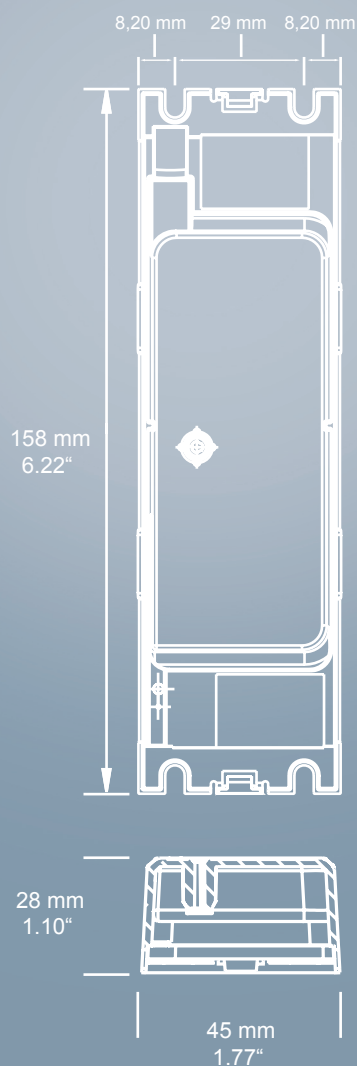




Lumen Controller ADP Autonomous Dimming



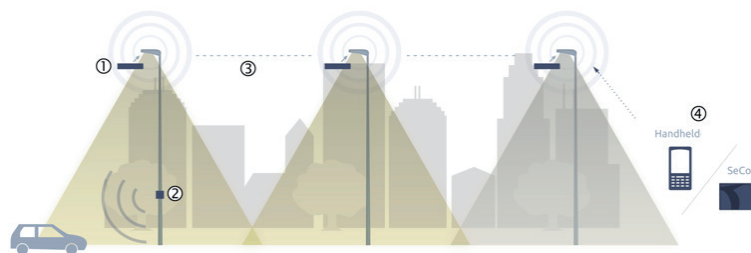
Product Information

General Description

The LuCo-ADP is an autonomous operating, intelligent control for use inside outdoor luminaires for residential, road and urban applications including Ambiance, Sport, Industry and Campus. The controller controls the driver/ballast by the means of either DALI or 1-10V interface. LuCo-ADP offers as well a sensor power supply sensor input compatible with the dry contacts of a wide range of presence, movement or traffic detectors to adjust the light levels on demand and the patent-pending LightSync™ technology ensuring dusk/dawn detection.

In addition to the above it offers driver / ballast independent energy saving algorithms, Constant Lumen Output CLO which compensates the luminance depreciation over time and VPO which equalizes wattage jumps in a luminaire range to prevent over lighting.

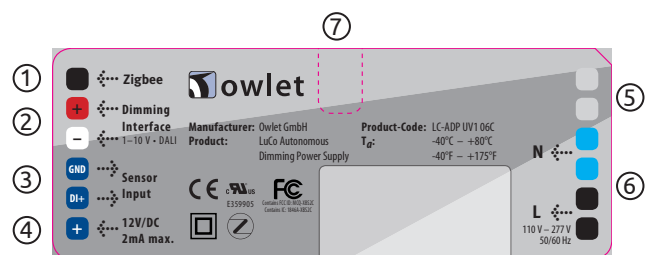
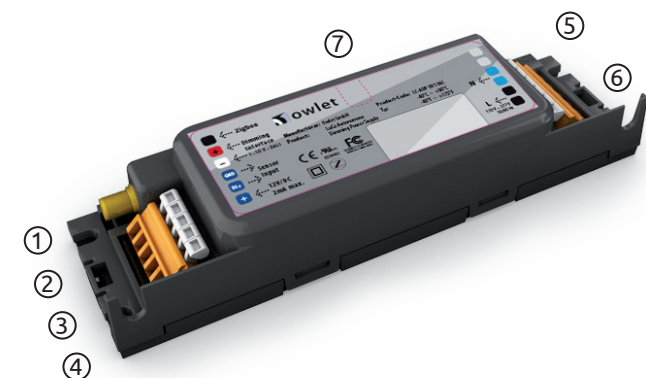
Based on the wireless industry standard ZigBee, the LuCo-ADP forms together with other LuCo-ADP's a robust and reliable autonomous mesh network to controls luminaires based sensor signals sensors to increase the light intensity when required (such as motion detectors) and group dimming profiles for customised illumination levels and the best possible energy savings.



