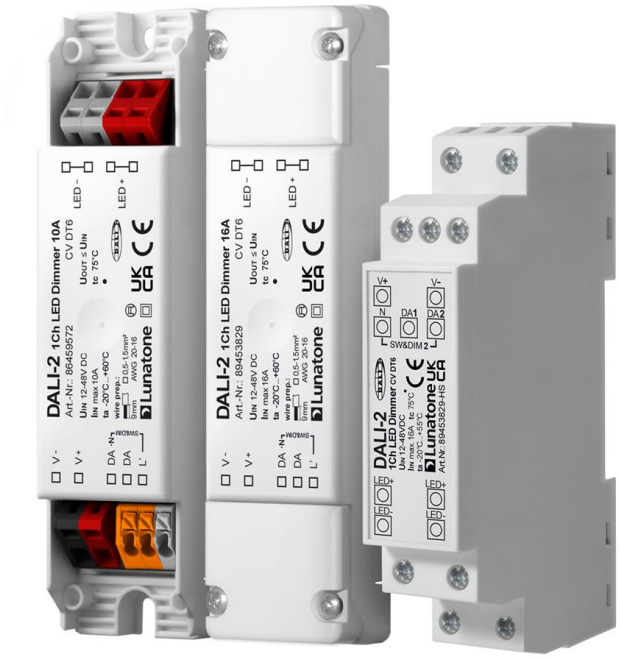
DALI-2 1Ch LED Dimmer CV



Datasheet

Control Gear

1-channel LED Dimmer (CV, DT6)



Art. No. 89453826 (4A)
Art. No. 86459556-DK (8A)
Art. No. 86459556-SL (8A)
Art. No. 86459556 (8A)
Art. No. 86459572 (10A)
Art. No. 89453829 (16A)
Art. No. 89453829-HS (16A)

Datenblatt Deutsch:
https://www.lunatone.com/wp-content/uploads/2018/03/DALI_1Ch_LED_Dimmer_CV_SD2_GER_D0009-1.pdf

DALI-2 1Ch LED Dimmer CV Control Gear

Overview

- 1 channel DALI LED-Dimmer
- suitable for constant voltage LED-modules with operating voltages from 12V to 48V
- **Sw&Dim or SwitchDim2**: 1 or 2 switch inputs offer control of light level control without DALI, up from FW 4.0 device can be alternatively controlled directly by a motion sensor (corridor function)
- dimming range 0.1%-100%
- adjustable PWM-frequency (122Hz/ 244Hz/ 488Hz/ 976Hz from FW version 4.6 onward changed PWM frequencies: 122Hz/ 250Hz / 500Hz / 1kHz)
- compact types for integration in luminaires or remote ceiling
- supply voltage type dependent of 12V to 28V DC or from 12V to 48V DC (according to the operating voltage of the led modules)
- type dependent max. input currents of 4A, 8A, 10A or 16A
- low standby power consumption
- high efficiency
- configuration via PC-software DALI-Cockpit and DALI USB-interface
- user-friendly factory default settings
- From FW Version 4.6 onward:

  - DALI-2 compatible

  - LED calibration for light adjustment

  - Configurable RESET behaviour

- From FW Version 7 onward supports Luminaire-, Energy- und Diagnostics Data (DALI-2 part 251, 252, 253); Updates from FW≤ 6 to FW7 are <u>not</u> possible.

Specification, Characteristics

type	**DALI-2 1Ch LED Dimmer CV**						
article number	89453826	86459556 -SL	86459556 -DK	86459556	86459572	89453829	89453829-HS

input: V+, V-				
input type	supply, DC			
marking terminals	V+, V-			
supply voltage	12VDC … 28VDC	12VDC … 48VDC		
maximum input current I_in_max	4A	8A	10A	16A
standby power consumption (12V)	~ 120mW			
power on behaviour	configurable: 0%-100% or last value			

article number	89453826	86459556-SL	86459556-DK	86459556	86459572	89453829	89453829-HS

input: DA, DA

input type	DALI, control signal
marking terminals	DA, DA
input voltage range	9,5V … 22,5V DC (according to IEC62386-101)
current consumption DALI	2mA
number of DALI-addresses	1

input: SW&DIM/ SW&DIM2

input type	SW&DIM 48V	SW&DIM**2** (mains)	SW&DIM (mains)	SW&DIM **2** (mains)
marking terminals	DA, DA	N; SW&DIM2-1 (DA); SW&DIM2-2 (DA)	L‘; SW&DIM (DA-N)	N; SW&DIM2-1 (DA); SW&DIM2-2 (DA)
number of inputs	1	2	1	2
input voltage	48V DC	230V AC ±10%		
input supply frequency	-	50Hz		

output: V+/LED+, Ch1/LED-

output type	LED Dimmer, constant voltage PWM			
marking terminals	V+, Ch1	LED+, LED-	V+, Ch1	LED+, LED-
number of outputs	2			
PWM frequency	FW: < 4.6. 122Hz/244Hz/488Hz/976Hz FW: ≥ 4.6: 122Hz/250Hz/ 500Hz / 1kHz			

general data

dimensions (LxWxH) [mm]	41x28x14	69x15x18	41x28x14	60x33x15	120x30x22	98x18x56
mounting	back box	installation	back box	back box	remote ceiling	DIN rail
rated max. temperature tc	75°C					
expected life time (T <Tc)	>100.000h					
protection class	II in intended use					
protection degree	IP20					

environmental conditions

operational ambient temperature	-20°C … +60°C	-20°C … +50°C	-20°C … +60°C	-20°C … +55°C
storing and transportation temperature	-20°C … +75°C			
rel. humidity, none condensing	15% … 90%			

