Philips remote monitoring and control systems

Starsense NEMA OLC (no dim)

Intelligent management for outdoor lighting

Starsense is a revolutionary telemanagement system for monitoring, controlling, metering and diagnosing outdoor lighting networks. Starsense Wireless is based on two-way wireless communication using the latest in mesh network tecnology.

Helping to improve energy management as well as related operating costs, the system enables individual light points to be switched on or off at any given time, continuously monitored for issues, and programmed for unique event or seasonal activity throughout the year. Moreover, the age and condition of each lamp in the system can also be monitored, and any failures will be reported by exact location. This offers the opportunity to significantly reduce maintenance costs through maximized lamp life and accurate scheduling of service calls. Starsense is designed for use in residential, street, and road lighting applications, including parking lots, ports, train stations, and industrial complexes.

Benefits and advantages

- Help customers by detecting, reporting and reducing lighting-related black-outs
- Enable the reduction of energy consumption via the accurate control of light times
- Save maintenance-related costs that are associated with lamp scouting and predictive maintenance

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General Description

The Starsense NEMA Intellivolt OLC (Outdoor Luminaire Controller) is a luminaire based device that monitors and controls a lamp/driver combination. Communication between the OLC and the system is based on radio frequency (RF) signals. The OLC controls the driver by switching and monitoring the mains. The OLC will monitor and store electrical characteristics from the lamp/driver system. The OLC is designed to work in combination with the Starsense Segment Controller (LFC7310). The OLC's, together with the Segment Controller, form an outdoor networked lighting system. Please consult the datasheet of the LFC7310 for more information.

Applications

The OLC can control one lamp/driver by connecting the OLC according to the wiring diagram below. It is designed for use in residential, street, and road lighting applications, including parking lots, ports, train stations, and industrial complexes. The OLC is designed to easily replace a standard light sensor using the NEMA twist-lock connector.

General Operation

The OLC is designed to perform three main functions:

1. Controlling
   The controlling function in the OLC receives the incoming commands (i.e. manual override) from the SC and acts accordingly.
2. Monitoring
   The monitoring function in the OLC measures the current, mains voltage, power factor, burning hours, and energy consumption of the connected lamp/driver combination.
3. Reporting
   Based on these measurements, the monitor function determines if the connected lamp/driver is functioning within configured thresholds. If not, the OLC will create an alarm that will be communicated to the SC. This information is used to determine the condition of the lamp/driver combination. In case the measured values are within the defined thresholds the OLC will store the information. On a regular basis the collected information is retrieved by the SC for reporting purposes. This includes, but is not limited to, actual energy consumption measurements.

Mounting Information

The OLC is designed to fit in the standard NEMA twist lock connector used to mount light sensors. The OLC needs to be placed vertically on top of the luminaire to create an optimum condition for wireless communication.

NOTE: The Light Sensor window must be pointed NORTH for optimum performance.

Starsense

Software Download

The Philips Starsense Wireless system has the ability to upload new software in the OLC over the wireless RF interface. Through the end-user software the system administrator can command the SC to upload new software in all or selected OLC's. This could be necessary in case of an upgrade to a new version, additional software functionalities or problem solving.

IEEE Address

The Starsense Wireless OLC will become a node in a large network of OLC's that are all controlled from a Segment Controller. To be able to address an OLC individually, the SC must know the unique IEEE address of the OLC. This IEEE address is printed on three barcode labels on the OLC. After installation of the luminaire on-site, the barcode label must be scanned using the LRV7310 Outdoor Configuration Assistant. Take care that the barcode readability is not impaired.

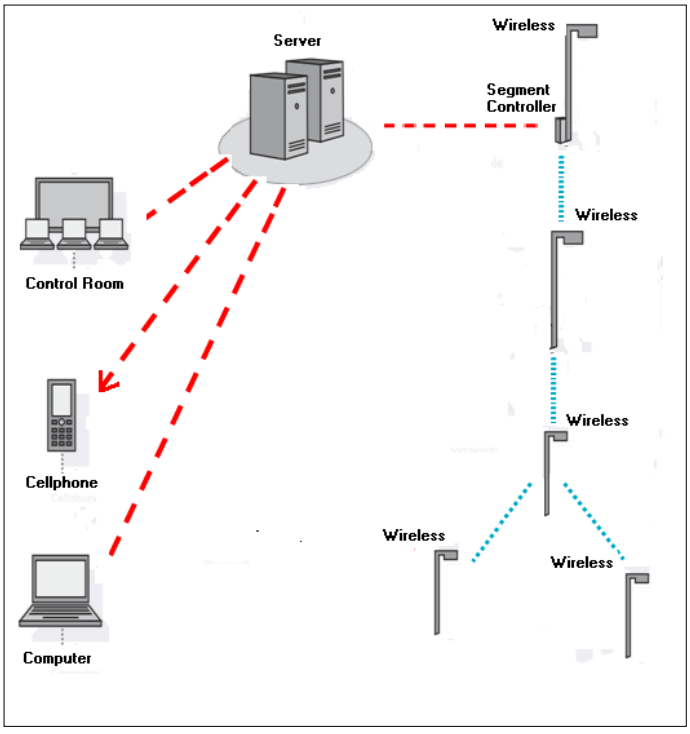
Communication

The Starsense Wireless OLC is communicating in a mesh network. Every OLC in the network can receive and transmit messages. The wireless solution used for communications is based on standardized sub-GHz IEEE 802.15.4 compliant hardware and a Philips networking solution.

