DLS3-1

EN Luminescence sensor

02-223/2016 Rev.2

Characteristics

- The luminescence sensor DLS3-1 is for sensing the current luminescence at the point of installation of the unit.
- The DLS3-1 sensor is equipped with two communication interfaces:
  - iNELS BUS Installation
  - DALI (a maximum 4 pcs of DMD3-1 or DLS3-1 units can be used on one DALI bus)
- Information about the current value of the light intensity can be used in tasks of maintaining constant luminescence. In space where it is possible, thanks to the contribution of natural light from the outside to adjust the artificial light, which can reduce energy consumption.
- Thanks to the DLS3-1 units cannot only be used in residential projects, but also in commercial projects, offices or manufacturing plants, warehouses.
- The DLS3-1 unit is recommended to be installed so that the luminescence sensor for sensing faces down and should not be exposed to direct radiation.
- Setting up a communication interface with DIP switches no. 1:
  - In the upper position determines the communication interface DALI.
  - In the lower position determines the communication interface iNELS.
- The DLS3-1 detector is powered directly via the iNELS BUS installation (nominal 27 V DC) or DALI BUS (nominal 16 V DC).
- The unit can be configured via iNELS3 Designer & Manager software, which, amongst other things it is possible to: Set the desired functions according to the detected ilumination.
- The sensing range is 1-100 000 lux.
- The DLS3-1 unit is supplied in IP65 and so can be installed in the outdoor environment.

General instrucions

CONNECTION TO THE SYSTEM, INSTALLATION BUS

iNELS3 peripheral units are connected to the system through the BUS installation. Installation BUS conductors are connected to the terminal units to BUS+ and BUS- terminals, wires cannot be interchanged. For installation of BUS it is necessary to use a cable with a twisted pair of wires with a diameter of at least 0.8 mm, the recommended cable is iNELS BUS Cable, whose features best meet the requirements of the BUS installation. Bearing in mind that in terms of all the properties is it is possible in most cases also use the cable JYSTY 1x2x0.8 or JYSTY 2x2x0.8, however it is not recommended as the best option. In the case of a cable with two pairs of twisted wires it is not possible to use the second pair of the other for modulated signal due to the speed of communications; it is not possible within one cable to use one pair for one segment BUS and the second pair for the second segment BUS. For installation of BUS it is vital to ensure that it is kept at a distance from the power lines of at least 30 cm and must be installed in accordance with its mechanical properties. To increase mechanical resistance of cables we recommend installation into a conduit of suitable diameter. BUS topology installation is free except for the ring, wherein each end of the bus must terminate at the terminals BUS + and BUS- peripheral unit. While maintaining all the above requirements, the maximum length of one segment of the installation BUS can reach up to 500 m. Due to the data communication and supply of units in one pair of wires, it is necessary to keep in mind the diameter of wires with regards to voltage loss on the lead and the maximum current drawn. The maximum length of the BUS applies provided that they comply with the tolerance of the supply voltage.

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.

CAPACITY AND CENTRAL UNIT

It is possible to connect to the central unit CU3-01M or CU3-02M two independent BUSes by means of terminals BUS1+, BUS1- and BUS2+, BUS2-. It is possible to connect to each BUS up to 32 units, so it is possible to connect directly to the central unit a total of 64 units. It is necessary to comply with the requirement of a maximum load of one BUS line - maximum up to 1000 mA current. When connecting units which draw greater than 1A, BPS3-01M with 3A sampling can be used. It is the sum of the rated currents of the units connected to the BUS line, other units can be connected using the units MI3-02M, which generate further BUSes. These are connected to the CU3 unit via the system BUS EBM and you can connect a total of 8 units via EBM BUS to the central unit MI3-02M.

SUPPLYING THE SYSTEM

For supplying power to system units, it is recommended to use the power source of ELKO EP titled PS3-100/iNELS. We recommend backing up the system with backup batteries connected to the source of PS3-100/iNELS (see sample diagram of connecting the control system).

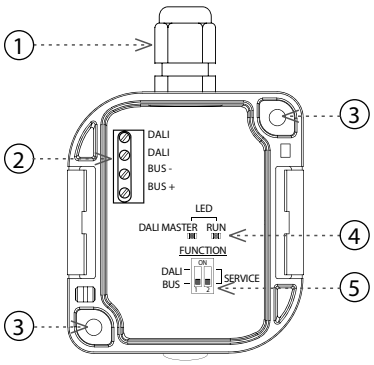
GENERAL INFORMATION

To operate the unit, it is necessary that the unit is connected to a central unit CU3 series, connected to the central unit of the system CU3, or to a system that already contains this unit as its expansion to include further system.

All unit parameters are set through the central unit CU3-01M in the software iDM3.