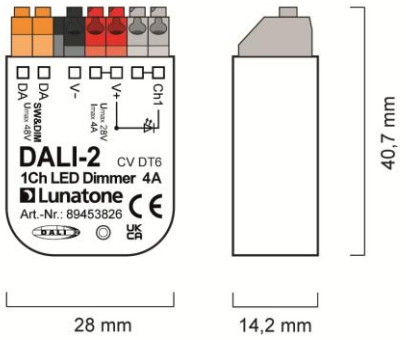
article number	89453826	86459556 -SL	86459556- DK	86459556	86459572	89453829	89453829-HS

terminals: V+, V-,LED+,LED-

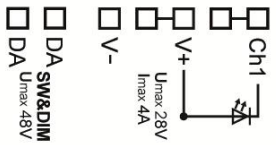
terminals	same as section terminals DA, DA, N, L‘, Ch1 see below	V+, V-, LED+, LED-	same as section terminals DA, DA, N, L‘, Ch1 see below
connection type		spring terminal connector (cage clamp)	
wire size solid core		0,08 … 2,5 mm² (AWG28 … AWG14)	
wire size fine wired		0,08 … 2,5mm² (AWG 28 … AWG 14)	
wire size using wire end ferrule		0,25 … 1 mm²	
stripping length		5 … 6 mm / 0,2 … 0,24 inch	
material		PA66, class V0	
release of wire		push back spring with tool	

terminals: DA, DA, N, L‘,Ch1

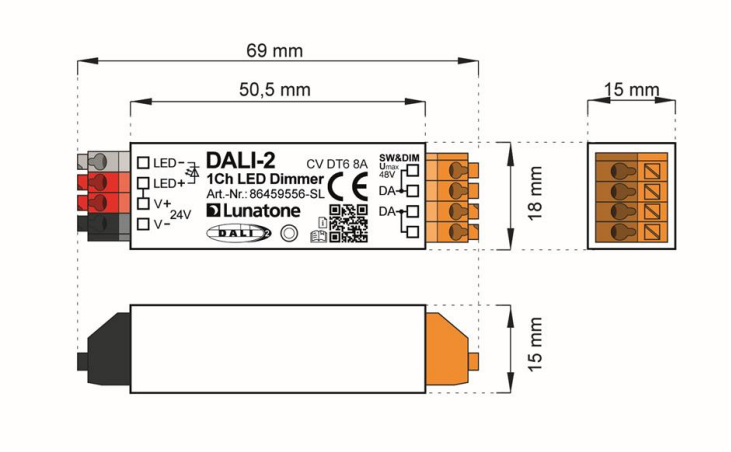
terminals	DA, DA, V+, V-, Ch1	DA, DA, V+, V-, LED+,LED-	DA, DA, V+, V-, Ch1	DA, DA, L’	DA, DA, V+, V-, N, LED+, LED-
connection type	spring terminal connector (push in cage clamp)				screw terminal
wire size solid core	0,2 … 1,5 mm² (AWG20 … AWG16)				0,5 … 2,5 mm² (AWG20 … AWG14)
wire size fine wired	0,2 … 1,5 mm² (AWG20 … AWG16)				0,5 … 2,5 mm² (AWG20 …AWG14)
wire size using wire end ferrule	0,25 … 1 mm²				0,25 … 1,5 mm²
stripping length	8,5 … 9,5mm / 0,33 … 0,37inch				7 mm / 0,27 inch
release of wire	push button				screw
tightening torque	-				0,5Nm



dimensions back box
Version 4A - Art.No.: **89453826**



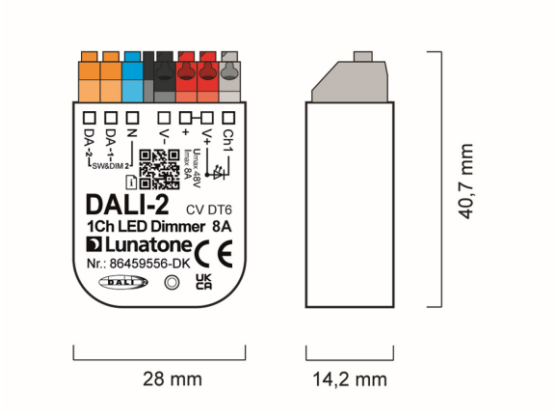
connection plan back box
Version 4A - Art.No.: **89453826**



