Produktbeskrivning

SBD – Lighting control unit [DALI - CAN]

SBD Version B05 (24VAC)

Introduction SBD

SBD is a controller for DALI luminaires.

Function

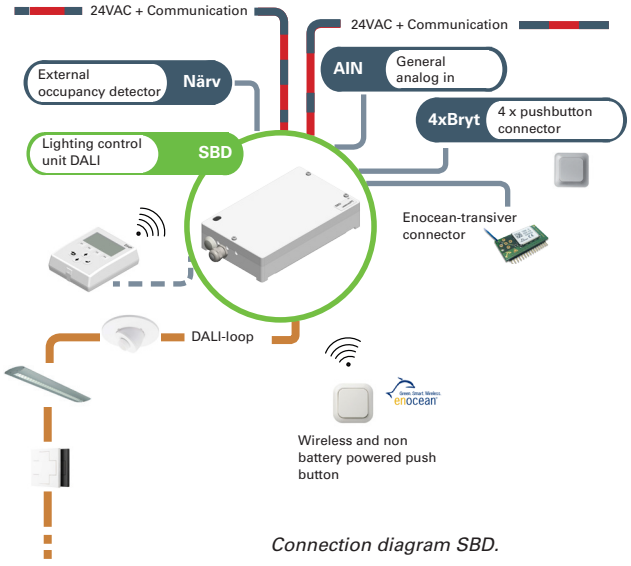
SBD serves both as a DALI master for a DALI loop of luminaires and as a DALI bridge to Lindinvent's communication loop (CAN).

Two options can be selected as the basic model for lighting control: Fully addressed DALI or Broadcast DALI.

- DALI functionality means that lighting individually or in groups after a choice of rules or conditions can, for example:
  - Go to max
  - Turn off
  - Fade up/down
- DALI functionality gives the possibility to control illumination via pre-programmed scene selections.

Options: Advanced mode DALI (Fully Addressed)
For fully addressed DALI, the system communicates with each addressed luminaire individually or to groups of luminaires on the DALI loop.

Option: Easy DALI mode (Broadcast)
Broadcast means that instructions for a DALI loop will control all luminaires regardless of individual addressing or assigned group affiliation.



Connection diagram SBD.

SBD 24 V – Lighting controller DALI.

DALI equipment: Light sensor and four-way scene selector.

Function (continued)

- One DALI loop can be connected per SBD.
- Support for 8 wireless and non battery powered switches that communicate with SBD via Enocean technology within a radius of 15 meters.
- Support for 4 wire-connected switches (not DALI).
- Support for 1 wire-connected occupancy detector (not DALI).
- Can be connected via node ID to a communication loop (CAN) for access to and communication with other concurrent nodes or systems via LINDINTELL or Gateway NCE with Modbus TCP / RTU.
- The controller has parameters that can be read and updated from LINDINTELL / LINDINSPECT via CAN.
- Other devices connected to Lindinvent's communication loop (CAN) can be used for increased functionality. For example the occupancy detector, mounted in Lindinvent's active supply air diffuser, can be used to control lighting.

User interface

- Server with LINDINTELL/LINDINSPECT via CAN.
- Direct login on the controller via hand unit DHP (Supports IR or wired communication)

LIND**INTELL**/LIND**INSPECT**

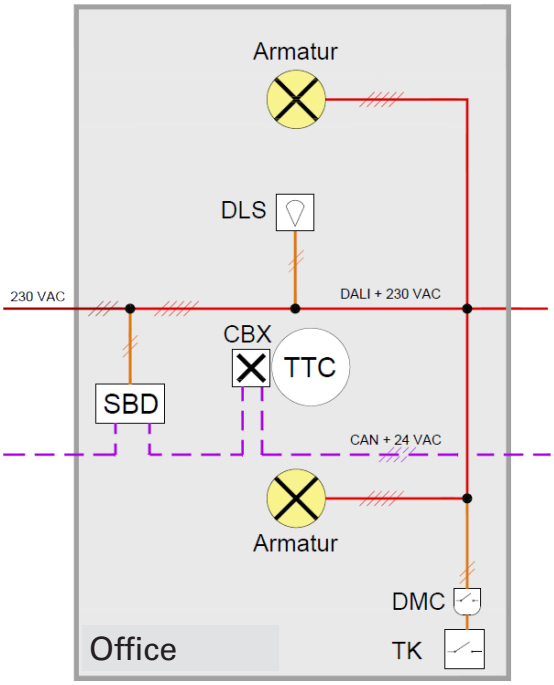
LIND**INTELL** is the software package that is installed on a central server. The software coordinates all optimisation and monitoring functions in Lindinvent's system for climate control and protective ventilation.

