

LFC7065 Segment Controller

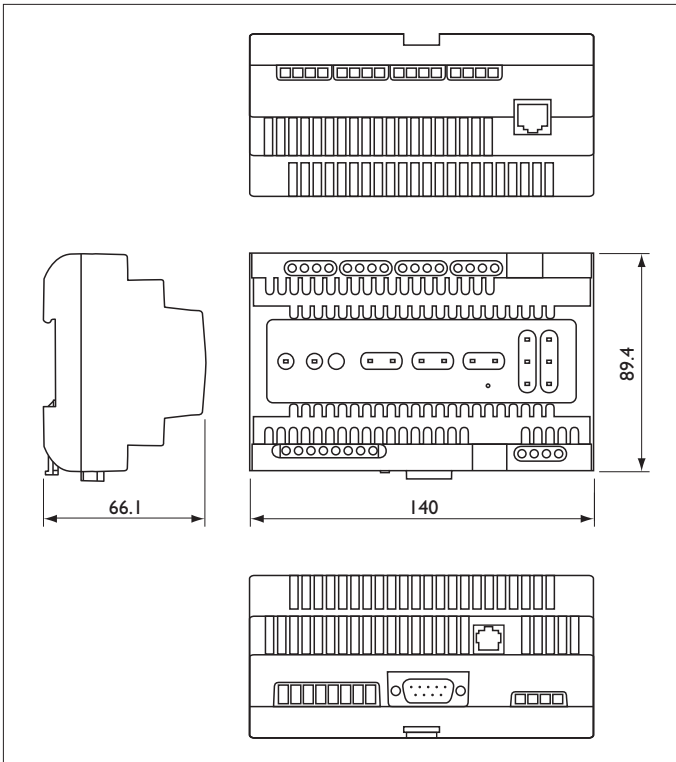
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General Description

The Segment Controller (SC) is a low-cost, high-performance LonWorks® network compliant device that connects to a LonWorks® network to monitor, control and manage Philips Outdoor Luminaire Controllers (OLC). Communication between SC and OLCs is performed via the power-line channel utilizing the open LonWorks® protocol. The SC interacts with the Philips Starsense Supervisor software by means of TCP/IP. The SC sends it's gathered data to an e-mail server for the Starsense Supervisor software to collect. The SC has built-in applications for scheduling, alarming and logging. Optionally combined with external sensors like light, weather and traffic sensors the SC can independently react on these sensor inputs and act according configuration. The SC is optimised for operation within the Philips Starsense telemanagement system.

The Philips Starsense telemanagement system consist of:
 LLC7020 Outdoor Luminaire Controller
 LFC7065 Segment Controller



Dimensions in mm



Applications

A SC is designed to control and monitor OLCs and report the OLC statuses back to the Starsense Supervisor. It is designed for use in residential, street and road applications, including parking lots, ports and train stations. The design of the SC is optimised for mounting in electrical cabinets beside the road. It's not allowed to connect more than 140 OLCs to one SC.

The Philips SC is released and authorised to solely interact with the Philips OLC, consult the local Philips representative if desired otherwise.

Benefits and advantages

The major benefits and advantages of using the Starsense telemanagement system are:

- Energy savings through dimming and switching
- Save costs on maintenance through reduced lamp scouting and improved predictive maintenance
- Improve safety by detecting, reporting and reducing night black-outs
- Reduced light nuisance so that the light levels are in harmony with their surroundings and dim-up on-demand when required