- Each lamp is equipped with an AD controller (1). (AD=Autonomous Dimming)
- An external sensor can be connected (2) to each AD controller (such as a motion detector).
- An AD controller can also be used without a lamp and only with a sensor.
- All AD controllers communicate with each other wirelessly (3).
- A mobile commissioning device (4) is used to transfer the configuration to the LuCo-ADP controller.

Application

The LuCo-ADP controls LED-Driver/Ballast units according to the wiring diagrams below. It is designed for use inside outdoor luminaires for residential, road and urban applications including Ambiance, Sport, Industry and Campus.



1	ZigBee SMA antenna connection
2	Dimming interface 1-10V/DALI
3	Sensor input (dry contact)
4	Sensor Power Supply (12 Vdc / 2 mA max.)
5	Switched Power Output, 110 V - 220 V 50/60 Hz
6	Power Supply, 110 V - 220 V 50/60 Hz
7	LightSync connector

General operation

The LuCo-ADP is designed to perform two major tasks.

1. Controlling and sensing

The LuCo receives the incoming commands (sensor events) from his sister controllers in the mesh network and acts accordingly to regulate the light output of the luminaire using its 1-10V/DALI interface (0..100% Light).

In case of a sensor attached to the sensor input the LuCo sends a detection event to RF mesh net and all to the event associated light points will act accordingly to the event and idle dim profile stored in the LuCo's.

Behaviour in case of fault / uncommisioned

In case of a disrupted RF communication the LuCo-ADP controller operates as follows: The LuCo-ADP controller operates with the maximum value of the Idle or Event profile and reacts to its own sensor.

An un-commisioned LuCo-ADP will turn its output (1-10V/ DALI) to 100% on power up