LIND**INSPECT** is a Web interface developed to be used with LIND**INTELL**.

SBD – Lighting control unit [DALI - CAN]

SBD Version B05 (24VAC)

Sample operation card DALI

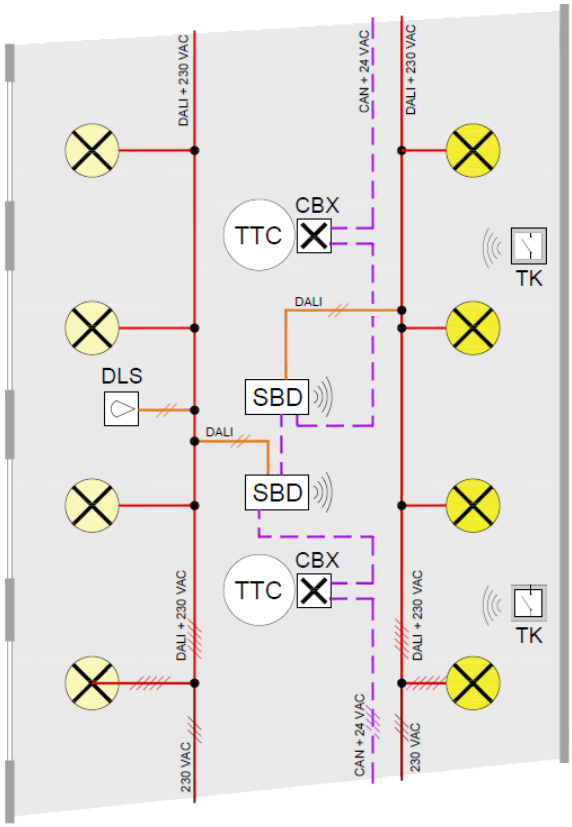


Operation card for fully addressed DALI. For additional detailed examples, see Lindinvent's Lighting Design Guide.

Full DALI:

SBD with individually addressed devices:

- SBD power supply: 230 VAC.
- SBD is connected to the communication loop (CAN) witch is built using a shielded 4-conductor cable for both 24 VAC power supply and communication.
- All units on the DALI loop are assigned unique addresses.
- Units in the same room are assigned a common group number.
- The occupancy detector in TTC (An active supply air diffuser) turns on the lighting when presence is detected. The lighting is turned off after a set time in case of absence.
- Light sensor DLS controls the intensity of light via SBD when presence.
- With power switch (TK) connected to I/O module DMC, the lighting can be controlled manually (Go to maximum / Go to minimum / Dim Up or Down.



Operation card for Broadcast DALI. For additional detailed examples, see Lindinvent's Lighting Design Guide.

Broadcast DALI:

Lights connected to one and the same Dali loop are controlled via a common command:

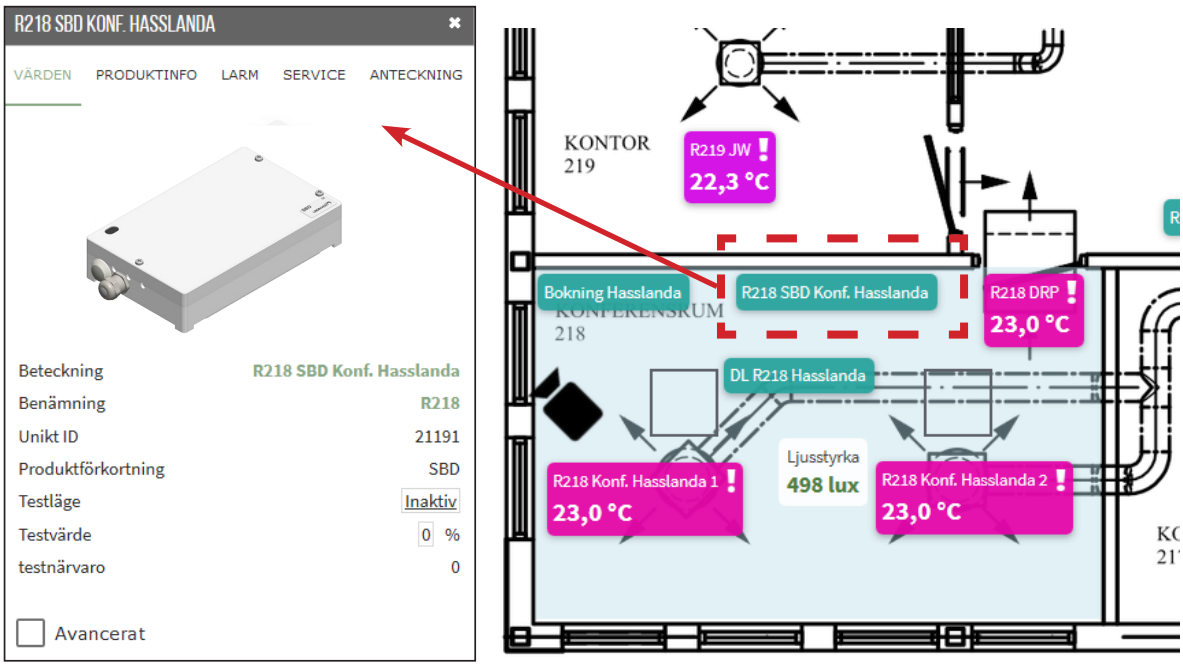
- SBD is supplied with 230 VAC.
- SBD is connected to the communication loop (CAN) witch is built using a shielded 4-conductor cable for both 24 VAC power supply and communication.
- Wireless switches TK (Enocean) is connected to SBD.
- DALI lights do not need to be addressed. Lights on the same DALI loop receives a common command.
- The occupancy detectors in TTC1 and TTC2 (Active supply air diffusers) are in the same lighting zone. The lighting is turned on when presence is detected by any of the detectors. The lighting is turned off after a set time in case of absence.
- Light sensor DLS controls the intensity of light along the façade when presence.
- Luminaires in the inner zone are lit as long as there is presence in the zone.
- With the wireless switches (TK), the illumination can be controlled manually Max / Off or dim Up / Down.

SBD – Lighting control unit [DALI - CAN]

SBD Version B05 (24VAC)

LINDINSPECT for visualization

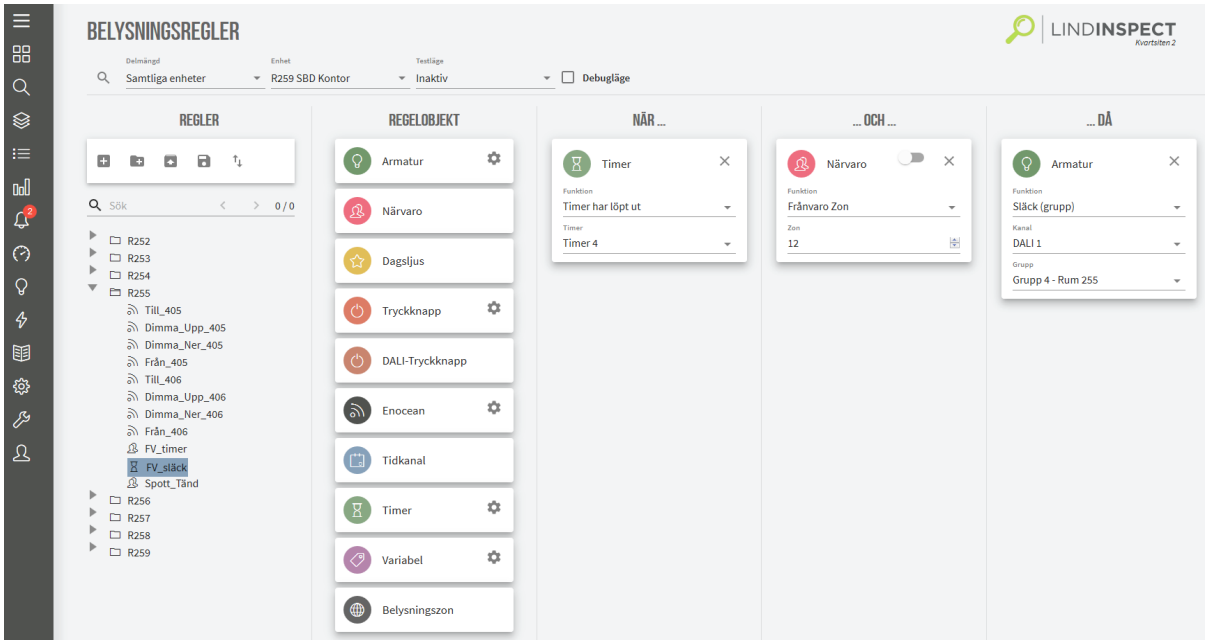
Via Lindinvent's web tool LINDINSPECT, users can view or detail the current lighting conditions using plan views.



