it, making their data available to corporate IP networks and the Internet, and providing local device monitoring and control via built-in scheduling, alarming, and data-logging applications. Appliances, meters, load controls, lights, security systems, pumps, valves—virtually any electrical device—can be connected remotely configured, monitored, and controlled from across the room, or across the globe.

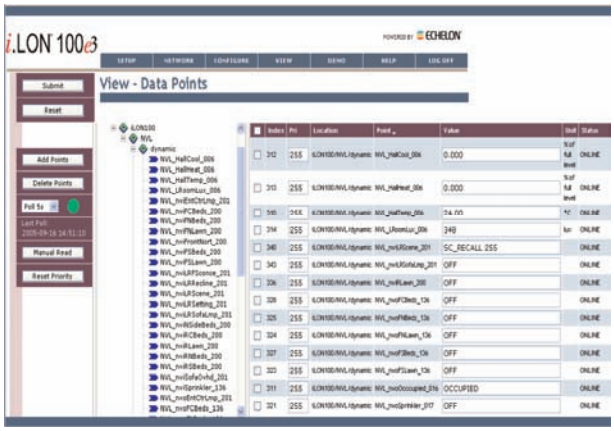
The *i*.LON 100 e3 plus includes a data server that provides a single data source for LonWorks data, Modbus data, M-Bus data, and legacy bus data. Each data point has a common set of parameters including name, type, value, priority, location, update rate, status, and time-stamp. The *i*.LON 100 e3 plus typically supports up to 800 data points, including 310 built-in data points. The actual number of data points that can be implemented on an *i*.LON 100 e3 plus server may be more or less

- Web server and gateway with SOAP/XML Web services interface allows easy remote monitoring and control, and supports integration with enterprise systems
- *i*.LON Vision Web authoring tool—the simplest way to create custom Web pages for the *i*.LON 100 server (requires separate purchase of Macromedia Contribute)
- Connects LonWorks® devices, Modbus devices, M-Bus devices, and legacy devices to the Internet, a LAN, or a WAN for commercial, industrial, and utility applications
- Scheduler for local control based on date, day, and time of day
- Astronomical clock for lighting applications
- Optional built-in IP-852 router for network expansion and for creating a high-speed backbone for large networks
- Web binding allows simplified interconnection between devices and applications using SOAP/XML
- Web connections can be used to span LonWorks domains, expand the network address limits of LonWorks devices, and to convert SNVTs, UNVTs, Modbus, and M-Bus types
- Alarm monitoring and notification with e-mail, data point, or network variable notification of alarm conditions
- Data logging with optional data log compression for monitoring system operation
- Compatible with NAT routers for operation behind firewalls, including firewall-compatible data log upload
- Remote network interface (RNI) provides seamless support for the LonMaker Integration Tool and other tools and LNS® or OpenLDV™ based applications
- Supports the LonScanner™ Protocol Analyzer to ensure fast, successful LonWorks network deployment
- 2 opto-isolated digital inputs
- 2 high-voltage, high-current relay outputs
- 2 S0 inputs for electric, gas, or water impulse meters
- Auto-polarity 10/100BaseT Ethernet interface
- Optional integral 56K V.90 analog modem for dial-up support (FT versions only)
- Supports connection to an external GSM or GPRS modem
- Supports LonWorks TP/FT-10 and PL-20 channels

depending on the complexity of the functional blocks that are used on the server. An integrated data point browser provides a fast and easy way to see the status of data points and parameters like online/offline, and to discover parameterization errors or incorrectly scaled data. A preset value can be assigned to every data point, allowing technicians to work with intuitive names instead of cryptic numerical values.



Data points on different *i*.LON 100 servers can be connected to bridge multiple networks and busses. In addition, data points on an *i*.LON 100 server can be connected to data points in enterprise and other service-center applications. These connections can be used to bridge between inputs and outputs on any LONWORKS, Modbus, M-Bus , or local analog/digital/ S0 devices, or between these devices and service-center applications via the Ethernet connection or dial-up PPP connection.



i.LON Vision

The *i*.LON 100 e3 plus server includes *i*.LON Vision—an exciting new Web authoring tool that works with Macromedia Contribute (licensed separately). With *i*.LON Vision and Contribute, network integrators can quickly and easily create custom Web pages for the *i*.LON 100 e3 plus. *i*.LON Vision adds new *i*.LON objects to Contribute that integrators simply drag-and-drop to custom Web pages to view and control any data points in the *i*.LON 100 server. No custom HTML, JavaScript, or SOAP calls are required. Using *i*.LON Vision, integrators can also quickly incorporate custom navigation trees and menus in custom Web pages. Integrators can also incorporate graphics from the *i*.LON Vision graphics library to quickly generate visually appealing and easy-to-use Web pages.