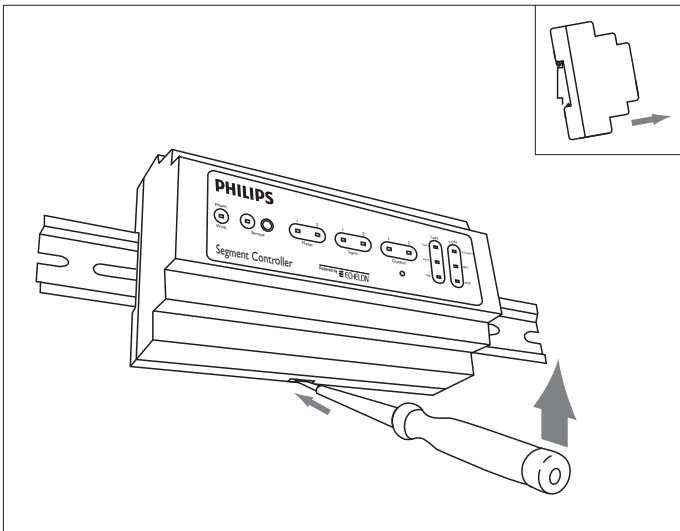
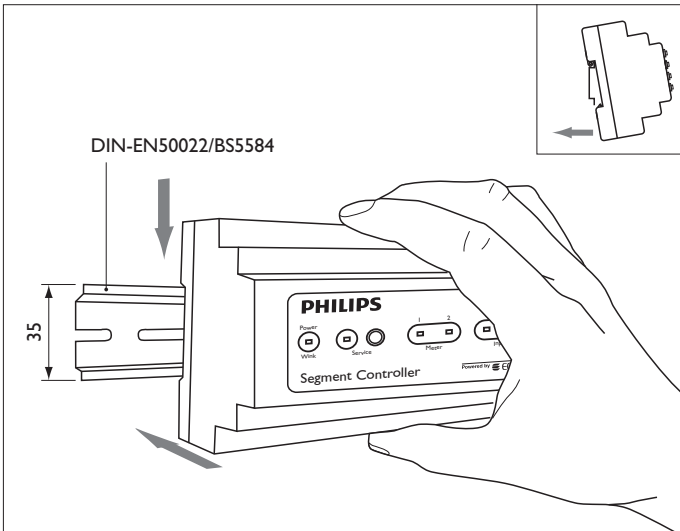
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General operation

The SC combines a Scheduler, Alarm generator, Logging and a power-line network management controller. After the SC is configured by the dedicated Starsense Configurator software it can switch and dim segments of OLC controlled light points based upon configuration. Monitoring the collected OLC status messages ensures that data can be provided to the user with the Starsense Supervisor simplified SCADA software. The SC automatically logs all the status data from all OLCs under its control and sends it regularly via e-mails to the Starsense Supervisor.

Mounting information

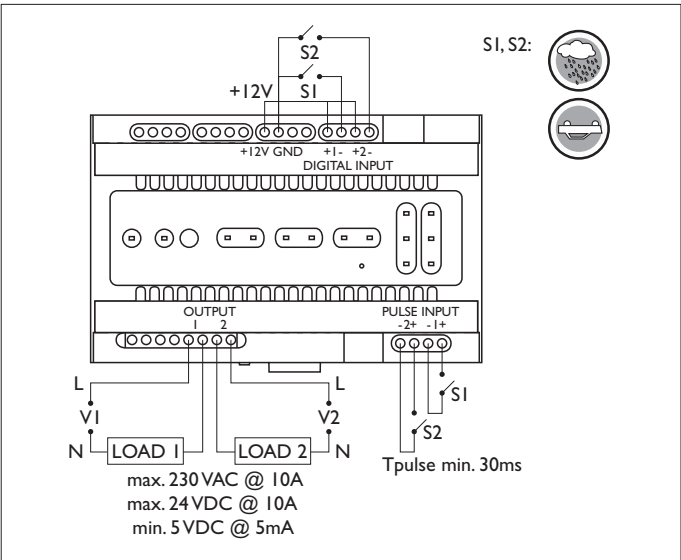
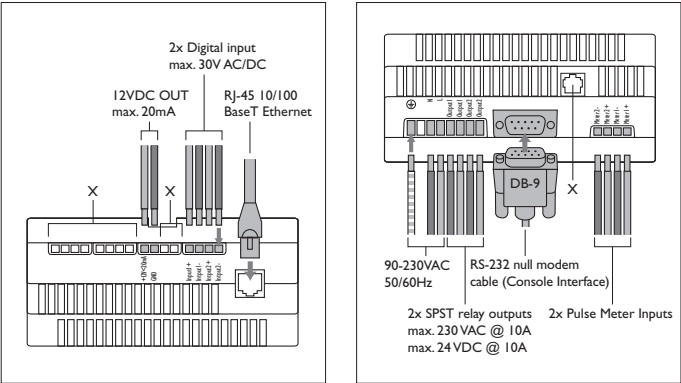
The rear of the SC contains a spring-loaded DIN rail lock, which securely grabs the DIN rail. To release, insert a flathead screwdriver into the locking tab and gently pull the tab downwards and then pull the SC away from the DIN rail.