Visualization of luminaires with regard to on / off, brightness and setting parameters takes place in LINDINSPECT - our web-based interface that is intuitive and simple.

LINDINSPECT and INCONTROL for DALI

INCONTROL is the tool within LINDINSPECT that is used to link rules / conditions to lighting or lighting groups.



The graphical tool INCONTROL within LINDINSPECT where the user can tie rules to DALI-nodes.

SBD – Lighting control unit [DALI - CAN]

SBD Version B05 (24VAC)

Technical specification

General

Dimensions (mm)
200 x 125 x 45 (LxWxH)

Temperature limits
Operation: 10°C till 40°C; <85% RF
Storage: -20°C till 50°C; <90% RF

Material
Polystyrene encapsulation

Net weight
0,6 kg

Colour
RAL 9003

IP classification
IP53

Electrical system

Supply voltage
24 VAC

Electric power usage
Max 10W

CE marking
Complies with EMC and the Low Voltage Directive

Connection instructions

Connection to the communication loop (CAN) is made with a shielded 4-conductor cable used both for 24 VAC feed and CAN.

- Supports DALI1-protocol devices
- Supports connection of Lindinvent sensors.

Available connections at full DALI

- 1 DALI-loop/line per SBD
- Maximum number of DALI-nodes/devices: 64
- Maximum number of controllers
  - Switches: 8 st
  - Occupancy and light sensors in total: 8 st
- Maximum number of groups: 16
- Maximum number of scenes: 16

Line current limitation
Maximum line current: 125 mA

Available connections at Broadcast DALI

- 1 DALI-loop/line per SBD
- Maximum number of controllers
  - Switches: 8
  - Occupancy detectors: 8
  - Light sensor: 1

Line current limitation
Maximum line current: 125 mA

Connections for peripherals

- Wired, potential free, pushbutton: 4
- Wired occupancy detector: 1
- General analog in, 0 - 10 VDC: 1
- Maximum number of wireless and non battery powered switches (Enocean): 8
- Maximum distance to wireless switch: within a radius of 15 meters from SBD.

Additional connectors

- (24 VAC + communication loop (CAN)) x 2
- Enocean-transceiver socket
- DALI loop/line
- Modular jack RJ45 - for connection of user panel DHP
- IR-transciever ”IRDA”

SBD – Lighting control unit [DALI - CAN]

SBD Version B05 (24VAC)

Additional product documentation SBD

Table 1: Additional documentation for SBD can be obtained via the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation instruction		●	Assembled with screws using the included mounting plate
Start-up instruction	●		Available in swedish: Presenting steps when deploying fully-addressed DALI and broadcast DALI
Maintenance instruction		●	Considered as maintenance free
External connection diagram	●		Available in english
Environmental product declaration	●		Assessed by Byggvarubedömningen
User information		●	Not relevant
Modbus list	●		Available in swedish
AMA text	●		Available in swedish

Product documentation for SBD can be downloaded via www.lindinvent.se/ products/

Contact

www.lindinvent.se
Tel: 046–15 85 50

Lindinvent – Smarter indoor climate. Greener buildings.

The company offers products and systems for controlling ventilation, lighting, solar shading and local utilization. Equipment and climate solutions are being developed for offices, schools, hospitals, laboratories and similar environments. Lindinvent's systems work together for the best comfort and energy use.

Product description

DLS – Light sensor [DALI] [Without Presence sensor]

Introduction DLS

DLS is an addressable DALI compliant sensor that measures light intensity.

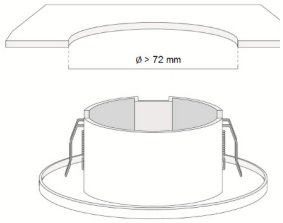
DLS – Light sensor DALI.

Function

- Addressable
- Measures light intensity in DALI systems.
- The sensor reference point can be manually adjusted

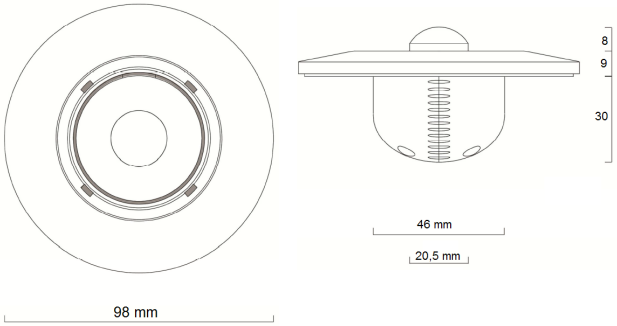
Mounting

DLS is designed to be mounted in a ceiling.



