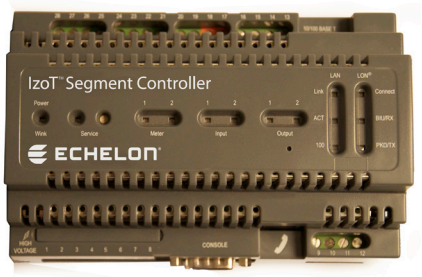
LUMEWAVE By ECHELON

Lighting Segment Controller



Lighting Segment Controller

Echelon's Lighting Segment Controller is a versatile product for the outdoor lighting controls industry. It seamlessly discovers, commissions, manages, and controls lights on both wireless and power line networks. All the communications — wide-area networks (GPRS, GSM and IP networks) and light controls (ISO 14908 and IEEE 802.15.4) — are based on open industry standards. And it connects control devices to IP-based applications such as enterprise energy management, demand response programs, street light management systems, and high-value remote asset management applications.

Echelon's technology not only allows you to access, control, and monitor electronic devices, but also lets you use data intelligently to save energy, improve operations, and lower maintenance costs. Easy to deploy and manage, and capable of both local and remote control, the Lighting Segment Controller offers unparalleled flexibility. Use it as a standalone server, or integrate it with the control system of your choice. With built-in drivers for industry-standard protocols such as LONWORKS® technology, Web services (SOAP/XML, Modbus, M-Bus, digital I/O, and pulse count input), and custom driver support for everything else, the Lighting Segment Controller offers unprecedented connectivity at no extra cost.

Street Light System Support

The Lighting Segment Controller creates peer-to-peer connections between devices for autonomous functions. It integrates many different kinds of networked sensors (traffic, weather, noise, pollution, and many more) either on wireless or power line networks for Smart City applications. It can manage mesh networks on wireless channels and provides dynamic and automatic repeating on power line channels. As a result, system integrators and end customers have tremendous flexibility to select devices and applications that best meet their current and future needs.

Power line (PL) editions of the product have street light segment control built-in, with support for mesh repeating for street light controllers using both power line and RF segments. RF segments are created with CPD 4000 RF OLC, which supports standards-based 6LoWPAN, IPv6 stack, and LonTalk services with meshing capability.

User Interfaces

- Built-in Web pages simplify setup, network installation, commissioning, scheduling, alarming, data logging, and network integration.
- The included i.LON Vision 2.0 Web Authoring Tool lets you create custom Web pages quickly and easily — or you can create custom Web pages by editing simple page mark-up with any standard Web authoring tool.
- Serial and Telnet console interfaces are available for advanced configuration.

Programmatic Interfaces

- Web services using SOAP/XML
- Standard WSDL file suitable for .NET and Java Web services integration
- LNS® Remote Network Interface (RNI) for local or remote connection to LNS or OpenLDV™ applications, including the LonMaker® Integration Tool, supporting the following limits:
  - 32,768 address table entries
  - 255 outgoing transactions
  - 3,000 dynamic network variables
- HTTP and HTTPS interfaces for Web browser-based interfaces
- Lighting Segment Controller API for custom apps

Network and Device Interfaces

- IP via built-in 10/100BaseT Ethernet interface, optional internal 56K V.90 analog modem, or external GSM/GPRS or 3G modem
- PL-20 C-band power line ISO/IEC 14908-1 (LONWORKS) with built-in LONWORKS transceiver
- RF for wireless channel: 868 MHz or 915 MHz IEEE 802.15.4
- Modbus RTU with built-in RS-485 transceiver
- Modbus TCP (Modbus TCP/IP) with built-in Ethernet interface, optional internal analog modem, or external GSM/GPRS modem
- M-Bus with built-in RS-485 transceiver and optional M-Bus translator
- Custom drivers using built-in Ethernet, RS-232, and RS-485 interfaces

Built-in Lighting Segment Controller Apps

- Scheduling: time of day, day of week, date, and sunrise/sunset relative
- Alarming: data point health and value monitoring; flexible reporting
- Data logging with automatic transfers to historical data repositories
- Meter reading
- Network integration with customizable data type translation, analog functions, and case logic for converting, splitting, and merging structured data points
- Built-in Web pages for configuring and using all applications
- Unified data model for easy access to all your data regardless of manufacturer or communication protocol
- Up to 1,000 data points definable for use by built-in and custom applications
- Programmatic SOAP/XML interface for remote application access to all applications

Windows PC Apps

- Rapid site deployment lets you quickly replicate and deploy a site design and configuration to a new site.
- Remote upgradability lets you easily update multiple remote sites to new Lighting Segment Controller versions.
- Remote backup and restore features help you easily recover from hardware failures.
- Data log historian automatically receives and extracts data logs from multiple sites.
- LNS SOAP interface provides seamless synchronization between an Lighting Segment Controller and an LNS Server.

Custom Apps

Support for custom apps is included with the Professional Edition and is available as an option for the Standard Edition.

C/C++ programming environment is included.

Eclipse IDE lets you quickly and easily develop and deploy Lighting Segment Controller apps.

Requires separate purchase of Lighting Segment Controller 2.0 Programming Tools.

LONWORKS Network Installation

Two LONWORKS network installation modes: LNS mode and Standalone mode

LNS mode provides seamless integration with the market-leading LNS Server, the operating system for LONWORKS networks.

LNS mode works with LNS tools such as the LonMaker Integration Tool. A standalone LNS Server for the Lighting Segment Controller is available if an LNS tool is not available.

Standalone network installation mode supports up to 250 devices and ensures field personnel can get a site up and running quickly, without additional installation tools.