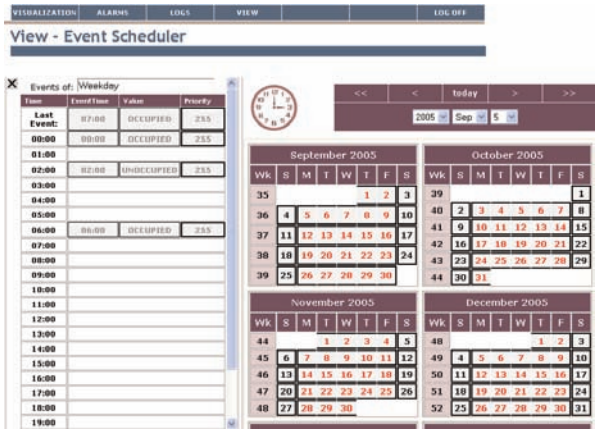
Custom Web pages created with *i*.LON Vision can be edited using any Web authoring tool such as Macromedia Dreamweaver—and they can still be modified in *i*.LON Vision after they have been updated by other tools. This flexibility lets integrators use the best tool for the job—Contribute for fast and easy Web authoring, and other tools like Dreamweaver for more complex operations.

A trial version of Contribute is included on the *i*.LON 100 e3 plus CD so that new users can try *i*.LON Vision before purchasing Contribute. The *i*.LON 100 e3 plus server is also compatible with a number of third party *i*.LON 100 Web page authoring tools including i.Vue100 from iVue Systems (USA) and DotVision Studio *i*.LON 100 Edition from DotVision (France).

Applications

The *i*.LON 100 e3 plus software applications provide a rich set of functions that enable it to work as a self-contained controller without the need for a PC or host processor. Standard applications include scheduling, data logging, alarm detection & dispatch, meter reading, analog functions, and type translation. The scheduling application permits events and exceptions to be initiated based on time and date schedules configured by the user. An astronomical position calculator permits scheduling to be done based on the calculated position of the sun. The data logging application collects network activity for use by trending, reporting, and analysis applications. New DIME support enables data log upload to a Web services application to occur through a firewall. The alarming application provides a means to identify, annunciate, and log alarm conditions. The meter reading application supervises impulse meters and provides suitable conversion values for energy, gas, and water metering. The analog function block provides statistical pre-processing of data points to calculate and store mean values, minimum and maximum values, and comparison values. The type translation application can be used to convert between data types, simplifying integration of disparate devices.

These applications may be used either separately or in combination with one another. The *i*.LON 100 e3 plus applications are accessible from built-in Web pages, via a SOAP/XML interface, or via a standard LNS plug-in. The SOAP/XML interface to these applications allows custom integration of data into back-end databases and reporting applications using Web services. The LNS plug-in is used to configure the operation of the internal applications, and customize the presentation of data



and alarms that are viewed with the integrated Web interface, or accessed via the SOAP/XML interface. Used in conjunction with the built-in security features, the applications allow day-to-day operational activities such as scheduling events, reading data logs, monitoring events, and acknowledging alarms to be supervised from anywhere in the world using a Web browser. Data from large *i*.LON 100 e3 plus deployments can be aggregated using Echelon's Panoramix® Platform.

IP-852 Routing Option

A new IP-852 routing option is available with the e3 plus release that enables integrators to use any IP network as a backbone for a large LONWORKS network. An LNS Turbo Edition server and up to 255 *i*.LON 100 servers with IP-852 routing, *i*.LON 600 servers, and LNS Turbo Edition clients may all be attached to the same IP network, and the LONWORKS networks attached to each of the *i*.LON servers become part of a single flat peer-to-peer network. The servers and clients attached to the IP network communicate using the IP-852 protocol. This protocol supports thousands of ANSI/CEA-709.1 packets per second over the IP channel, providing the highest performance for LNS monitoring and control applications on the IP backbone. The *i*.LON 100 e3 plus server can be ordered with IP-852 routing, or the IP-852 routing option can be purchased and activated at any time for *i*.LON 100 e3 plus servers without IP-852 routing.