DLS mounting – make a 73 mm circular hole for the sensor mount.

Measure



Power supply

DLS is powered by a connected DALI loop.

Specifications

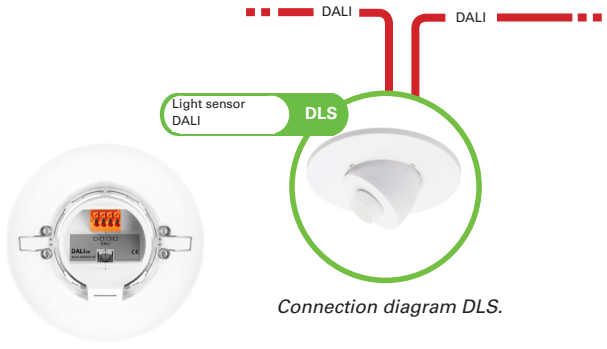
Current draw	3,5 mA
Light detection range	0 - 2500 lux
Resolution	1 lux
Operating temperature	0 _+ 70°C
IP classification	IP20
Cable area	0,5 - 1,5 mm²
Encapsulation material	Termo plastics

Positioning relative to light conditions

Here are some guidelines for positioning a light sensor:

- Light sensors must be placed so that temporary reflections or other artificial light do not hit the sensor if the light does not simultaneously affect the target surface equally.
- The light sensor should never be placed in the brightest or darkest place.
- A location where daylight inputs vary widely can result in unwanted fast or frequent light control.
- Appropriate placement in office rooms with windows is often 2/3 into the room in a place that is not above desks.
- Light sensors may need to be redirected or moved and may be recalibrated when lighting conditions have changed after final furnishing of the room. Factors such as altered daylight input and color setting or material selection may affect the light ratio between the target surface and the reference point at the sensor.

Connection



Connection diagram DLS.

DLS – terminal block DALI.

DLS – Light sensor [DALI] [Without Presence sensor]

Additional product documentation DLS

For additional documentation we refer to the product page for Lighting Control unit SBD at www.lindinvent.se

Table 1: Status on additiomal specific DLS documentation to be found on Lindinvents website www.lindinvent.se

Document	Available	Not available	Comments
Installation instruction		●	See dimensions and mounting here in the product description.
Start-up instruction		●	See lighting control unit SBD
Maintenance instruction		●	Considered as maintenance free
External connection diagram		●	See the illustration with the terminal block here in the product description.
Environmental product declaration		●	To be assessed by Byggvarubedömningen
User information		●	Not relevant
Modbus list		●	Not relevant
AMA text		●	See lighting control unit SBD

Product description

DCS – Presence and light sensor [DALI]

Introduction DCS

DCS is an addressable DALI compliant sensor that detects presence and measures light intensity.

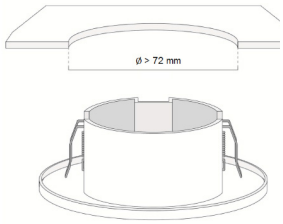
DCS – Presence and light sensor DALI.

Function

- Addressable
- Records presence in DALI systems.
- Measures light intensity in DALI systems.
- The sensor reference point can be manually adjusted

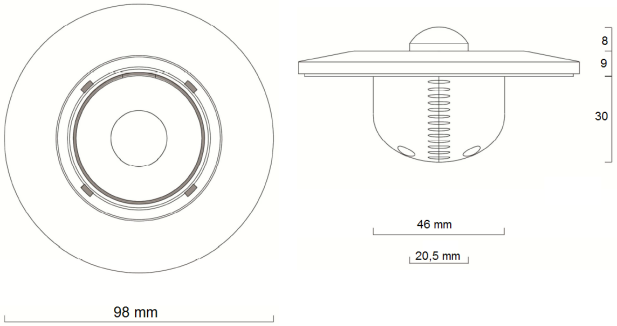
Mounting

DCS is designed to be mounted in a ceiling.



DCS mounting – make a 73 mm circular hole for the sensor mount.