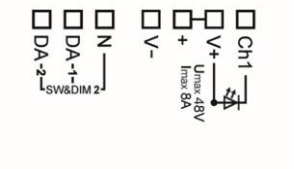
dimensions Slim
Version 8A - Art.No.: **86459556-SL**



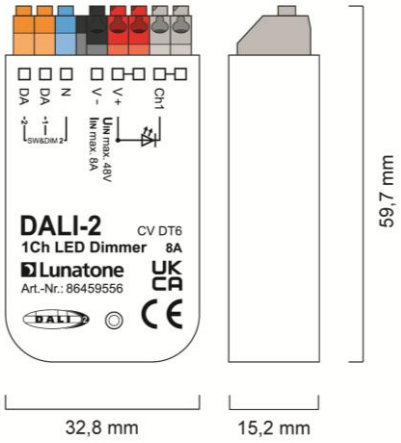
connection plan Slim
Version 8A - Art.No.: **86459556-SL**



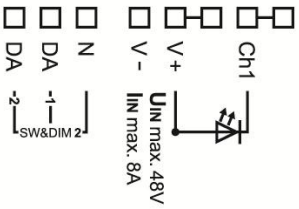
dimensions back box
Version 8A - Art.No.: **86459556-DK**



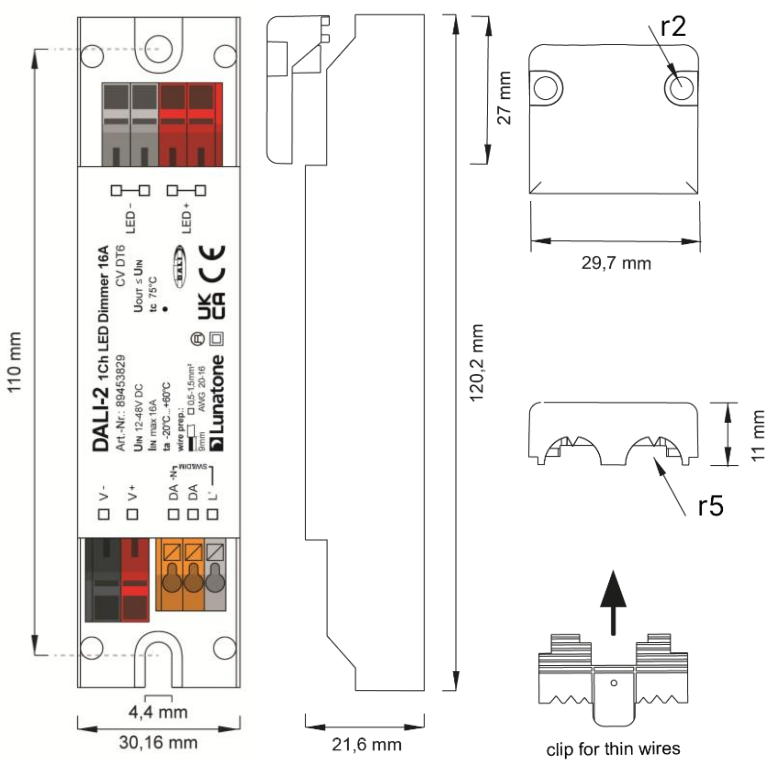
connection plan back box
Version 8A - Art.No.: **86459556-DK**



dimensions back box
Version 8A - Art.No.: **86459556**



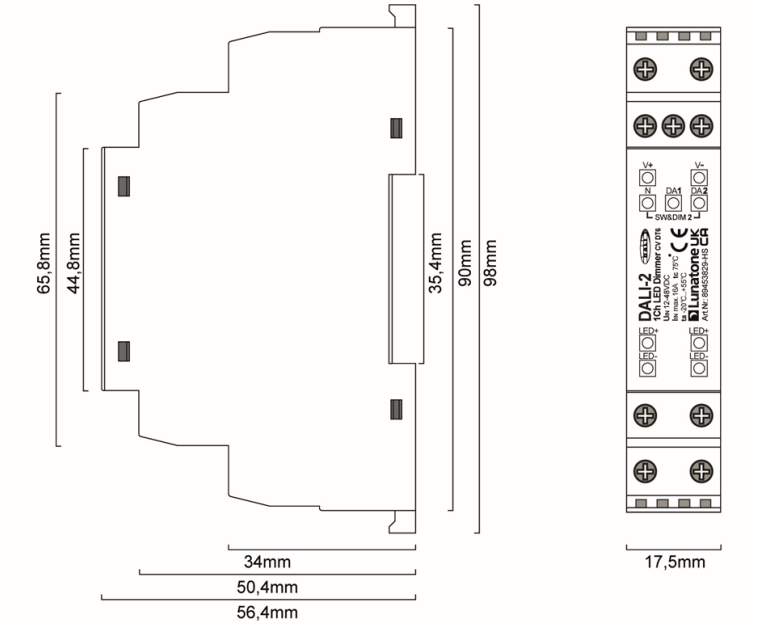
connection plan back box
Version 8A - Art.No.: **86459556**



