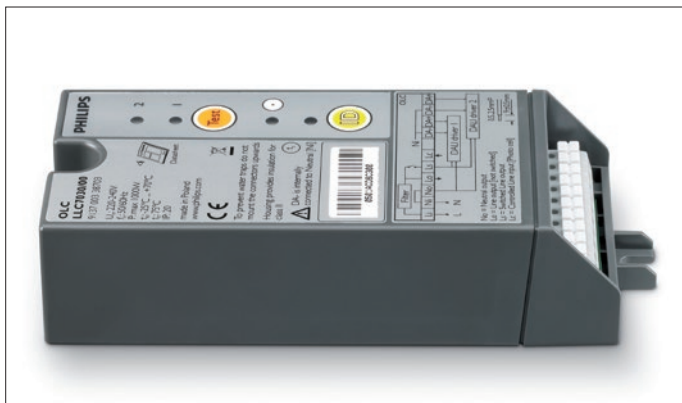# LLC7030 Datasheet
Outdoor Luminaire Controller DALI

Dimensions in mm

General Description

The Outdoor Luminaire Controller (OLC) is a high-performance LonWorks® network device that connects to a lamp-driver combination to control and monitor.

Communication with the OLC is established via the power line utilizing the LonTalk® open protocol. The OLC interacts with the lamp driver by means of a DALI interface and when needed, switching also its mains voltage line.

The OLC can autonomously switch its output ON and OFF if combined with a photocell.[1]

The OLC is designed to work in combination with the Philips Starsense Segment Controller (SC).

Applications

Each LLC7030 is able to monitor and control up to two independent lamp-drivers. [1]
It is possible to use two DALI drivers per output, to monitor and control two light points. As a result certain feedback is combined(power) or reported for one driver only (lamp voltage/driver temp).

It is designed for use in highway, residential, street and road lighting applications including parking lots, ports, train stations and industrial complexes.

The design of the OLC is optimized for mounting within a luminaire or in the base of the pole.

For optimal system performance please respect the specified maximum lightpoints connected to a Segment Controller (see datasheet).

The OLC is released and authorized to interact solely with the Philips Starsense SC. Consult the local Philips representative if desired otherwise.
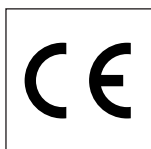
⭐ **Tip:**
   When you switch the lamp-driver ON/OFF by means of a DALI command, the Switched Line Output [Ls] can be used for another type of load (e.g. advert light, Christmas lights, etc)[1] .

The OLC gathers energy, lamp voltage and power information from the driver if available. For best system performance it is recommended to use Philips DALI drivers.
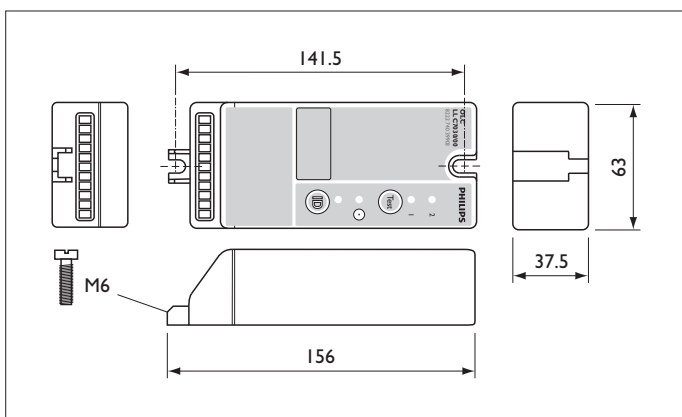
[1]Note: Check if feature is supported by the Central Management Software (CMS)

PHILIPS

General operation

The OLC combines three main functions:

1 The controller function receives the incoming commands from the SC and acts accordingly.
 The OLC can control the lamp-driver via the DALI interface. It can also switch the output relay to control the mains supply to the lamp-driver.

2 The OLC switches the Line Output and communicates with the lamp-driver via the DALI interfaces.

3 The monitor function reports on DALI information, current, mains voltage, mains frequency, power factor, burning hours, power and energy consumption of the connected lamp-driver combination. The OLC sets its status accordingly. The SC read this information and communicates the actual values and fault conditions to the CMS.
 The measured feedback data is optimal for released Philips drivers.
A default configured OLC will switch ON output at maximum level on power-up.

The OLC has a backup scenario (safeguard mechanism) that can be configured in different ways (see below).