Measure



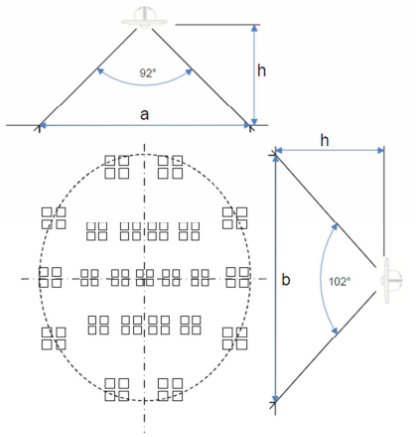
Power supply

DCS is powered by a connected DALI loop.

Specifications

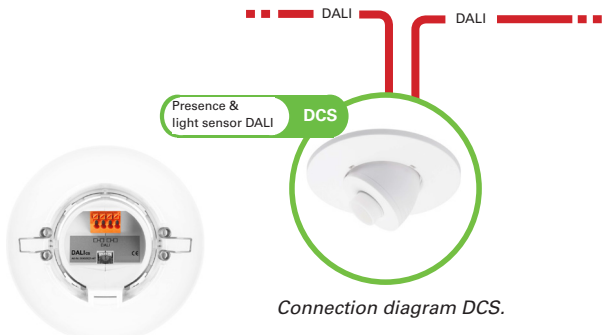
Current draw	3,5 mA
Light detection range	0 - 2500 lux
Resolution	1 lux
Presence detector	Passive IR
Operating temperature	0 _+ 70°C
IP classification	IP20
Cable area	0,5 - 1,5 mm²
Encapsulation material	Termo plastics

Detection area for presence



h [m]	a [m]	b [m]	A [m2]
2,50	5,2	6,2	25,1
2,7	5,6	6,7	29,3
3,0	6,2	7,4	36,2
3,5	7,2	8,6	49,2
4,0	8,3	9,9	64,3
5,0	10,4	12,3	100,4
6,0	12,4	14,8	144,6
8,0	16,6	19,8	257,1
10,0	20,7	24,7	401,7

Connection



Connection diagram DCS.

DCS – terminal block DALI.

DCS – Presence and light sensor [DALI]

Positioning relative to light conditions

Here are some guidelines for positioning a light sensor:

- Light sensors must be placed so that temporary reflections or other artificial light do not hit the sensor if the light does not simultaneously affect the target surface equally.
- The light sensor should never be placed in the brightest or darkest place.
- A location where daylight inputs vary widely can result in unwanted fast or frequent light control.
- Appropriate placement in office rooms with windows is often 2/3 into the room in a place that is not above desks.
- Light sensors may need to be redirected or moved and may be recalibrated when lighting conditions have changed after final furnishing of the room. Factors such as altered daylight input and color setting or material selection may affect the light ratio between the target surface and the reference point at the sensor.

Location of light and presence sensor

Prior to the final decision on the placement of DCS, which is a combined light and presence sensor, consideration should be given to lighting conditions and any existing or planned physical barriers to presence detection from the selected position.

Additional product documentation DCS

For additional documentation we refer to the product page for Lighting Control unit SBD at www.lindinvent.se

Table 1: Status on additiomal specific DCS documentation to be found on Lindinvents website www.lindinvent.se

Document	Available	Not available	Comments
Installation instruction		●	See dimensions and mounting here in the product description.
Start-up instruction		●	See lighting control unit SBD
Maintenance instruction		●	Considered as maintenance free
External connection diagram		●	See the illustration with the terminal block here in the product description.
Environmental product declaration		●	To be assessed by Byggvarubedömningen
User information		●	Not relevant
Modbus list		●	Not relevant
AMA text		●	See lighting control unit SBD

Product description

DSC – 4-way switch [DALI]

Introduction DSC

DSC is an addressable DALI compliant 4-way switch.

DSC – 4-way switch DALI.

Function

- addressable
- Switch with four programmable push buttons.
- By doing a quick or longer push, two functions can be assigned to each input.
- Usually used to achieve the following functions:
  - Go to max
  - Turn it off
  - Darken up/down
- Can be used to access pre-programmed scene selections.

Mounting

DSC is intended for wall mounting on a junction box.

