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Made in Czech Republic
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EN

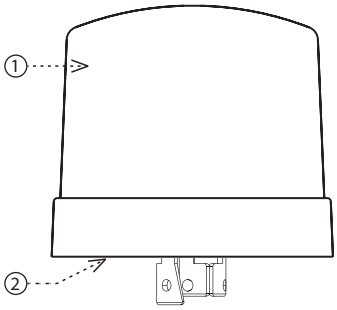
AirSLC-100L/NEMA

Street light controller - NEMA socket

Characteristics

- Used for remote control of the luminaire: ON / OFF / DIMM.
- Measures current flow - fault detection (ballast fault, light source, connecting wires ...)
- Communicates over the wireless LPWAN network (LoRa).
- Output signal 0 (1) -10V or DALI for direct control of ballast in luminaire.
- Internal light intensity sensor, range 5 - 100,000Lx.
- Internal temperature sensor in the range -30 ... 70 ° C.
- Power supply: 100-230 V AC, Power 3.5 VA.
- The IP66, UV-resistant, is designed for outdoor mounting in the NEMA socket.
- Update using the RFAF / USB Service Key.
- Connection standard: Standard ANSI C136.41 Dimming Receptacle.

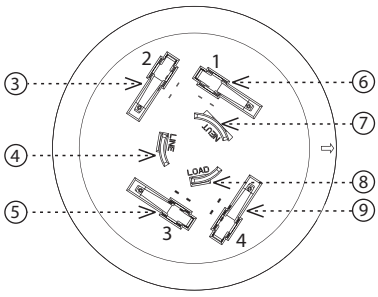
Description



1. Cover
2. Base
3. 0(1)-10 V (+) / DALI (+) *
4. L - phase (LINE)
5. Not connected
6. 0(1)-10 V (-) / DALI (-) *
7. N - neutral (NEUT)
8. V - switched output (LOAD)
9. Not connected

* by module type (analog / DALI)

Underside view



Cloud app assignment

It is done in your Smartphone application. Enter the relevant information on the product cover into the application.

General instrucions

Internet of Things (IoT)

- The IOT wireless communications category describes the Low Power Wide Area (LPWA). This technology is designed to provide full-range coverage both inside and outside buildings, energy-saving and low-cost operation of individual devices. The LoRa network is available to use this standard.

LoRa network information

- The network is bidirectional and its communication uses free frequency band.
  - 865 - 867 MHz India
  - 867 - 869 MHz Europe
  - 902 - 928 MHz North America, Japan, Korea
- The advantage of this network is the possibility of freely deploying individual stations in local locations, thus strengthening their signal. It can therefore be used efficiently in company premises or, for example, in local parts of cities.
- For more information on this technology, please visit www.lora-alliance.org.

Caution for proper operation:

- Products are installed according to the wiring diagram given for each product.
- For proper device functionality, it is necessary to have sufficient coverage of the selected network at the installation site.
- At the same time, the device must be registered in the network. Successful device registration on a given network requires a charge for traffic.
- Each network offers different tariff options - it always depends on the number of messages you want to send from your device. Information on these tariffs can be found in the current version of the ELKO EP pricelist.

Function

When the power is connected, the device sends the initial message containing the measured temperature and light intensity.

Sensor senses temperature and intensity of lighting every 2 minutes. After that, it sends a data message of measured values every 15 minutes.

Function setting (message from server):

- Function AUTOMAT:
  - the on / off is controlled according to the intensity measured by the light sensor
- Function SEMI-AUTOMAT:
  - Switching on / off, the brightness is set according to the set schedule (the schedule can be set by a message from the server)
  - Outside the schedule is set to Auto
- Function MANUAL:
  - Messages from the server can be turned on / off, adjust brightness and interval for sending data messages.

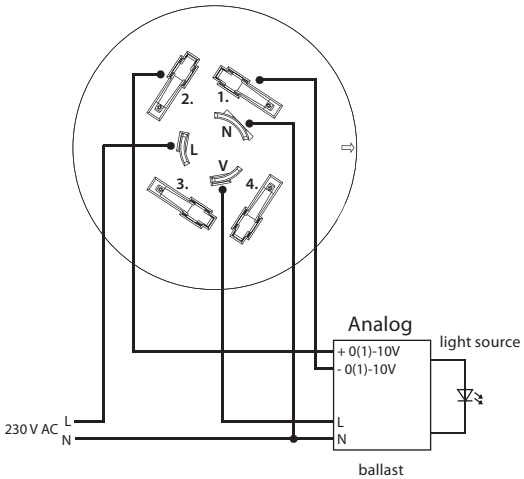
Connection

Connections by TE Connectivity Connector Type:

LUMAWISE Endurance N, NEMA7 (ANSI C136.41-2013)

Example connection

Connection 0 (1) -10V (analog)

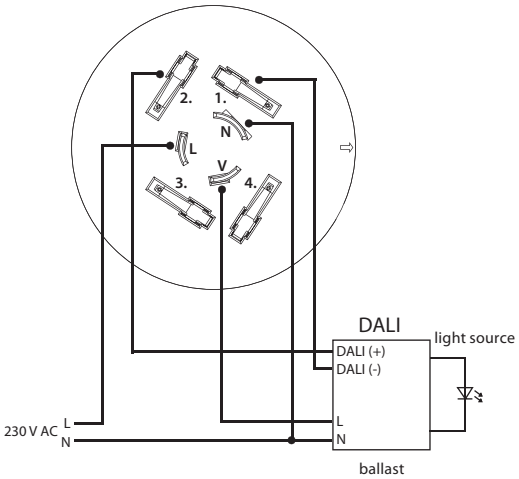


Description of wiring contacts:

1. 0(1) - 10 V (-)
2. 0(1)-10 V (+)
3. not connected
4. not connected

L (LINE)- phase
N (NEUT) - neutral
V (LOAD) - switched output

Connection DALI



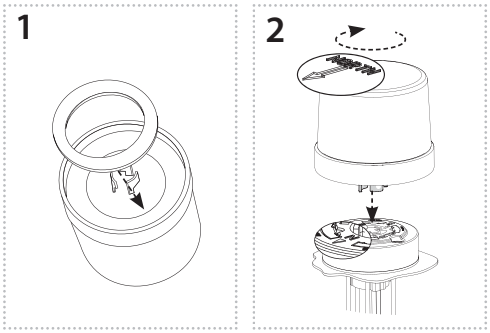
Description of wiring contacts:

1. DALI -
2. DALI +
3. not connected
4. not connected

L (LINE)- phase
N (NEUT) - neutral
V (LOAD) - switched output

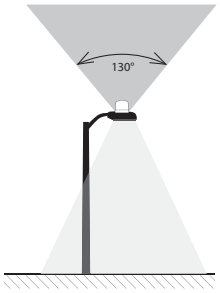
For the management of DALI BUS there is not an exact cable type recommended, but it is important to keep some installation conditions. For DALI BUS lines up to 100 m the recommended min. conductor cross section is 0.5 mm^2. For management between 100 m -150 m a cross section of 0.75 mm^2 and more than 150 m the recommended min is 1.5 mm^2. Management of more than 300 m is not recommended. The voltage drop at the end of the installation may not be greater than 2 V.

Assembly



1. Remove the protective layer from the seal and glue it to the underside of the AirSLC-100 / NEMA.
2. Place the AirSLC-100/ NEMA into the prepared socket and turn it clockwise (see LUMAWISE Endurance N, NEMA7 manual (ANSI C136.41-2013) for mounting the socket).

Placement recommendations



- The outdoor lighting control module is designed for mounting into a ready-made base for public lighting.
- Before mounting, check the range and location of the product and the antenna. Ensure the correct location - see Warning.
- The recommended working position is vertical, connectors down.
- Ensure the correct location - see Warning.
- The sensor is suitable for outdoor use. Operating conditions are consistent with conventional chemically non-aggressive environments.
- For proper functionality, the cover guide should be kept clean and uncovered (occasional cleaning of the cover without the use of chemicals).

Inappropriate location

- Places where distortion may occur (the cover must not be illuminated by direct light) - below the lamp, where there is a sudden change in lighting intensity (e.g. flashing advertising), etc.
- Very dusty environment.
- In the case of light pipe installation, the weather may be distorted due to bad weather (heavy rain / snow).

UPLINK

Message	Port / Byte	0	1	2	3	4	5	6	7	8	9	10	11	12
Notification	1	Actual output level	Actual ballast status*	Actual function status										
Heartbeat	2				Tempera-ture[0]	Tempera-ture[1]	Illumi-nance[0]	Illumi-nance[1]	Illumi-nance[2]	Illumi-nance[3]	Actual downlink counter			
Power on	3	Version FW	Subversion FW	Version FW LoRaWAN	Subversion FW LoRaWAN	Actual downlink counter								
Configuration confirm	5	0x01												
Multicast configuration confirm	50	Multicast address [0]	Multicast address [1]	Multicast address [2]	Multicast address [3]									

