Echelon’s Lighting Segment Controller is a versatile product in the outdoor lighting controls industry. It seamlessly discovers, commissions, manages, and controls lights on 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 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.

The server 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 like Echelon’s LONWORKS® technology, Web services SOAP/XML, Modbus, M-Bus, digital I/O, and pulse count input, and custom driver support for everything else, the SmartServer offers unprecedented connectivity at no extra cost.

**Street Light System Support**

Echelon’s Lighting Segment Controller creates peer-to-peer connections between devices for autonomous functioning of devices. It integrates many different kinds of networked sensors (traffic, weather, noise & pollutants, and many more) either on wireless or power line networks for Smart City applications. It has capability for managing mesh networks on a wireless channel and dynamic & automatic repeating on power line channels. This provides tremendous flexibility to system integrators and end customers to select devices and applications that best meet current and future needs.

Power line (PL) editions have street light segment control built-in, with support for mesh repeating for street light controllers using both power line and RF segments, with RF segments 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 for 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 Web page mark-up with any standard Web authoring tool.

Serial and Telnet console interface 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.
Echelon 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 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 Web pages for configuring and using all applications.
Unified data model provides easy access to all your data regardless of manufacturer or communication protocol.
Up to 1,000 data points can be defined for use by built-in and custom applications.
Programmatic SOAP/XML interface for remote application access to all applications.

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.
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 for seamless synchronization between the Lighting Segment Controller and an LNS Server.
Custom Apps
Support for custom apps included with the Professional and is available as an option for the Standard Edition.
C/C++ programming environment.
Eclipse IDE lets you quickly and easily develop and deploy Lighting Segment Controller apps.
Web page localization tool.
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, standalone LNS Server for the Lighting Segment Controller is available if an LNS tool is not available.
Standalone network installation mode supports up to 200 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 mode.
Built-in LonScanner™ interface supports the LonScanner Protocol Analyzer.
Built-in LonConnector™ interface supports the LonConnector Programming Tools.

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 SO 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 supported using the dynamic DNS service from DynDNS.
NAT is supported.
ISO/IEC 14908-2 Free Topology Twisted Pair (FT versions).
ISO/IEC 14908-3 Power Line (PL versions).
IEEE 802.15.4

Specifications
PC Requirements
Minimum Requirements for Echelon’s 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 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 only be installed and used 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.

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 for real-time and historical tracking of data point values.
Trend graphs available on both built-in configuration pages and custom Web pages.
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 MTCA-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 +60°C

Non-operating Temperature
PL Versions: -40 to +85°C

Operating Humidity (non-condensing)
PL Versions: 10 to 90% RH @ 60°C

Non-operating Humidity
(non-condensing)
PL Models: 5 to 90% RH max @ 60°C

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
078-0426-01

Rapid Deployment Example for EES
078-0426-01

ORDERING INFORMATION
Echelon 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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