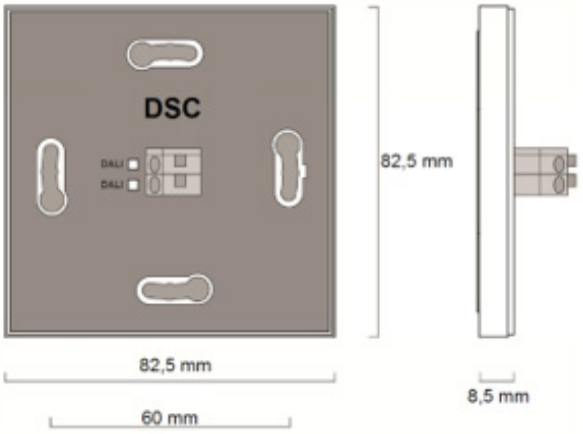
Power supply

DCS is powered by a connected DALI loop.

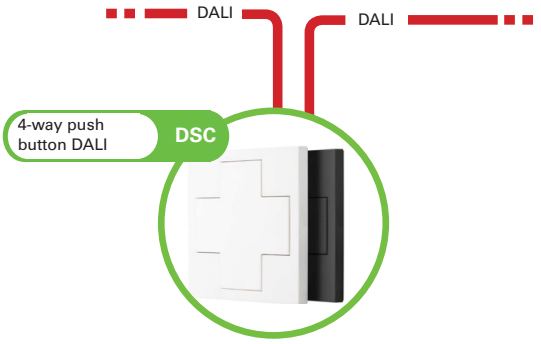
Specifications

Current draw	1,5 mA
IN	4 programmable push buttons
OUT	DALI
Operating temperature	-10 _+ 50°C
IP classification	IP20
Cable area	Up to 2,5 mm²
Encapsulation material	Termo plastics

Measure



Connection



Connection diagram DSC.

DSC – 4-way switch [DALI]

Additional product documentation DSC

For additional documentation we refer to the product page for Lighting Control unit SBD at www.lindinvent.se

Table 1: Status on additiomal specific DSC documentation to be found on Lindinvents website www.lindinvent.se

Document	Available	Not available	Comments
Installation instruction		●	See dimensions and mounting here in the product description.
Start-up instruction		●	See lighting control unit SBD
Maintenance instruction		●	Considered as maintenance free
External connection diagram		●	See the illustration with the terminal block here in the product description.
Environmental product declaration		●	To be assessed by Byggvarubedömningen
User information		●	Not relevant
Modbus list		●	Not relevant
AMA text		●	See lighting control unit SBD

Product description

DMC – I/O-module DALI

Introduktion DMC

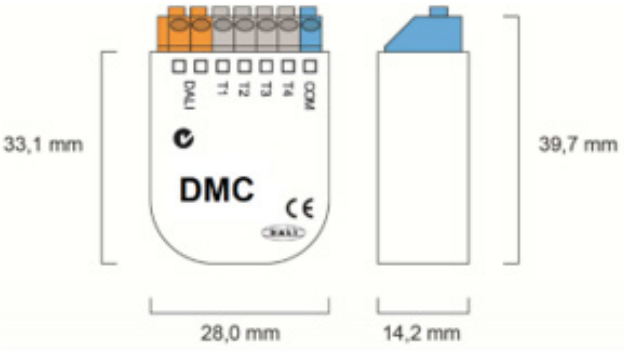
DMC is an addressable control module for DALI with four programmable inputs. The module enables the connection of standard resilient switches which can then be programmed via the I / O module in the same way as the 4-way switch DSC.

DMC – I/O-module DALI.

Funktion

- addressable
- Four programmable inputs.
- Two functions can be assigned to each input via short or long press on the connected switch.
- Usually used to achieve the following functions:
  - Go to max
  - Turn off/on
  - Fade up/down
- Can be used to switch to preset scene selections via a standard switch.

Measure



Mounting

DMC is intended for placement inside a junction box.

Power supply

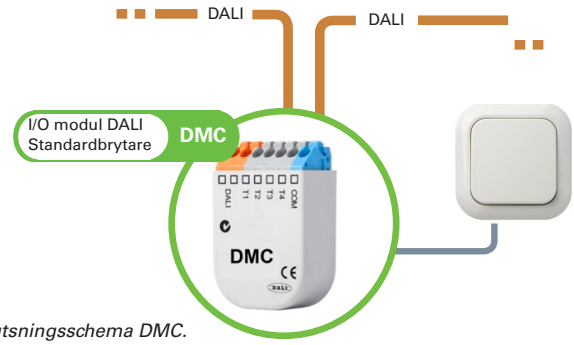
DCS is powered by a connected DALI loop.