Automatic device discovery and installation reduces time spent installing, replacing, and upgrading devices.

Configure, commission, test, upgrade, and replace devices.

Read and write any network variable or configuration property.

Create network connections in LNS mode.

Launch plug-ins to configure devices in LNS mode.

Built-in RNI supports remote OpenLDV and LNS applications.

Built-in LonScanner™ interface supports the LonScanner Protocol Analyzer.

Visualization

- Create custom displays with i.LON Vision 2.0 (no other software required); or use the Web authoring tool of your choice.
- Built-in design elements (such as a slider, gauge, navigation tree, and menu) help you create displays quickly.
- Trend graphs enable real-time and historical tracking of data point values.
- Trend graphs are available on both built-in configuration pages and custom Web pages.
- Trend graphs can show both scalar and structured data such as a temperature value with an alarm condition.
- Browse built-in and custom Web pages with Internet Explorer or Firefox.

Hardware I/O

- 2 optically isolated digital inputs
- 2 high-voltage, high-current SPST relay outputs
- 2 S0 impulse meter inputs for supervising electric, gas, and water impulse meters
- Hardware inputs and outputs are exposed as standard data points.
- Hardware inputs and outputs can be scaled and converted to and from appropriate units.
- Hardware outputs can be triggered by network events.

Standards-based Protocols

- IP local and wide-area networking protocols and Internet standards include TCP, IPv4, IPv6, PPP, CHAP, PAP, DHCP, DNS, FTP, ICMP, MD5, SMTP, SNMP, SNTP, HTTP, HTTPS, and SSL.
- Additional IP application protocols: HTML, XML, SOAP, and DIME
- Dynamic IP addresses are supported using the dynamic DNS service from DynDNS.
- NAT is supported.
- ISO/IEC 14908-1 Control Network Protocol
- ISO/IEC 14908-2 Free Topology Twisted Pair (FT versions)
- ISO/IEC 14908-3 Power Line (PL versions)
- ISO/IEC 14908-4 Control Network IP Tunneling Protocol (optional IP-852 routing)
- IEEE 802.15.4

SPECIFICATIONS

PC Requirements

- Minimum Requirements for the Lighting Segment Controller
- Pentium III @ 1.3GHz, 768MB RAM, DVD-ROM drive, 100MB of free disk space
- Minimum Requirements for Echelon Enterprise Services
- Pentium IV @ 1.5GHz, 1GB RAM, DVD-ROM drive, 270MB of free disk space
- Minimum Requirements for the Lighting Segment Controller Programming Tools
- Pentium IV @ 1.5GHz, 1GB RAM, DVD-ROM drive, 250MB of free disk space

Operating Systems

Windows 7 (64-bit* and 32-bit versions), Windows Vista (32-bit version), or Windows XP; *Note: the Lighting Segment Controller products can be configured, monitored, and controlled via Internet Explorer and Firefox on the supported 64-bit and 32-bit versions of Windows, and they can be accessed as a remote network interface for LNS applications and the LonMaker Turbo Integration Tool running on both 64-bit and 32-bit Windows; the Echelon Enterprise Services (EES) software can be installed and used only on 32-bit versions of Windows.

Lighting Segment Controller Hardware

Processor

MIPS32™, 264MHz

Memory

64MB flash memory; 64MB RAM (FT versions) or 128MB RAM (PL versions)

Channel Type

PL-20N or PL-20C power line (PL versions)

IEEE 802.15.4 with Border Router

LONWORKS Network Connector

Screw terminals

Operating Input Voltage

100 - 240VAC (-6%/+10%), 50/60Hz

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

(FT version only)

Modem Connector

RJ-11, 6 conductor

Supported External Modems

Cinterion MC75, Cinterion MC63i, ETM9300 1 3G, Janus Terminus GSM864Q, Multitech MTCBA-G-F1, Siemens 35 to 45 Series, Siemens MC55 3G, Siemens MC75 EDGE

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

Operating Temperature

PL Versions:

-40 to +60ºC

Non-operating Temperature

PL Versions:

-40 to +85ºC

Operating Humidity (non-condensing)

PL Versions: 10 to 90% RH @ 60ºC

Non-operating Humidity (non-condensing)

PL Models: 5 to 90% RH max @ 60ºC

Dimensions

3.51 in. (H) x 5.47 in. (W) x 2.60 in. (D); 8TE DIN, 8.9 cm (H) x 13.8 cm (W) x 6.6 cm (D)

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

Echelon Enterprise Services 2.0 User's Guide

078-0423-01

SmartServer 2.0 User's Guide

078-0345-01

SmartServer 2.0 Hardware Guide

078-0346-01

SmartServer 2.0 Programmer's Reference

078-0347-01

SmartServer 2.0 Power Line Repeating Network Management Guide

078-0348-01

SmartServer 2.0 Programming Tool User's Guide

078-0349-01

i.LON Vision 2.0 User's Guide

078-0422-01

IP-852 Channel User's Guide

078-0312-01

Rapid Deployment Example for EES

078-0426-01

ORDERING INFORMATION

Lighting Segment Controller

SmartServer 2.0 FT Standard SR2

72101R-430

SmartServer 2.0 FT Professional SR2

72101R-440

SmartServer 2.0 FT Professional with Modem SR2

72102R-440

SmartServer 2.0 PL Professional SR2

72103R-440

SmartServer 2.0 PL Professional with External Coupling SR2

72103R-460

SmartServer 2.0 SR2 Software License

72110-440

SmartServer 2.0 Programming Tools DVD

72111-439

LNS Server for SmartServer CD

72130-320

SmartServer IP-852 Router Activation Key

72160

SmartServer Programmability Activation Key

72161

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