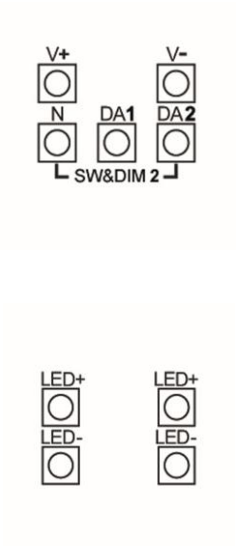
dimensions remote ceiling
Version 10A - Art.No.: **86459572**
Version 16A - Art.No.: **89453829**



connection plan remote ceiling
Version 10A - Art.No.: **86459572**
Version 16A - Art.No.: **89453829**



dimensions DIN rail housing
Version 16A - Art.No.: **89453829-HS**



connection DIN rail housing
Version 16A - Art.No.: **89453829-HS**

Installation

RECOMMENDATION: Care should be taken on keeping cable lengths between DC power supply and dimmer, as well as between dimmer and luminaires (Led-Strings), as short as possible. This kind of installation will minimize the influence of voltage drops.

- The DALI-2 LED Dimmer back box versions can be installed in a flush-mounted installation box. Ensure proper working cable relief for installation in protection class II equipment
- The DALI-2 LED Dimmer remote ceiling versions are suitable for remote ceiling and integration in luminaires. Ensure proper working cable relief for installation in protection class II equipment
- The DALI-2 LED Dimmer DIN rail is suitable for DIN rail mounting, protection against electric shock has to be ensured by an appropriate enclosure.
- The wiring should be carried out as a permanent installation in a dry and clean environment.
- Installation may only be carried out in a voltage-free state of the system and by qualified specialists.
- National regulations for setting up electrical systems must be followed.
- Connect the terminals V+ and V- only to a DC supply voltage of category SELV (Safety Extra Low Voltage)
- the connection to the DALI-line (DA,DA) is polarity free
- If used in Sw&Dim2 mode for both inputs the same phase has to be used
- Wiring topology of the DALI-line: line, tree, star
- Connect only one wire on each terminal, if twin ferrules are used, take note of the maximum wire size
- The DALI wiring can be realised with standard low-voltage installation material. No special cables are required.
- The DALI line may be routed together with the mains voltage (in one cable or as single wires in a tube)
- The devices are designed for 4A. 8A, 10A, or 16A input current. External protection must be provided to ensure that this current is not exceeded permanently, even in the event of a fault or short circuit. If two dimmers are powered by one power supply, depending on the quality of the power supply regulation, mutual interference may occur, resulting in visible light fluctuations during dimming.



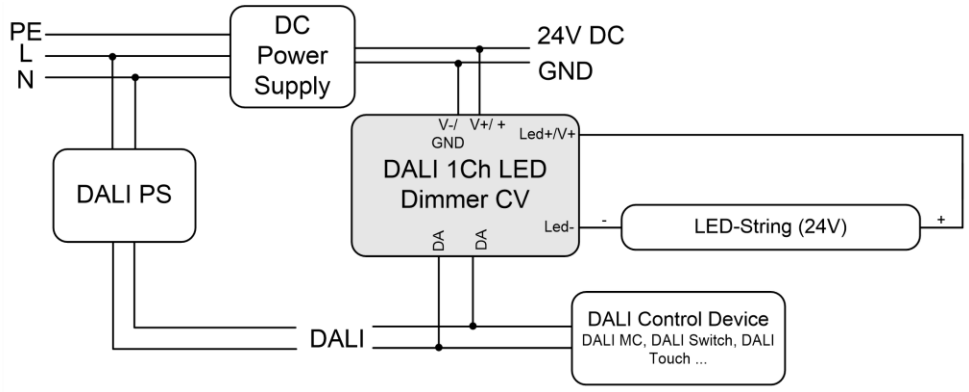
Attention: The DALI-signal is not classified as SELV circuit (Safety Extra Low Voltage). Therefore, the installation regulations for low voltage apply



The voltage drop on the DALI line must not exceed 2V at maximum length (300m) and maximum bus load (250mA).