Note

Actual output level	0 - 100 [%]	
Actual ballast status*	Bit 0 = 1	ballast not responding
	Bit 1 = 1	ballast fault
	Bit 2 = 1	lamp fault
	Bit 3 = 1	high temperature DALI switching element
Actual function status	Bit 0 = 1	Unknown actual time
	Bit 1 = 1	Function MANUAL - timeout overlapped
	Bit 5 - 4	Function: „01" - AUTOMAT „10" - SEMI-AUTOMAT „11" - MANUAL
Temperature[0 - 1]	x [°C * 10]	
Illuminance[0 - 3]	0 - 188000 [lx]	
Multicast address [0 - 3]	Actual multicast address	

* DALI only

DOWNLINK

Message	Port / Byte	0
Control	1	Requested output level
	51 (multicast)	Requested output level

Note

Actual output level	0 - 100 [%]

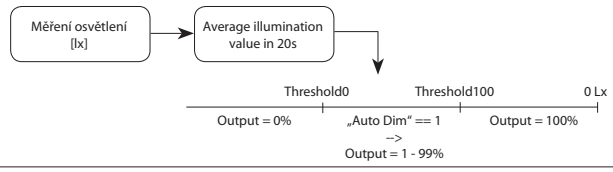
Message	Port / Byte	0
Status get	2	0xC0

Message	Port / Byte	0	1	2	3	4	5	6	7	8	9
Configuration	5	Function	Heartbeat period	Initial output level	Ramp	Threshold100	Threshold0	Auto Dim	Manual timeout	Manual timeout value	Manual timeout status

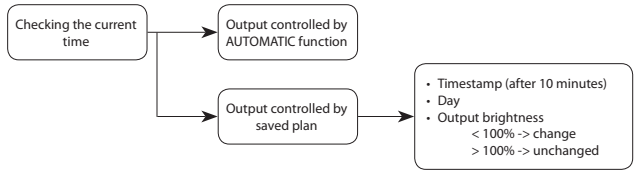
Note

Function	0x01	Function AUTOMAT
	0x02	Function SEMI-AUTOMAT
	0x03	Function MANUAL
Heartbeat period	0 - 127	x [min]
	129 - 255	x - 128 [h]
Initial output level	0 - 100 [%]	
Ramp	0 - 10 [s]	
Threshold100	0 - 255 [lx / 10]	Threshold100 < Threshold0
Threshold0	0 - 255 [lx / 10]	
Auto Dim	0x00	without diming
	0x01	smooth diming
Manual Timeout	1 - 255	x * heartbeat period
Manual Timeout hodnota	0 - 100 [%]	
Manual timeout status	0x00	output from Manual timeout value
	0x01	output from AUTOMAT

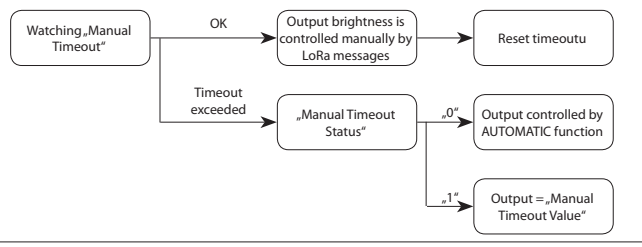
Function AUTOMAT



Function SEMI-AUTOMAT



Function MANUAL



Message	Port / Byte	0	1	2
Actual time set	6	Time[0] [min]	Time[1] [min]	Day
	56 (multicast)	Time[0] [min]	Time[1] [min]	Day

Note

Time[0 - 1]	0 - 1439 [min]	e.g. 18:20 = 18*60 + 20 = 1100
Day	0x00	Sunday
	0x01	Monday
	0x02	Tuesday
	0x03	Wednesday
	0x04	Thursday
	0x05	Friday
	0x06	Saturday

Message	Port / Byte	0	1	2	3
Time mark set	7	Time[0] [min]	Time[1] [min]	Day (mask)	Requested output level
	57 (multicast)	Time[0] [min]	Time[1] [min]	Day (mask)	Requested output level

Note

Time[0 - 1]	0 - 1439 [min]	10 min, e.g. 18:20 = 18*60 + 20 = 1100
Day (mask)	Bit 0 = 1	Sunday
	Bit 1 = 1	Monday
	Bit 2 = 1	Tuesday
	Bit 3 = 1	Wednesday
	Bit 4 = 1	Thursday
	Bit 5 = 1	Friday
	Bit 6 = 1	Saturday
Requested output level	0 - 100 [%]	

Message	Port / Byte	0
Time table clear	8	0x00
	58 (multicast)	0x00

Message	Port / Byte	0	1	2	3	4	5	6	7	8	...
Mutlicast address set	50	0x01	Multicast address [0]	Multicast address [1]	Multicast address [2]	Multicast address [3]	NwksKey[0]	AppsKey[0]	NwksKey[1]	AppsKey[2]	...
		0x00 - multicast cancel									