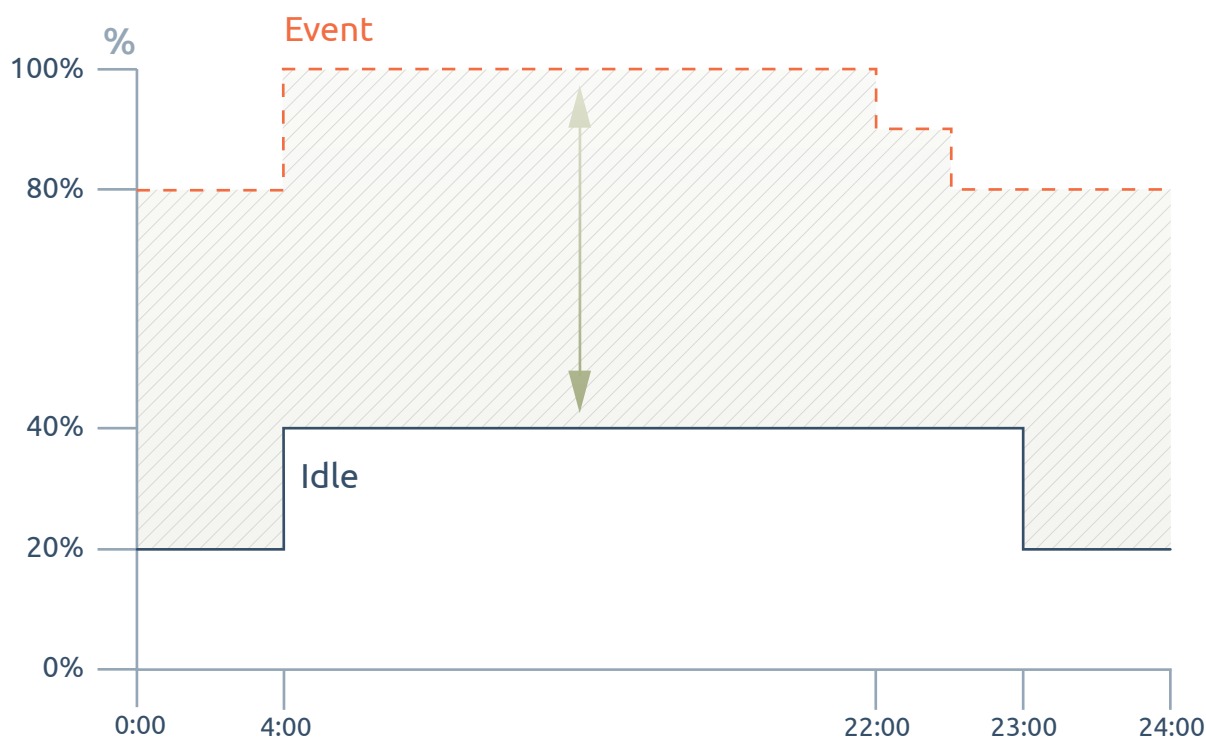
2. Energy Saving

The LuCo firmware has two inbuilt remote configurable energy savings algorithmtms:

Contant Lumen Output CLO compensates the luminance depreciation over time according to the maintance factor of the luminaire/lamp/LED assembly and VPO equalizes wattage jumps in a luminaire range to prevent over lighting.

Behaviour with Idle/Event

Each LuCo-ADP normally runs the configured Idle profile. For each LuCo-ADP it is configurable which sensors are triggering the Event dimming profile. A LuCo-ADP can react to up to 15 sensors.