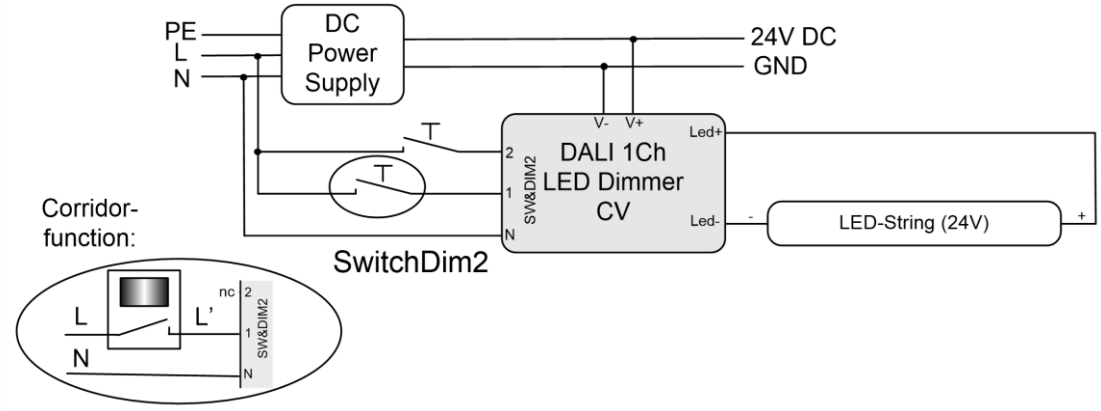
Typical Application

Control via DALI (all device versions)



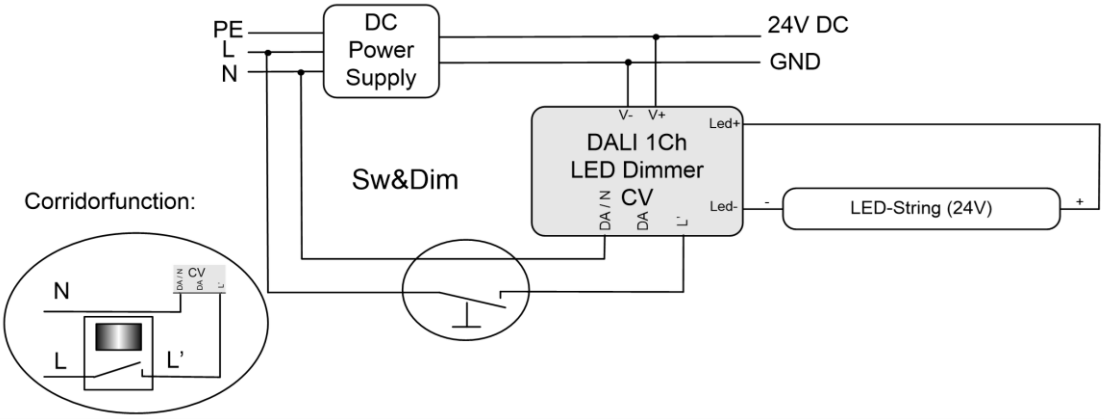
Control via SwitchDim2 (8A Version art. no.: 86459556 and 16A HS Version art no.: 89453829-HS)

- control via 2 pushbuttons SwD1 – dimming and switching – SwD2 – scene selector or
- alternatively, by a motion sensor with relay output (on input SwD1)

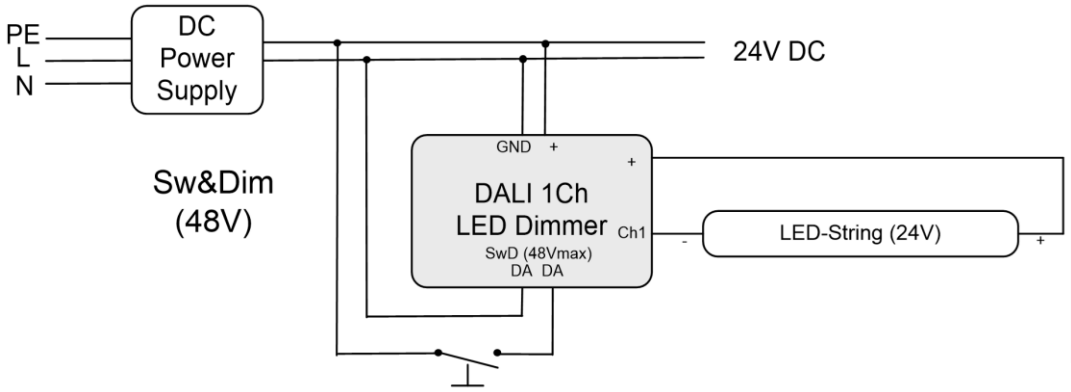


Control via Sw&Dim (Version for 10A/16A, art. no.: 86459572 and art. no.: 89453829 respectively)

- control via pushbuttons: switch and dim or
- alternatively, by a motion sensor with relay output



Control via Sw&Dim 48V (4A Version, art.no.: 89453826): – Switch and Dim



Commissioning

- After connection the 1Ch Dimmer is ready to use. Delivery default settings see page 13

- The DALI-2 1Ch Dimmer can be addressed with the DALI Cockpit PC Software. When using the DALI Cockpit Software, the PC must be connected to the DALI bus via a suitable interface module (DALI-2 USB; DALI USB, DALI-2 WLAN, DALI-2 Display, DALI-2 IoT, DALI 4Net, DALI SCI RS232). The DALI Dimmer is automatically recognised by the DALI Cockpit during the addressing process and listed in the device overview.