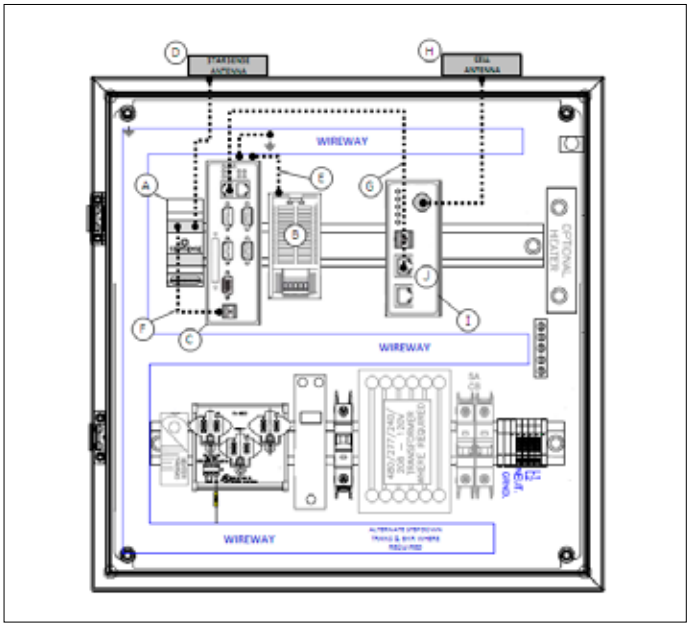
Outdoor Configuration Assistant (OCA)

This device combines the barcode with the GPS coordinates of the location of the luminaire. Both inputs are important to build up the networked telemanagement system. To avoid reopening the luminaire after installation, it is advised to peel off a label from the OLC and place the label on an agreed location like a light plan drawing or the connection box at the bottom of the pole. This simplifies scanning of the barcode at a later stage. The LRV7310 Outdoor Configuration Assistant is a standard ruggedized PDA for outdoor use. To combine asset information with IEEE address and GPS data, a special program has been designed to collect all information in an XML file.

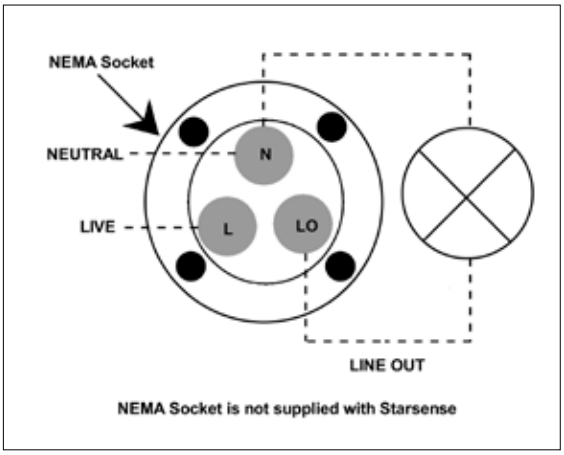
LRV7310 Outdoor Configuration Assistant



Servers



Starsense SC Cabinet(LFC7310)



Wiring/Installation Diagram

Luminaire with NEMA socket for installation

Technical Data

Operating conditions

Ambient temperature (t_a)	-30°C to +60°C
Relative humidity	10 to 90%
Max. housing temperature	80°C
Lifetime	90% operational products after 80,000 hours of operation

Non-operating conditions

Temperature	-30°C to +80°C
Relative humidity	5 to 90%

Mains connection

Mains voltage (LLC7310)	120-277VAC ±10%
Mains voltage (LLC7315)	347-480VAC ±10%
Mains frequency	50/60 Hz ± 5%
Max. load wattage	750VA @ 120V 1000VA @ 277V, 347V, 480V
Recommended external fuse	15A Maximum

Power consumption

Stand-by wattage	≤ 0.75W for LLC7310, ≤1.25W for LLC7315
Operating wattage	≤ 1.5W for LLC7310, ≤2W for LLC7315
Accuracy integrated power	±5% consumption metering

Radio Frequency

Protocol	IEEE802.15.4
Frequency band	906-924MHz
Range	300m (OLC to OLC) 50m (OLC to SC)
Data rate	250 kbit/s
Antenna	Internal 1/4 wave monopole
Transmitter Output Power	89dBµV/m
Receiver Sensitivity	46dBµV/m
Transceiver Security	AES128 encryption

* **NOTE:** Multiple OLC's should be in range of the Segment Controller Controller.

Certifications/Misc

Conducted Emission	FCC 47 Part 15
Radiated Emission	FCC 47 Part 15
ANSI	136.10
Flammability	UL 94V-0
Protection class	IP54
Housing material	Polycarbonate (PC)
Damp Heat	IEC 60068-2-30
Salt Mist	IEC 60068-2-11
Mixed Gas Corrosion	IEC 60068-2-60
Vibration	IEC 60068-2-6
Rain tightness Test	UL773
Temperature Sensor	±3°C (-30°C to +60°C range)
Agency marking:	UL, CSA, NOM

Packing Data

Type	Box dimensions (mm)	Qty	Material	Weight (Kg) net	gross
LLC7310	460 x 276 x 289	30	Cardboard	2.78	3.00
LLC7315	460 x 276 x 289	30	Cardboard	2.78	3.00

Ordering Data

Type	MOQ	Ordering number
LLC7310/00 Starsense NEMA Intellivolt OLC (no dim)	30	9137 012 47601
LLC7315/00 Starsense NEMA Hi Voltage OLC (no dim)	30	9137 012 47702
LRV7310 Outdoor Configuration Assistant	1	9137 003 44503
LFC7310 Starsense Segment Controller	1	9137 012 47501

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