Repeating

The OLC is equipped with a power line transceiver, which can repeat messages. The SC monitors and controls the dynamic repeating functionality centrally. If communication fails between the SC and a specific OLC, another OLC can be designated dynamically by the SC, which can repeat messages. The SC will autonomously and continuously keep track of which OLC's can be reached directly and which ones require message repeating.

Mounting information

The OLC is designed to be installed inside a luminaire, but can also be mounted in the pole, gear-trays and separate boxes. If the OLC is mounted inside a pole it may only be mounted upright. The OLC may be mounted in any position if the enclosure is IP43 or above.
Please also refer to the installation instruction of the LLC7030.

Released drivers

The OLC has been tested with a very wide range of LED/lamp driver types. For the best overall system performance we do recommend the use of Philips LED/lamp drivers. Currently the lamp-drivers released to interact with the DALI outputs of the OLC are:

• PHILIPS HID-DV DALI 100/150W SON/CDM with lamps SON and CDM-TT
• PHILIPS HID-DV DALI Xtreme driver with CPO (Cosmopolis) lamps 60, 90, 140 W
• PHILIPS HF-Regulator II Touch and DALI for PL-L, PL-T, PL-C lamps
• PHILIPS outdoor Xitanium Prog+ DALI LED 40W, 75W, 100W and 150W.
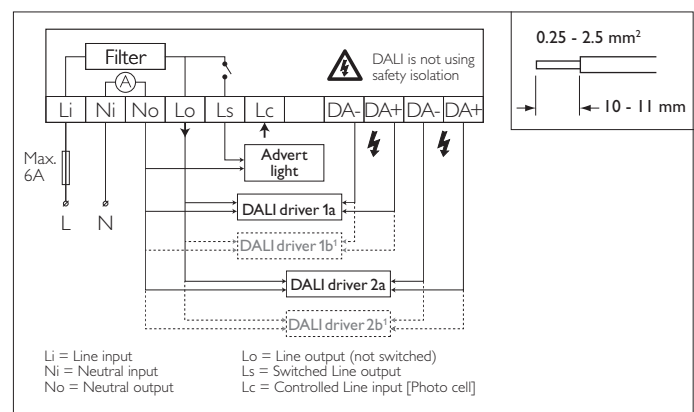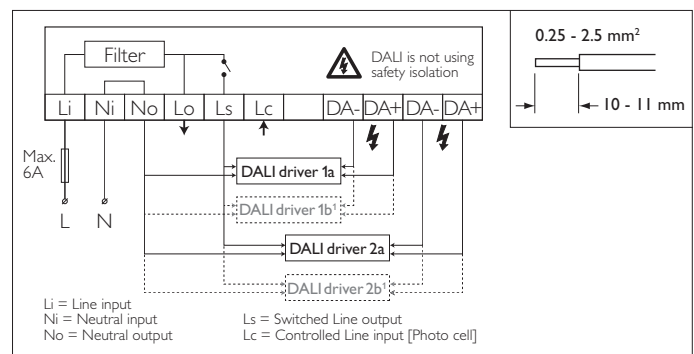
Any other component must be validated before it may be used with the OLC. Contact your local Philips representative about how to obtain component validation.

⚠ **Warning**
The DALI interface does not use safety isolation (DA- is internally connected to the Neutral conductor). Disconnect the main power supply before servicing.

Wiring Diagram

Li = Line input
Ni = Neutral input
No = Neutral output
Ls = Switched Line output
Lc = Controlled Line input [Photo cell]

Li = Line input
Ni = Neutral input
No = Neutral output
Lo = Line output (not switched)
Ls = Switched Line output
Lc = Controlled Line input [Photo cell]

[1]Note: Check if feature is supported by the Central Management Software (CMS)

User interface

The OLC has two push buttons - one for testing the lamp-driver and one to send its unique Neuron® ID number to the Segment Controller (see Starsense User Manual for more information). The test button can also be used as maintenance indicator.

PHILIPS

2

1 —— Status LEDs

Test

—— Power LED

—— Neuron LED

ID
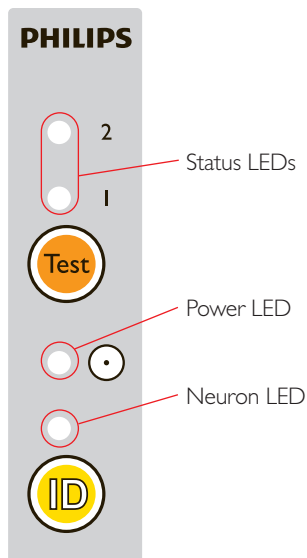
Status LEDs	LED 1 and 2 will show which output is switched ON.
Power LED	Will show device- or output status. If it's continuously in blinking mode, the OLC is in error mode - consult your local Philips representative.
Neuron LED	Will show when Neuron® ID is sent.