- Scene values, groups, DALI parameters and device specific settings can be configured in the DALI Cockpit, see section DALI-Cockpit Configuration on page 10 and following.

Operating Modes

DALI DT6
The output is controlled by its DALI address (Device Type 6). From FW version 4.6 on Lunatone LED Dimmer are DALI 2 compatible and support DALI 2 commands.

SwitchDim/SwitchDim2
Sw&Dim:
Art. No.: 89453826
Art. No.: 86459556-SL and -DK
Art. No.: 86459572
Art. No.: 89453829
SwichDim2:
Art. No.: 86459556
Art. No.: 89453829-HS

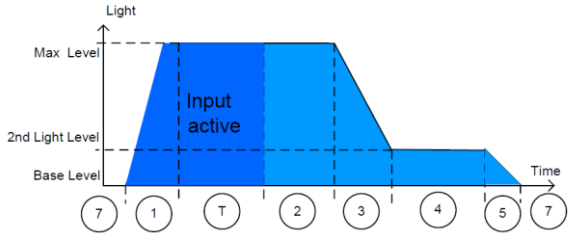
Alternatively, the device can be controlled by one (Sw&Dim) or two switch inputs (SwitchDim2):

SwD1, Sw&Dim: light level
short press: On/Off
long press: dimming
SwD2: scene selector (short press)
scene pre-set see *Table 1*, page 13.

With a long press > 30s several devices can be synchronized in Sw&Dim mode.

Corridor Function (from FW 4.0 up)
If the SwD1-input is pressed for 2 minutes the device changes the operating mode to

„corridor function“. This mode stays active until the device is power cycled (on power up the standard switchdim operating mode is active).
This mode provides a staircase function (e.g. to control the device directly with the relay output of one or more motion sensors). On input action the LED-output is switched to max level. After the hold-time elapsed the output switches to a second light value for a defined time period (2nd hold-time) before switching to the base level. If the input is activated again, the sequence is restarted.



sequence of corridor function

States and Default values of the corridor function:

1 – Fade-In Time:	immidiate
2 – Holdtime Max Level:	10 minutes
3 – Fade Time:	5 seconds
4 – HoldTime 2nd Level:	10 minutes
5 – Fade Out Time:	5 seconds
Max Level (P,2):	100%
2nd Light Level (4):	50%
Base Level (7):	0%

Hint: predecessors of the 10A/16A, which do not have inputs marked with L‘ and N, do not support Sw&Dim with mains voltage and only 48V DC may be used for SwD operation!

DALI-Cockpit Configuration

With the help of the DALI-Cockpit software the device can be configured. The device can be assigned to groups, scene values can be set, and parameters can be set (Min Level, Max Level, Power On Level, System Failure Level, Fade Time, Fade Rate). Besides these standard DALI settings the following configurations can be made.

PWM Frequency
The PWM frequency can be selected: 122Hz / 244Hz / 488Hz / 976Hz.
From FW version 4.6 changed PWM frequencies: 122Hz / 250Hz / 500Hz / 1kHz.

Ignore Broadcast Commands
The broadcast control can be deactivated individually. Through selection of “Ignore Broadcast”, the respective channel does no longer respond to broadcast commands on the DALI bus (group assignments are not ignored).

Adjustable RESET behaviour
From FW 4.6. on the response to a DALI reset command is configurable. The following options are available:

- *Ignore command*: the DALI reset command does not trigger any changes to the device settings
- *DALI standard*: the selected device settings are reset to the values defined in the DALI standard (see table 1 below - second column: DALI standard values)
- *Custom settings*: the current device settings can be saved. With a DALI Reset command, the selected parameters (6 check boxes) are then reset to these saved values.