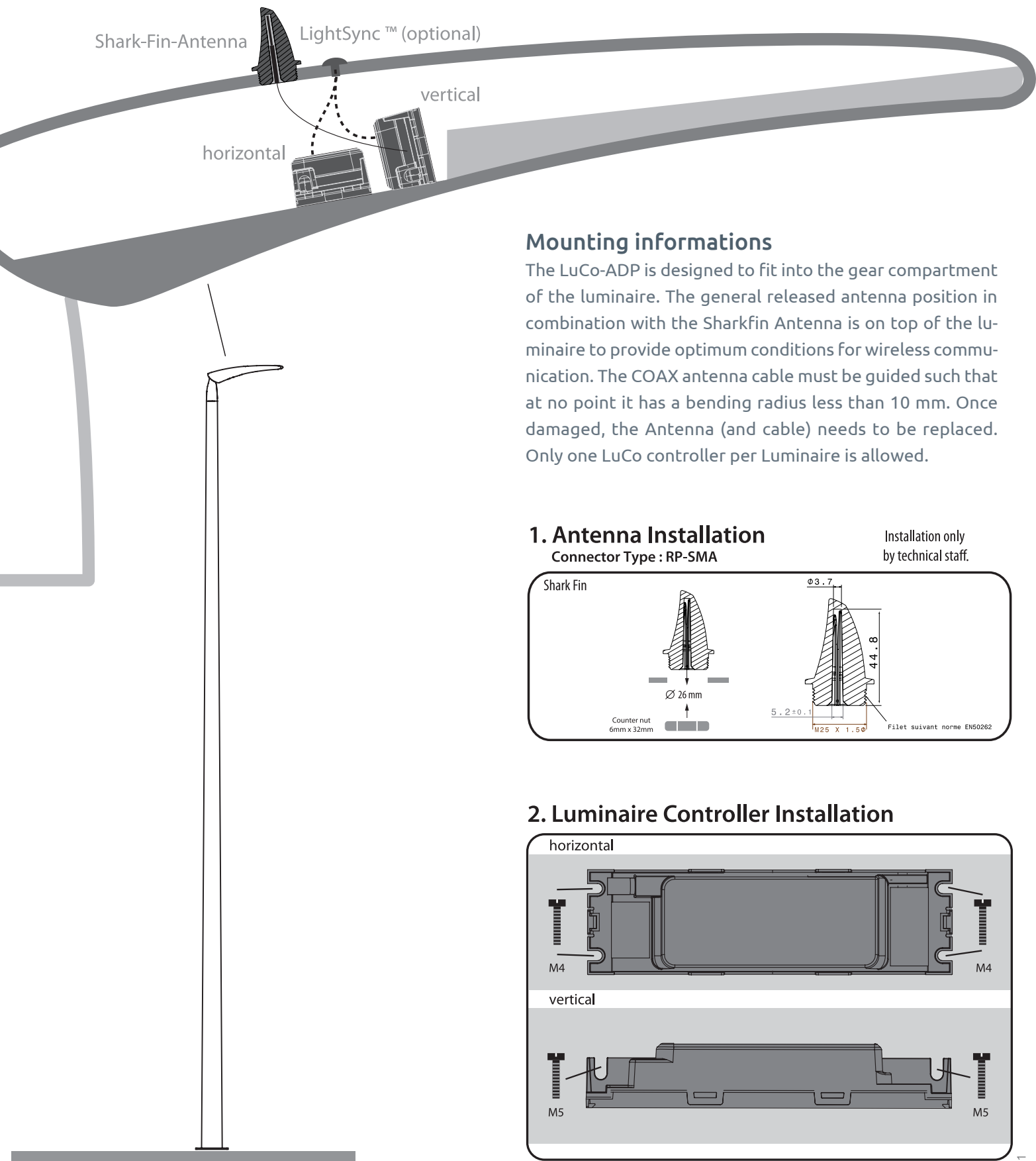


External sensors

An external sensor can be connected to each LuCo-ADP (such as a motion detector). Upon triggering of the sensor, a signal is sent to all other LuCo-ADP controllers. The LuCo-ADP also has an integrated sensor power supply (12 Vdc / 2 mA max.).

Network

All LuCo-ADP are connected with each other using ZigBee wireless. The connections among each other allow each LuCo-ADP react to every sensor.



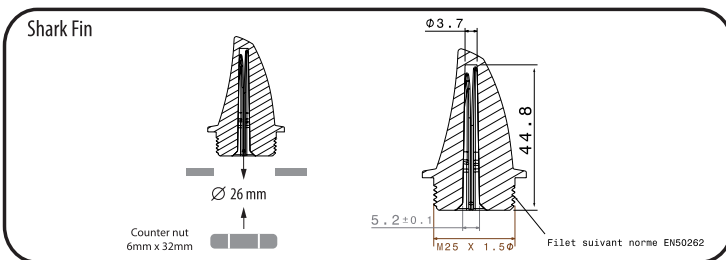
Mounting informations

The LuCo-ADP is designed to fit into the gear compartment of the luminaire. The general released antenna position in combination with the Sharkfin Antenna is on top of the luminaire to provide optimum conditions for wireless communication. The COAX antenna cable must be guided such that at no point it has a bending radius less than 10 mm. Once damaged, the Antenna (and cable) needs to be replaced. Only one LuCo controller per Luminaire is allowed.

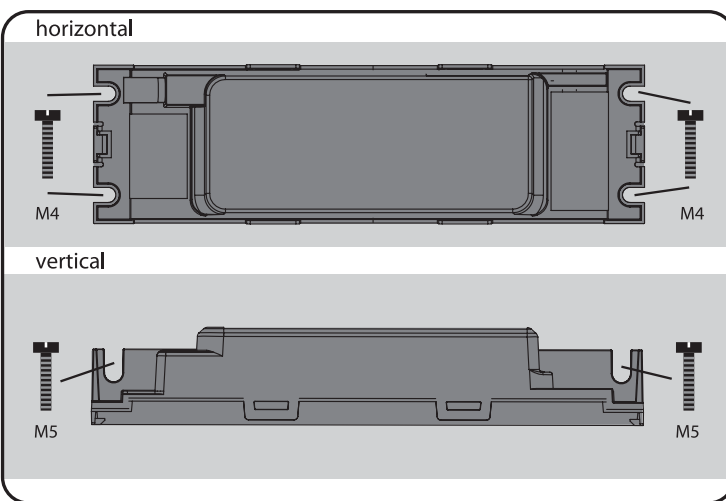
1. Antenna Installation

Connector Type : RP-SMA

Installation only
by technical staff.