Mounting

Powering the SC

Apply mains power to the SC once it is mounted securely and when all its wiring is connected as shown in the typical connection diagram.



Wiring

Immediately after applying power, the green Power LED starts blinking rapidly. The unit is fully operational after a minimal 2 min boot period. The power LED is continuously ON when the SC is booted correctly and is ready for its daily operation.

Dynamic Repeating Technology

All the OLCs are equipped with a power-line transceiver; which, if activated centrally by the SC, can forward communication messages. Power-line communication between the SC and OLC can be impaired at a certain point in time because of externally introduced noise or attenuation. When the communication is lost between the SC and an OLC another OLC will be selected by the SC to forward the message to the unreachable OLC. The SC will continuously keep track of which OLCs can be reached directly and which ones require repeating.

Scheduling

To control OLC controlled light points the SC utilizes its internal real-time clock and or astronomical clock with Daylight Saving Time per geographical region. A lighting dimming shape based on a fully configurable intelligent scheduler can be easily build for each light point or group of light points with the Starsense Configurator software. Priority settings within the scheduler scenario provide a powerful and easy way to create the desired lighting scheme.

Data logging

An OLC continuously monitors its load current, mains voltage, power factor, and power consumption. These measured values are compared locally against threshold values. Each value is set during the configuration of the OLC. The OLC will set its internal status accordingly as soon as a threshold level is exceeded. The SC collects the status, electrical parameters, energy consumption and burning hours of each OLC regularly. A SC will collect the status and stores it locally. The SC sends the data-log daily to an e-mail server for the Starsense Data Collect module to collect. The trigger to send the data can be the daily schedule or by the automated outage detection functionality.

Exceptional data transfer

The SC can generate an exceptional data transfer. This means that the SC sends its local data immediately to an e-mail server when a specific combination of OLC statuses occur that indicate that it is likely that the light point is broken. The Starsense Data Collect module then collects the e-mail and stores the information in the central database. The exceptional data transfer trigger condition is based upon fixed SC memory usage thresholds or on a special automated outage detection algorithm that analyzes whether light is still produced by the lamp or not.

TCP/IP interface

The 10/100 BaseT interface enables a connection to a local Ethernet network. Via TCP/IP interface the SC is reachable through its web server and gateway. The SC is compatible with the most popular IP local and wide area networking protocols. Dynamic IP addresses are supported using the Dynamic DNS service. The SC will always select the 10Mbps transfer speed settings.

Console

Network management commands can be given to the SC by using a terminal emulator connected to the Console interface. Also an external serial GPRS modem can be attached to provide a network connection in locations without Ethernet connection. The Console interface is only to be used by certified personal.

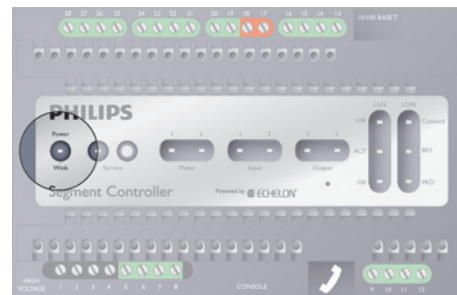
Inputs/outputs

The SC includes two optically isolated digital inputs; two Single Pole Single Throw (SPST) relay outputs; and two impulse meter inputs for detecting pulses. Each input or output may be configured using the Starsense Configurator. The SC contains one +12VDC output, which may be used by a set of dry contacts to power the optically isolated SC digital inputs.

User Interface

After the start up of the SC the following LED's provide status information for the SC.