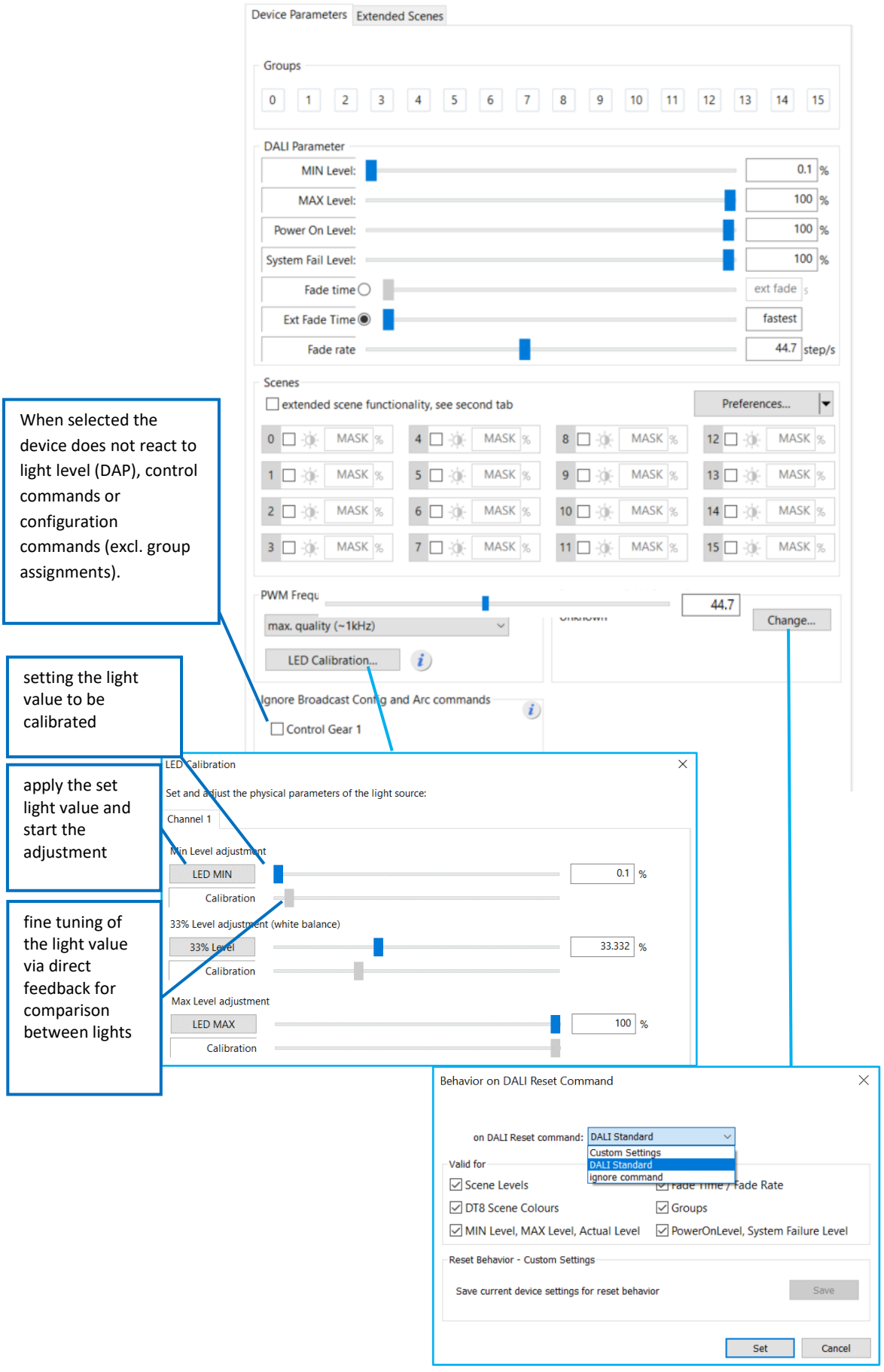


Figure 1 Cockpit overview page – LED calibration and settable RESET behaviour

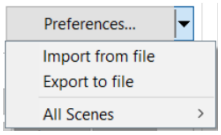
Calibration - light adjustment

The dimming range extends from 0.1% to 100%. From FW version 4.6 on, it is possible to calibrate different light sources, with the option: LED calibration.
The MIN level (default: 0.1%)
an intermediate value (default: 33%) and
the MAX level (default: 100%) can be adjusted and matched between light sources.

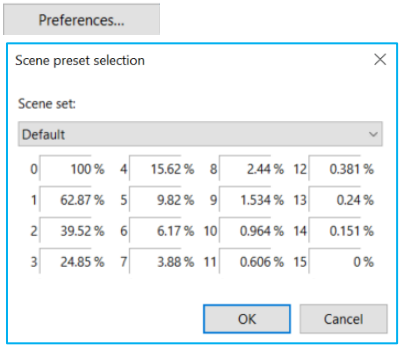
To do this, the desired level with the upper slider needs to be set. Apply the value and start the fine adjustment by pressing the button next to it. The appropriate fine adjustments can now be made with the calibration slider below. See also Figure 1.

Scene settings

Via the arrow button the scene settings can be imported and exported.



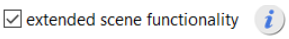
Via the button „Preferences“ the default scene settings can be loaded.

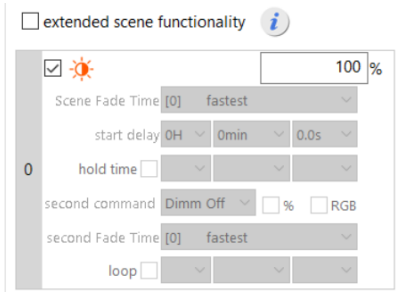


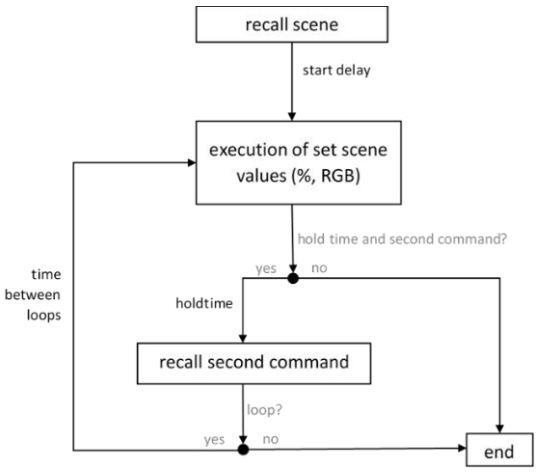
From FW 6.0 on, extended scene settings can be configured. With extended scenes it is possible to automatically change between 2 scene values (once or looped). Thereby enabling configuration of blinking lights, time delayed switch off or light repetitions, as well as traveling lights with multiple dimmers. The extended scene settings can be configured for each of the 16 scenes in the second tab:



By enabling the extended scenes these are used instead of the standard scenes on the “Device Parameters” tab

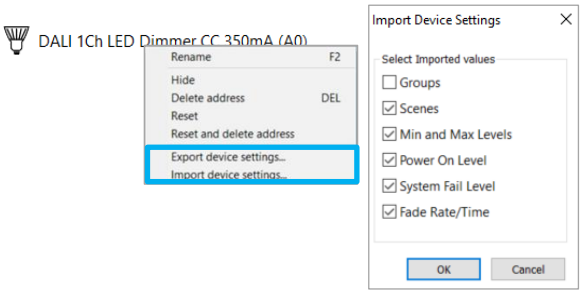






Import/Export settings

With a right click on the channel in the device-tree overview the device settings can be exported or imported.



Factory Default Settings

Before the initial addressing is performed, the device can already be controlled by group address G0. This predefined grouping will be deleted during the first addressing procedure.

Afterwards groups can be assigned as usual (e.g. with the help of the DALI Cockpit). By sending a DALI-Reset command the device is set to DALI default values as defined in the standard. Table 1 below shows a summary of the factory default values and the DALI standard values

The factory default values as well as the DALI-norm values are summarised in *Table 1* below.

.

Table 1 factory default settings column 1, DALI Standard settings column 2

	Factory default		**DALI Standard**
Operating mode	DT6		remains unchanged
SwitchDim/ SwitchDim2	SwD1: brightness SwD2: scene selector		remains unchanged
Min Level	0.1%		0.1%
Max Level	100%		100%
Power On Level	MASK (last value)		100%
System Failure Level	100%		100%
Fade Time	1s		none
Fade Rate	89.4 steps/s		44.7 steps/s
PWM-Frequency	FW < 4.6: 122Hz FW ≥ 4.6: 1kHz FW ≥ 6.2: 250Hz		remains unchanged
Groups before initial addressing:	G0		none
Scene values:	Scene 0: 254 Scene 1: 237 Scene 2: 220 Scene 3: 203 Scene 4: 186 Scene 5: 169 Scene 6: 152 Scene 7: 135	Scene 8: 118 Scene 9: 101 Scene 10: 84 Scene 11: 67 Scene 12: 50 Scene 13: 33 Scene 14: 16 Scene 15: 0	all scenes: MASK
Behaviour at DALI RESET command	set DALI Standard values, see column 2		remains unchanged

Purchase Order Information

Art. No. 89453826: 1-channel LED Dimmer, CV, max. input current 4A, 12V-28V DC, Sw&Dim 48V, back box 41x28x14
GTIN 9010342011528

Art. No. 86459556-DK: 1-channel LED Dimmer, CV, max. input current 8A, 12V-48V DC, Sw&Dim 48V, back box 41x28x14
GTIN 9010342018787

Art. No. 86459556-SL: 1-channel LED Dimmer, CV, max. input current 8A, 12V-48V DC, Sw&Dim2, installation “Slim” 69x15x18
GTIN 9010342018565

Art. No. 86459556: 1-channel LED Dimmer, CV, max. input current 8A, 12V-48V DC, Sw&Dim2, back box 60x33x15
GTIN 9010342011535

Art. No. 86459572: 1-channel LED Dimmer, CV, max. input current 10A, 12V-48V DC, Sw&Dim, remote ceiling & integration in luminaires 120x30x22
GTIN 9010342011542

Art. No. 89453829: 1-channel LED Dimmer, CV, max. input current 16A, 12V-48V DC, Sw&Dim, DALI-2, remote ceiling & integration in luminaires 120x30x22
GTIN 9010342011559

Art. No. 89453829-HS: 1-channel LED Dimmer, CV, max. input current 16A, 12V-48V DC, Sw&Dim2, DIN rail housing 1DU 98x18x56
GTIN: 9010342011559

Additional Information and Equipment

DALI-Cockpit – DALI system configuration tool, free when using a Lunatone interface device
https://www.lunatone.com/en/product/dali-cockpit/

Lunatone datasheets and manuals
https://www.lunatone.com/en/downloads-a-z/

Lunatone DALI products
https://www.lunatone.com/en/

Contact

Technical Support: support@lunatone.com

Requests: sales@lunatone.com

www.lunatone.com

Disclaimer

Subject to change. Information provided without guarantee. The datasheet refers to the current delivery.

The compatibility with other devices must be tested in advance to the installation.