Network Interfaces

Available with either a PL-20 C-band power line or TP/FT-10 free topology twisted pair LONWORKS interface, the *i*.LON 100 features a standard 10/100BaseT Ethernet interface and an optional internal 56K V.90 modem for dial-in/out applications. The power line interface allows signaling to everyday devices through the power mains, and has the advantage of requiring no new wires. The free topology twisted pair interface uses inexpensive twisted pair wiring to interconnect devices without regard to wiring topology: the installer is free to route the wire in the most expeditious manner. The 10/100BaseT interface provides connection to a local Ethernet network, while the internal modem option permits signals over telephone lines without the need for an external modem. An external serial GSM/GPRS modem can also be attached to provide a network connection in locations with no phone or Ethernet connection.

The i.LON 100 e3 plus includes an LNS Remote Network Interface (RNI) that can be used to create a local or remote network connection for LNS or OpenLDV applications including the LonMaker Integration Tool. A single LNS application can simultaneously manage, monitor, and control many remote LONWORKS networks by installing a *i*.LON 100 e3 plus server in each remote network. The combination of RNI, Web, and SOAP servers enables the creation of Web browser-based interfaces as well as connectivity to enterprise systems such as manufacturing, accounting, and SCADA applications.

A standard WSDL file suitable for .NET and Java Web services integration is included in the *i*.LON 100 e3 plus server. This Web service interface allows programmers to seamlessly access the internal workings of the *i*.LON 100 server. The result—faster access to network data.

The *i*.LON 100 e3 plus also includes a LonScanner RNI that can be used with the LonScanner Protocol Analyzer (licensed separately) to capture, analyze, characterize, and display network packets in a simple format so you can pinpoint network or device faults and identify potential solutions. The LonScanner tool can monitor the networks attached to multiple *i*.LON 100 servers simultaneously—improving remote site monitoring and reducing the need for costly site visits to diagnose problems.

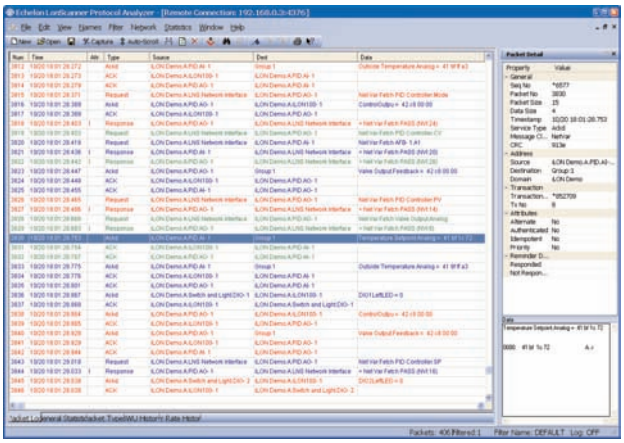
Hardware I/O

The *i*.LON 100 e3 plus includes two optically-isolated digital inputs; two high-voltage, high-current SPST relay outputs; and two S0 impulse meter inputs for supervising electric, gas, and water impulse meters. Each input or output may be configured using built-in Web pages or the LNS plug-in. For example, the pulse meter inputs can be easily configured to convert a predefined number of pulses into a kilowatt hour (kWh) value and then store the kWh reading in one of the *i*.LON data logs. When convenient, the day's energy consumption log can be uploaded as an attachment to a SOAP/XML interface or as an optionally compressed CSV file through FTP, dispatched as a daily e-mail message, or simply displayed on an *i*.LON 100 Web page for viewing in a Web browser.

Likewise, the *i*.LON 100's outputs can be triggered by network events. In addition to sending an e-mail or network variable update when an alarm condition is detected, the *i*.LON 100's built-in alarm annunciator can trigger one of the internal high-voltage, high-current relays. For example, detection of a burst pipe or a conveyor failure might trigger an electrical system shutdown.

Standards Based Protocols

The *i*.LON 100 is compatible with the most popular IP local and wide area networking protocols including TCP, PPP, CHAP, PAP, ICMP, NAT, SMTP, DHCP, SNTP, FTP, DNS, MD5, and HTTP. HTML, XML, SOAP, and DIME application protocols are also supported. Dynamic IP addresses are supported using the Dynamic DNS service from DynDNS. The *i*.LON 100 fully supports the ANSI/ CEA-709.1-B protocol as well as ANSI/ CEA-709.2 or 709.3 physical layers. When the IP-852 routing option is enabled, the *i*.LON 100 also supports the ANSI/CEA-852 control network IP tunneling protocol. Application modules are exposed using standard functional blocks that can be configured with built-in Web pages or with an LNS plug-in that can be integrated with any LNS based integration tool including the LonMaker Integration Tool. Regardless of whether one is connecting to a LAN, WAN, or ANSI/CEA-709.1 protocol based system, the *i*.LON 100 server offers interoperable networking based on open standards.