Specifications

Current draw	4,1 mA
IN	4 programmable inputs
OUT	DALI
Operating temperature	0 _+ 50^{0}C
IP classification	IP20
Cable area	0,5 to 1,5 mm^2
Maximum cable length to switch	50 cm
Encapsulation material	Termo plastics

Connection

DMC is powered by the connected DALI loop. The inputs are connected directly to the switch (potential-free contacts).



Anslutsningsschema DMC.

Additional product documentation DSC

For additional documentation we refer to the product page for Lighting Control unit SBD at www.lindinvent.se

Table 1: Status on additiomal specific DMC documentation to be found on Lindinvents website www.lindinvent.se

Document	Available	Not available	Comments
Installation instruction		●	See dimensions and mounting here in the product description.
Start-up instruction		●	See lighting control unit SBD
Maintenance instruction		●	Considered as maintenance free
External connection diagram		●	See the illustration with the terminal block here in the product description.
Environmental product declaration		●	To be assessed by Byggvarubedömningen
User information		●	Not relevant
Modbus list		●	Not relevant
AMA text		●	See lighting control unit SBD

Product description

DRM – Relay module DALI

POTENTIAL-FREE SWITCH FOR 230 VAC [DALI]

DRM

Introduction DRM

DRM is a relay module that enables on/off control of non-dimmable lighting devices via a DALI loop.

Function

- addressable
- Alternating potential-free switch for 230 VAC
- Size of unit selected to allow hidden mounting in a junction box

Mounting

DRM is intended for placement inside a junction box.

Power supply

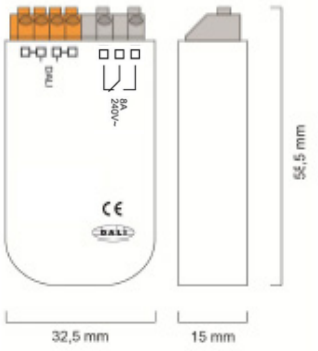
DRM is powered by the connected DALI loop.

Specifications

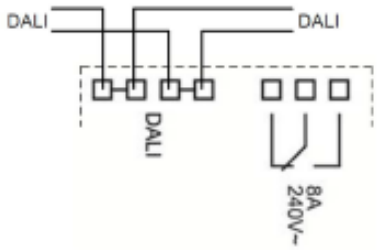
Current draw	4,1 mA
IN/OUT	• DALI • Alternating potential-free switch for 230 VAC
Switching Voltage	max 240 VAC
Switching current	8A
Switching power	1000 VA
Cutoff frequency	max 1 Hz
Operating temperature	-20 ... 75 ° C
IP classification	IP20
Cable area	1,5 mm^2
Dimension	59 x 33 x 15 mm
Number of DALI-addresses	1
Encapsulation material	Termo plastics

DRM – Relämodul DALI.

Mått



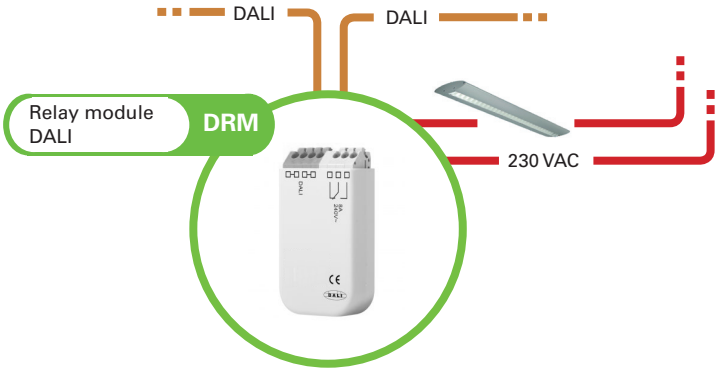
Inkopplingsschema



DRM - DALI connection terminal and switching voltage.

Connections

DRM is powered by a connected DALI loop. Relay output connected to conventional lighting.



Connection diagram DRM.

DRM – Relay module DALI

Additional product documentation DRM

For additional documentation we refer to the product page for Lighting Control unit SBD at www.lindinvent.se

Table 1: Status on additiomal specific DRM documentation to be found on Lindinvents website www.lindinvent.se

Document	Available	Not available	Comments
Installation instruction		●	See dimensions and mounting here in the product description.
Start-up instruction		●	See lighting control unit SBD
Maintenance instruction		●	Considered as maintenance free
External connection diagram		●	See the illustration with the terminal block here in the product description.
Environmental product declaration		●	To be assessed by Byggvarubedömningen
User information		●	Not relevant
Modbus list		●	Not relevant
AMA text		●	See lighting control unit SBD