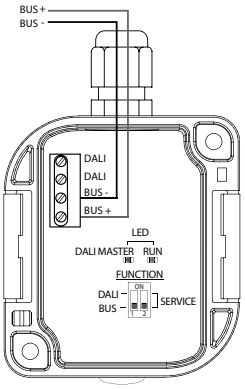
There is LED diode on the PCB for indication of supply voltage and communication with the central unit series CU3. In case that the RUN diode flashes at regular intervals, so there is standard communication between the unit and BUS. If the RUN diode lights permanently, so the unit is supplied from BUS, but there is no communication between BUS and unit. In case that RUN diode is OFF, so there is no supply voltage on the terminals BUS+ and BUS-.OFF, so there is no supply voltage on the terminals BUS+ and BUS-.

Description of device



1. Bushing M16x1.5 for connecting cable with max. diameter of 10 mm
2. Terminal
3. Opening for wall mounting Ø 4.3 mm
4. LED indication
5. Switch

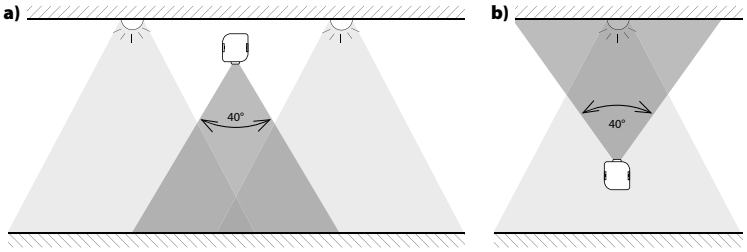
Connection



Mounting

Safe handling

When handling a device unboxed it is important to avoid contact with liquids. Never place the device on the conductive pads or objects, avoid unnecessary contact with the components of the device.
Always set up, connect, and mount the device when the power is off. There is a risk of mechanical failure and electrical shock. Or damage to parts!



Installation instructions:
- Do not connect the device live to DALI or iNELS BUS.
- Set up the unit (DALI/BUS) first.
- Attach the unit (on the wall).
- Connect the BUS and close the box cover.

DO NOT handle an open unit when the BUS or DALI BUS is on!

a) the height of the DLS3-1 location and the colour of the illuminated surface affect the resulting value of the measured illumination
b) can be installed with the light sensor facing upwards, provided that the lens of the sensor is kept clean (free from dust, etc.)

Technical parameters

DLS3-1	
Inputs	
Range of measurement of lighting:	1 - 100 000 lx
Detection angle:	40 °
Ouputs	
Indication red LED:	identification DALI MASTER / setting indication
Indication green LED RUN:	communications / unit status
Communication	
Interface:	Installation BUS iNELS DALI
Pover supply	
From iNELS BUS:	27 V DC, -20 / +10 %
Rated current:	12 mA (27V DC)
From DALI BUS:	16 V (max. 23 V)
Rated current:	20 mA (16 V DC)
Dissipated power:	max. 0.5 W
Connection	
Terminals (mm^2):	max. 1x 2.5, max. 2x1.5 / with sleeve max. 1x 2.5
Operating conditions	
Operating temperature:	-30 .. +60 °C
Storing temperature:	-30 .. +70 °C
Protection degree:	IP65
Operating position:	vertical
Dimension and weight	
Dimension:	96 x 62 x 34 mm
Weight:	100 g

Warning

Before the device is installed and operated, read this instruction manual carefully and with full understanding and Installation Guide System iNELS3. The instruction manual is designated for mounting the device and for the user of such device. It has to be attached to electro-installation documentation. The instruction manual can be also found on a web site www.inels.com. Attention, danger of injury by electrical current! Mounting and connection can be done only by a professional with an adequate electrical qualification, and all has to be done while observing valid regulations. Do not touch parts of the device that are energized. Danger of life-threat! While mounting, servicing, executing any changes, and repairing it is essential to observe safety regulations, norms, directives and special regulations for working with electrical equipment. Before you start working with the device, it is essential to have all wires, connected parts, and terminals de-energized. This instruction manual contains only general directions which need to be applied in a particular installation. In the course of inspections and maintenance, always check (while de-energized) if terminals are tightened.

Communication protocol

24 bit DALI MASTER frame

Bit 23	Bit 22 – 17	Bit 16	Bit 15	Bit 14 -10	Bit 9 – 0
0	64 short addresses	0	1	32 instance numbers	event data

Instance number:	Event data DLS–3
1	
2	Light intenzity step (1 sec)
3	
4	

Light intenzity [Lux] = 10exp(Light intenzity step/174)

Supported DALI commands (IEC 62386-103:2014)

TERMINATE
INITIALIZE
RANDOMIZE
COMPARE
WITHDRAW
SEARCHADRH
SEARCHADRM
SEARCHADRL
PROGRAM_SHORT_ADDRESS
VERIFY_SHORT_ADDRESS
QUERY_SHORT_ADDRESS
DTR0
DIRECT_WRITE_MEMORY

IDENTIFY_DEVICE
SET_SHORT_ADR
ENABLE_WRITE_MEMORY
QUERY_DEVICE_STATUS
QUERY_VERSION_NUMBER

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