Software Upgrades

A low-cost software upgrade is available that can be used to upgrade a Release 1 or e2 *i*.LON 100 server to an *i*.LON 100 e3 server.

Configuration Plug-in and Configuration Server Software Specifications

Minimum PC Requirements	Pentium II @ 600MHz, 128MB RAM, CD-ROM drive, 70MB of free disk space
Operating System	Microsoft Windows XP, Windows 2000, or Windows Server 2003

Hardware Specifications

Processor	MIPS32™
Channel Type	72101-3xx and 72102-3xx TP/FT-10 free topology twisted pair
	72103-3xx and 72104-3xx PL-20N or PL-20C power line,
	L-N coupling
LonWorks Network Connector	Screw terminals
Operating Input Voltage	100 – 240VAC, 50/60 Hz
Power Consumption	<15 Watts
Controls	Service button, Reset button
Indicators	Power On/Wink
	Ethernet link, Ethernet activity, 10/100 Mbps
	LonWorks Service, BIU (PL only), PKD (PL only), Tx, Rx
	(2) Digital Inputs
	(2) Relay Outputs
	(2) Metering Inputs
	Remote Network Interface connection status
Ethernet Port	10/100BaseT, auto-selecting, auto polarity
Ethernet Connector	RJ-45, 8 conductor
Serial Ports	(1) Isolated RS-485 port
	(1) EIA-232 port
Serial Connectors	Screw terminals
Modem	Optional V.90 internal analog modem
Modem Connector	RJ-11, 6 conductor
Console Port	EIA-232
Console Connector	DB-9
Digital Inputs	2 optically-isolated dry contact inputs, 30V AC/DC
Digital Input Connector	Screw terminals

Relay Outputs	2 SPST relays rated at 240VAC @ 10A or 24VDC @ 10A
Relay Output Connector	Screw terminals
Impulse Meter Inputs	DIN 43 864 (Open terminal voltage ≤12VDC Max; Max current ≤ 27mA)
Impulse Meter Input Connector	Screw terminals
Temperature	
Operating	FT Models: 0 to +50°C PL Models: -40 to +60°C
Non-operating	FT Models: -40 to +85°C PL Models: -40 to +85°C
Humidity (non-condensing)	
Operating	FT Models: 10 to 90% RH @ 50°C PL Models: 10 to 90% RH @ 50°C
Non-operating	FT Models: 5 to 90% RH max @ 50°C PL Models: 10 to 90% RH @ 60°C
Dimensions	H: 3.51", W: 5.47", D: 2.60"
	(8TE DIN, H: 8.9 cm, W: 13.8 cm, D: 6.6 cm)
EMC	FCC Part 15 Class B, EN55022 Class B, EN55024, CISPR 22 Class B, VCCI Class B
Agency Listings	UL 60950, cUL C22.2 No. 60950-00, TÜV EN60950, CE, C-Tick
Mounting	DIN, Enclosure 8TE

Documentation

The following documentation is included in PDF format on the *i*.LON 100 e3 plus CD, and may be downloaded from Echelon's Web site.

Document	Echelon Part Number
i.LON 100 e3 User's Guide	078-0310-01
i.LON 100 e3 Hardware Guide	078-0311-01
i.LON 100 e3 Programmer's Reference	078-0250-01
IP-852 Channel User's Guide	078-0312-01

Ordering Information

Product	Echelon Model Number
i.LON 100 e3 plus FT Internet Server	72101R-350
i.LON 100 e3 plus FT Internet Server with IP-852 Routing	72101R-358
i.LON 100 e3 plus FT Internet Server with Modem	72102R-350
i.LON 100 e3 plus FT Internet Server with Modem and IP-852 Routing	72102R-358
i.LON 100 e3 plus PL Internet Server	72103R-350
i.LON 100 e3 plus PL Internet Server with IP-852 Routing	72103R-358
i.LON 100 e3 plus Software Upgrade	72110-350
i.LON 100 IP-852 Router Activation Key	72160