Note

Multicast address [0 - 3]	multicast address
NwksKey [0 - 15]	NwksKey
AppsKey [0 - 15]	AppsKey
CRC[0 - 1]	Sum of all bytes + 0x0A0A Little-Endian

Message	Port / Byte	0
Multicast address get	51	0x00

Message	0	1
Device reset	100	0xE1

Message	Port / Byte	0 - 3	4 - 7	8 - 11
Counters set	101	Uplink counter[3 - 0]	Downlink counter[3 - 0]	Multicast downlink counter[3 - 0]

Example

Multicast address set		
Multicast address		01234567
NwksKey		00112233445566778899AABBCCDDEEFF
AppsKey		A0A1A2A3A4A5A6A7A8A9AAABACADAEAF
Final message	50	010123456700A011A122A233A344A455A566A677A- 788A899A9AAAABBABCCACDDADEEAEFFAF1C7A
Cancel multicast address		
Final message	50	00

Heartbeat period	Time between periodical messages on port 2	
Manual timeout	Time without receiving the message by the device.	
	The manual timeout is set in multiples of the heartbeat period.	
	Heartbeat = 5 min	
	Manual timeout = 2	Manual timeout = 10 minut
Threshold100 / Threshold0	Enter in lux / 10	
	100% at 20 lux	Threshold100 = 2
	0% at 300 lux	Threhsold0 = 30

Technical parameters

	AirSLC-100L/NEMA/ DALI	AirSLC-100L/NEMA/ 0-10
Supply voltage::	AC 100 - 230 V AC	
Power:	3.5 VA	
Supply voltage tolerance:	-10 /+15 %	
Standby consumption:	0.5 W	
Consumption max.:	at 2 W communication	
Temperature sensor	Measurement of instrument internal temperature	
Range:	-30 .. 70°C	
Accuracy:	±1°C in the range -10°C .. 70°C ±3°C in the range -30°C .. -10°C	
Light sensor		
Scanned Range:	5 - 100 000 Lx	
Detection angle:	130°	
Indication		
- blue LED:	module power supply	
- green LED:	STATUS module	
- red LED:	LPWAN communications	
Inputs		
Communication Interface:	DALI polarized - active (20 mA)	Analog 0(1)-10 V (20mA)
Relay		
Power outputs L, N, V:	Load max. 10 A	
Number of contacts:	1x NO $AgSnO_2$	
Current rating:	10 A	
Breaking capacity:	2500 VA / 300 W	
Switching voltage:	250 V AC1 / 30 V DC	
Mechanical life:	$1x\ 10^7$	
Electrical life:	$1x\ 10^5$	
Communication		
Protocol:	LoRa	
Transmitter frequency:	868 MHz	
Range in open space:	Approx. 10 km*	
Transmission power (max.):	25 mW / 14 dBm	
Protocol:	iNELS RF Control	
Transmitter frequency:	866 MHz, 868 MHz, 916 MHz	
Range in open space:	up to 20 m	
Other parameters		
Working temperature:	-30 .. +50 °C	
Storage temperature:	-30 .. +70 °C	
Operation position:	See manual	
Mounting:	in socket	
Protection degree:	IP66	
Overvoltage category:	III.	
Pollution degree:	2	
Dimension:	Ø 84 x 75 mm	
Weight:	150 g	

* Depending on network coverage

Warning

Read the operating instructions before installing the device and putting it into operation. Instruction manual is designated for mounting and also for user of the device. It is always a part of its packing. Installation and connection can be carried out only by a person with adequate professional qualification upon understanding this instruction manual and functions of the device, and while observing all valid regulations. Trouble-free function of the device also depends on transportation, storing and handling. In case you notice any sign of damage, deformation, malfunction or missing part, do not install this device and return it to its seller. It is necessary to treat this product and its parts as electronic waste after its lifetime is terminated. Before starting installation, make sure that all wires, connected parts or terminals are de-energized. While mounting and servicing observe safety regulations, norms, directives and professional, and export regulations for working with electrical devices. Do not touch parts of the device that are energized – life threat. To ensure the transmission of the radio signal, make sure that the devices in the building where the installation is installed are correctly located. Unless otherwise stated, the devices are not intended for installation in outdoor and damp areas, they must not be installed in metal switchboards or in plastic cabinets with metal doors - this prevents transmission of the radio frequency signal. iNELS Air is not recommended for controlling life-saving instruments or for controlling hazardous devices such as pumps, heaters without thermostat, lifts, hoists, etc. - radio frequency transmission may be overshadowed by obstruction, interference, transmitter battery may be discharged etc., thereby disabling the remote control.