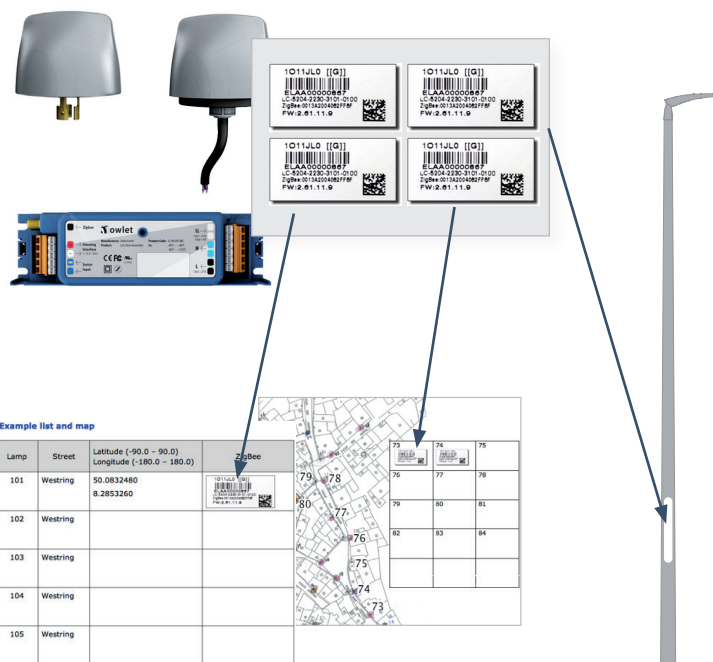


2. Luminaire Controller Installation




ZigBee/IEEE address

A LuCo-ADP will become a node in a large mesh network of LuCo-ADP's. To represent the controller in a map and address it individually, the geographic position and the unique ZigBee address needs to be recorded. This address is printed on four barcode labels on the controller. After installation on-site, the barcode must be scanned during configuration of the system.



Example list and map

Lamp	Street	Latitude (-90.0 - 90.0) Longitude (-180.0 - 180.0)	ZigBee
101	Westring	50.0832480 8.2853260	
102	Westring		
103	Westring		
104	Westring		
105	Westring		

Operating conditions

Ambient temperature (ta)	-40°C to +80°C -40°F to 175 °F
Relative humidity	10% to 90%
Max. housing temp.	(tc) 80°C

Non-operating conditions

Temperature	-30°C to +80°C -22°F to 175 °F
Relative humidity	5% to 90%

Mains connection

Mains voltage	110-277VAC ±10%
Mains frequency	50/60 Hz ± 5%

Power consumption

Stand-by wattage	< 0,7W
Operating wattage	< 0,8W

DALI output Interface

DALI Compliant to IEC62386 part 101, 102, 201, 203, 207	
Load capacity	8 DALI lampdrivers
Protection	Interface is short circuit proof
DALI voltage	11.5 to 20.5Vdc
DALI current	16 mA

Installation terminal

- Tension clamp connection with a 135° outlet direction
- lever for simple opening of terminal point
- Solid, flexible 0.13-2.5mm2(IEC)/26-14AWG(UL) with wire end ferrule DIN 46228 pt 1 min 0,25mm2 – 1,5mm2 stripping length 6mm

1-10V interface

Compliant to 1-10VDC IEC60929 (Annex E)

Load capacity	eight 1-10V lampdrivers
Load current	Interface is current sinking max 16mA

Sensor Power Supply

12 Vdc ± 0,5 V, 2 mA max.

Radio Frequency

Protocol	IEEE802.15.4 / ZigBee Pro Meshnet
Frequency band	2,4 GHz (2400,0...2483,5 MHz)

Housing

Material	PPE+PS, RESIN: SABIC NORYL N300X
Protection class	IP20 (installed condition) provides insulation Class II

Standards & Legislation

Approvals:	UL 916 (E359905) R&TTE directive 1999/5/EC EMC directive 2004/108/EC LV directive 2006/95/EC RoHS directive 2002/95/EC EN301489-17 EN61000-6-2 EN61000-6-3 EN55022
Conducted emission	FCC Part 15 (MCQ-XBS2C)
Radiated emission	FCC Part 15 (MCQ-XBS2C)
Safety:	EN60950-1 / EN 61347-2-11