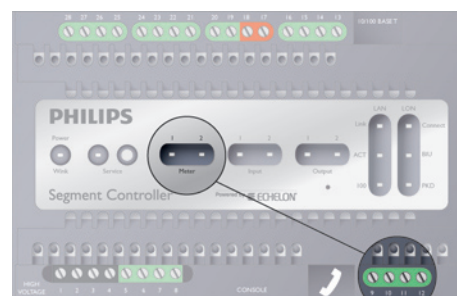
Power/Wink	LED is ON: Operational. SC has power and is operational. LED is blinking temporarily: Winking. SC received and is executing a wink command by blinking slowly 5 times. LED is blinking rapidly continuously: Application-less. This LED blinks rapidly when the SC internal applications are not running. This for instance occurs during the minimal 5 min start-up phase.
Service	Indicates the state of the LonTalk[®] application in the SC. LED is OFF: Operational SC has power and is operational. LED is blinking: Un-configured. Indicates the application is in the un-configured state. LED is ON: Security Access Mode. This LED will remain ON when the SC is in security access mode.
Meter	2 LED's labelled 1 and 2, indicating when a pulse is received on the meter1 and meter2 inputs.
Input	2 LED's labelled 1 and 2, indicating when the ON value is received on the input1 and input2 digital inputs respectively. The LED's are aware of whether the invert option is selected i.e. if an open circuit is interpreted as ON, the light will come ON when the circuit is open and vice versa.
Output	2 LED's, labelled 1 and 2, indicating when the output1 and output2 outputs, respectively are closed. The LED is ON when the relay contacts are closed, and OFF when the relay contacts are open.



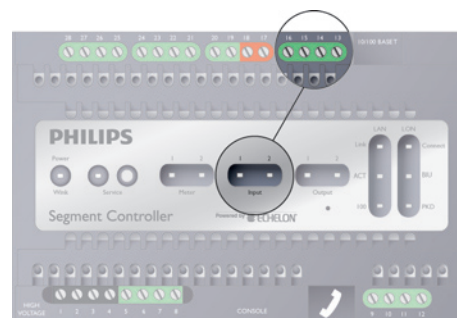
Power LED



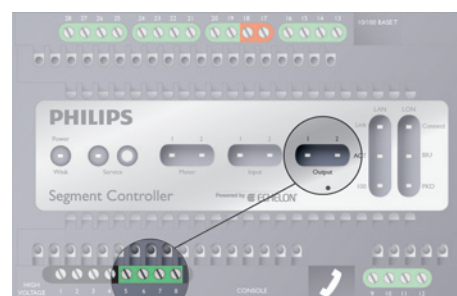
Service LED



Metering input LED's

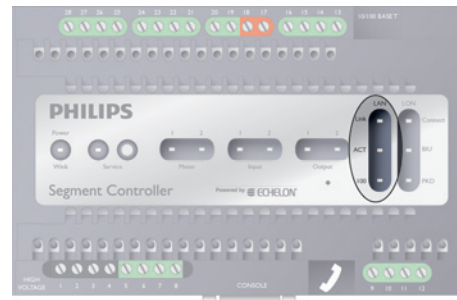


Digital input LED's



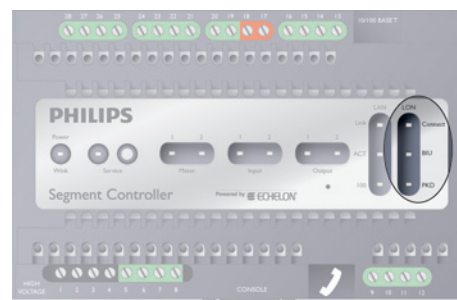
Digital output LED's

LAN Link	ON when an Ethernet connection has been established.
LAN ACT	ON when there is activity on the Ethernet connection.
LAN 100	OFF when the SC operates at 10Mbps. ON if the SC operates on 100Mbps.



LAN LED's

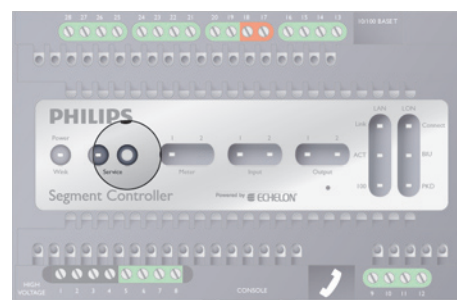
LON Connect	Comes ON when the SC is used as a Remote Network Interface (RNI)
LON BIU	This is the Band In Use indicator. Indicator is ON when a device is communicating within the PL-20C band. The SC therefore does initiate communication if any device has the PL-20C band in use.
LON PKD	This is the PackE Detect indicator; it flashes when the device detects a packet on the LonWorks® channel.