The yellow service LED indicates the internal OLC state:

ON:	Application-less. The OLC has only communication parameters loaded.
Blinking:	Unconfigured. This OLC state indicates that it has communication parameters and an application program and network address information. This OLC state is the "idle" state. Commissioning and configuration need to be performed.
OFF:	Configured.

From the factory the OLC is configured for a default lamp and is operating normally.

Test button
- Pressing the test button while the output is OFF will switch the output ON for a maximum of 15 minutes. The output will be turned OFF after the timer has expired. During this period the red LED 1 blinks slowly.
- Pressing the test button while the output is at maximum level will cause the output to switch to dimmed level for 15 minutes. The output will be turned OFF after the timer has expired. During this period the red LED 1 blinks rapidly.
- Pressing the test button while the output is ON at a dimmed level will switch the output OFF..

⚠ **Attention**
The OLCs output will be switched OFF after 15 minutes. Power cycle the OLC to have the output automatically switched to its configured power-up level.

Maintenance identification
After maintenance has been done on an OLC, press the test button for 4 seconds. An identification message will be sent via Powerline, and will be made visible in the CMS.

Neuron® ID
Each OLC has a unique fixed 48-bit identifier called Neuron® ID. The Neuron® ID is printed on the three barcode labels placed on the front of the OLC, which barcode readers can read.

**OLC
LLC7030/00**
8222 740 39903

U_n: 220-240V
f_n: 50/60Hz
P: max 1000W
t_a: -25°C ... +70°C
t_c: 75°C
IP: 20

made in E.U.
www.philips.com

CE ⊲ LLC7030/00

Datasheet

To prevent water traps do not mount the connectors upwards

Housing provides insulation for class II

⚠ DA- is internally connected to Neutral [Ni] t_c

000981379400

000981379400

000981379400

OLC label

⚠ **Attention**
When the OLC is installed it is vital for the Starsense system operation that it knows the Neuron® ID and the location of the device. A drawing or list indicating which Neuron® ID belongs to which installed OLC acts as an input for creating the Starsense telemanagement configuration.

Power-on the OLC

⚠️ **Attention:**
Apply mains power to the OLC only after it is mounted securely and has been wired as shown in the typical wiring diagram.
In case of an OLC that it is not yet commissioned, at power-up both red LEDs will come ON for 3 seconds. The unit is fully operational and ready for commissioning and configuration after both red LEDs go OFF. The green power LED should stay ON continuously indicating that power is applied and the OLC is running in the correct mode. The OLC is now in its default configuration. The safe-guard mechanisms, burning hours counter, power-up behavior and manual interfaces are operational.
In default configuration mode, the OLC will always turn the light ON at power-up. The switch ON level can be pre-configured through the OLC power-up value.

Smart Power-On feature is actually an intelligent inrush current limiter. This would enable a 1:1 replacement of the existing electromagnetics ballast with an electronic lamp-driver and an OLC without adjustments in the power grid structure or the number of light-points per circuit breaker (MCB).

Safe-guard mechanism

SC commands have always priority on the operation of the OLC (except the Daylight control based on photocell operation - see below) An OLC with default configuration will fall back on photocell input when no communication is detected (default value is after 1 hour). In case this is not detected, it will follow the On/Off scheduler, only if the real time clock information is available in the OLC, and a back-up schedule is set. In case this is also not available will go on to Power-Up state (configurable by the user).

Safe-guard mechanism with photocell[1]

The OLC can be configured to fall back onto photocell operation mode when it detects a communication failure with the SC. This safe-guard mechanism prevents light points from staying OFF during the night - causing dangerous situations - and from staying ON during the day - which would waste energy. The OLC is equipped with one single-pole 230VAC input to monitor the photocell operation. When in safe-guard mode, the OLC output will follow the photocell input.

Note: It is only possible to connect photocells which use an electromagnetic relay.

Safe-guard mechanism with back-up scheduler[1]

The back-up scheduler is the default back-up mechanism of the OLC is not configured otherwise.
When the OLC detects a communication failure with the SC, it will continue to operate according to a predefined back-up schedule. The OLC will run on its own internal real-time clock and use this schedule to switch its output. In this operation mode the OLC will not regulate the light levels.

The switch ON level can be pre-configured through the OLC power-up value.
Attention: In case the OLC is powered off and the communication is still not establish at power-up time, the real time clock will not be available, so back-up scheduler will not be active. Lamps will simply turn ON and stay like this. To prevent this behaviour a safe-guard mechanism based on a photocell can be configured[1].