LON LED's

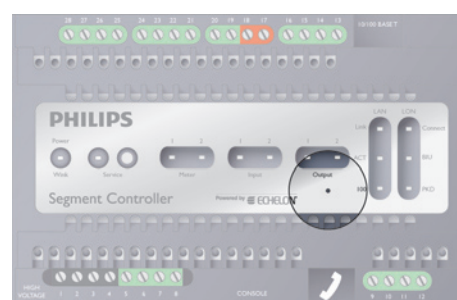
The SC has 2 buttons:

Service Pin	The Service pin is a recessed button used to send a service pin message to the PL-20C channel to which the SC is connected.
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Service pin

Reset Switch	The Reset switch is a recessed push button used to reset the SC. It is located below the Output LED's. To reset the SC, press and release the reset switch using a straightened paper clip or similar implement.
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Reset switch

! Attention

Only use this reset method when all other options have failed, or are not possible. Pressing the reset switch can cause files being written to the flash disk to become corrupted. You should use Starsense Configurator to reboot and cause an orderly shutdown before rebooting. This switch may only be used by certified personal.

Technical data

Storage conditions

Temperature	- 40°C ... +85°C
Relative humidity	5 ... 90% RH max @ 50°C (non-condensing)

Operating conditions

Temperature	-40°C ... +60°C
Relative humidity	10 ... 90% RH max @ 50°C (non-condensing)

Mains connection

Voltage	110-230 VAC -10% ... +30%
Frequency	50/60 ±2.5Hz
Maximum wire range	0.22 ... 3.3 mm ² solid
Wire strip length	7 mm
Flathead screwdriver tip	3 mm
Screw tightening torque	0.75 Nm

Power consumption

Power consumption	<15 Watt
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Power line interface

Channel type	PL-20C power-line
Coupling	L-N via mains
Protocol	ANSI/EIA 709.1-A-1999
Power-line transceivers	Compliant to ANSI/EIA 709.2
Approval	Cenelec 50065 compliant, C-band: 125-140kHz Automated B-band selection if communication on C-band fails Complies with FCC, Industry Canada, Japan MPT, and European CENELEC EN50065-1 power-line communication regulations

Connections

Ethernet port	10/100 Base-T auto selecting, auto polarity
IP networking protocols	TCP, PPP, CHAP, PAP, ICMP, NAT, SMTP, DHCP, SNMP, FTP, DNS, MD5, HTTP, SOAP, and DIME
Ethernet connector	RJ-45, 8 connector

Console Port

Console Port	According to EIA-232
Connector type	DB-9 (Null Modem Cable)

Digital Inputs

Digital inputs	2 optically-isolated dry contact inputs
Maximum input voltage	30V AC/DC
Connector type	Screw terminals

Relay Outputs

Relay Outputs	2 SPST relays
Maximum load	Rated at 240VAC @ 10A or 24VDC @ 10A
Connector type	Screw terminals

Pulse Meter Inputs

Number of inputs	2 (DIN 43 864)
Open terminal voltage	<12VDC
Maximum current	27mA
Minimum close time	30 ms
Minimum open time	30 ms
Connector type	Screw connectors

12VDC Output

Maximum current	20mA
Connector type	Screw connectors

User interface

Manual controls	Service button Reset button Power ON / OFF / Wink
Indicators	Ethernet link, Ethernet activity, 10/100 Mbps LONWORKS [®] Service, BIU, PKD 2 Digital inputs 2 Pulse inputs 2 Outputs Remote Network Interface connection status
Clock accuracy	2ppm @ 21°C 70ppm @ 70°C

Mounting

Mounting	35 mm x 7.5 mm or 35 mm x 15 mm DIN TS35 rail
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Norms

Ingress Protection EMC	Unrated FCC Part 15 Class B EN55022 Class B, EN55024, CISPR 22 Class B VCCI Class B
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Dimensions

Dimensions	W: 24,7 cm, L: 15,4 cm, D: 9 cm
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Weight

Weight	0.47 Kg
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Packing data

Type	Box dimensions (mm)	Qty	Material	Weight (Kg)	
				net	gross
Inner Box	247 x 154 x 90	1	card board	0.47	0.63

Ordering Data

Type	MOQ	Ordering number	EAN code level 1	EAN code level 3	EOC
LFC7065/00	1	9137 003 30603	8711559 731841	n.a.	731841 00

322 636 36050 06/2008 Data subject to change
www.philips.com/lightingcontrols