Daylight control based on photocell operation[1]

In Daylight Control Mode (DCM) the switching points are controlled by the available sunlight (via a photocell) and the light level is controlled by the Starsense system. When OLC is configured in DCM will follow the photocell input with its output while still receiving and executing the dimming levels from the segment controller. Monitoring function of the OLC are not influenced by the DMC. The following functional table represents the correlation between available light levels, photocell operation and the OLC output:

Photocell detection	Photocell relay	Photocell Line out
Dusk	Closed	Mains voltage on OLC input [Lc]
Dawn	Open	- 0Volt on OLC input [Lc]

Technical data

Operating conditions
Temperature	-25°C to +70°C
Relative humidity	10% to 90%
Max. housing temperature	+75°C (on Tc spot, see OLC cover)

If the Tc rises beyond 85°C during use, the OLC will switch off the relay (load).

Non-operating conditions
Temperature	-40°C to +85°C
Relative humidity	5% to 90%

Mains connection
Mains voltage	220-240V ± 10%
Mains frequency	50/60 Hz ± 5%
Max. load wattage	1000W (2 x 400W) DALI drivers including advert light

Power consumption
Stand-by wattage	<2W

Connector block
Mains connector	WAGO 804 series contact cage clamp connection
Wire cross section [mm²]	0.25 - 2.5 mm² solid
	0.25 - 2.5 mm² fine stranded
	0.25 - 1.5 mm² fine stranded with ferrule and plastic collar
	0.25 - 2.5 mm² fine stranded with ferrule, without plastic collar
Wire cross section [AWG]	20-12 AWG solid
Wire strip length	10-11 mm

[1]Note: Check if feature is supported by the Central Management Software (CMS)

Power line interface

Channel type	PL-20C power line
Coupling	Line-to-Neutral, Non-Isolated Coupling
Protocol	ANSI/EIA 709.1
Power line transceivers	Compliant to ANSI/EIA 709.2
Frequency band	CENELEC consumer band: C-band (132.5kHz), automated B-band (110kHz) selection if communication on C-band fails
Approval	FCC and CENELEC EN50065-1 compliant. RoHS directive 2002/95/EC REACH SVHC
Filter	Internal band stop filter, to filter interference from the lamp driver.

DALI interface

Interface	Compliant to IEC 60929:2004 Annex E
Number of DALI interfaces	2 individual DALI ports (max. 2 drivers per port)
Master/slave	The OLC operates as a Master lighting control device.
Insulating System	No insulation between DALI and Mains circuit (warning on product label and installation instruction)
Applicable DALI Standards	IEC 62386-101 (excl. clause 5.4)
Power supply	Integrated power supply; Max. 8mA per DALI interface.
Protection	Short circuit proof DALI interface. No mains protection!
Communication protocol	According to IEC 62386-102.
Marking	DALI 1 [+] [-] and DALI 2 [+] [-]
Output voltage	14.5V
External DALI powersupply	Not supported

Photocell input

Input	Suitable for magnetic relay type photocell (without snubber)

Indicators

Power LED (green)	This LED is on when the OLC has power.
Service LED (yellow)	This LED is normally off. Blinking indicates that the application is in un-configured state.
Output LED (red 2x)	2 red LEDs labelled 1 and 2, which indicate the output state of DALI output 1 and 2.

Manual controls

Service button (yellow):	Send Neuron® ID
Test button (orange):	Change output states 1 and 2 (100%-50%-OFF)
Barcode code	Code128 (Neuron ID)
Back-up scheduler	Accuracy ± 0.7%
Safety pre-fuse requirement	Max. value pre-fuse: 6 ATH

Housing

Material	Bayblend® KU 2-1514 (PC+ABS Blend)
Flammability	UL 94V-0 at 1.5mm thickness
Glow wire test	850°C
Protection class	IP20 in any position IP22 in upright position
Dimensions	H: 15.6 cm, W: 6.3 cm, D: 6.3 cm
Weight	0.31 kg

Standards

Safety	EN61347-2-11
Immunity	EN61547; EN50065-2-1
Emission	CISPR15 edition 7.1

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Packing data

Type	Box dimensions (mm)	Qty	Material	Weight (Kg) net	gross
LLC7030 OLC DALI	295 x 385 x 165	24	cardboard	4.99	5.08

Ordering Data

Type	Ordering number	EAN code level 1	EAN code level 3	EOC
LLC7030 OLC DALI	9137 003 38703	87115 59732817	87115 59732831	732817 99