



DALI-2 1Ch LED Dimmer CV

Datasheet Control Gear



1-channel LED Dimmer (CV, DT6)

Art. Nr. 89453826 (4A)

Art. Nr. 86459556 (8A)

Art. Nr. 86459572 (10A)

Art. Nr. 89453829 (16A)

Art. Nr. 89453829-HS (16A DIN Rail)

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



Specification, Characteristics

type	DALI-2 1Ch LED Dimmer CV				
article number	89453826	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				
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				

article number	89453826	86459556	86459572	89453829	89453829-HS
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 $\pm 10\%$		
input supply frequency	-	50Hz		

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

Output: V+/LED+, Ch1/LED-		
output type	LED Dimmer, constant voltage PWM	
marking terminals	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	60x33x15	120x30x22	98x18x56
mounting	back box		remote ceiling	DIN rail
rated max. temperature t_c	75°C			
expected life time ($T < T_c$)	>100.000h			
protection class	II in intended use			
protection degree	IP20			

environmental conditions

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

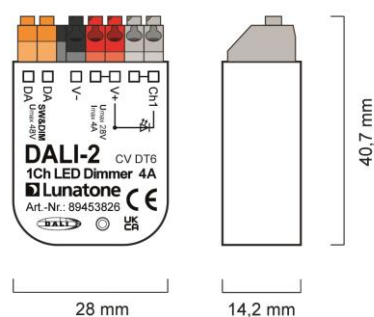
terminals: V+, V-,LED+,LED-

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 mm ² (AWG28 ... AWG14)	
wire size fine wired		0,08 ... 2,5mm ² (AWG 28 ... AWG 14)	
wire size using wire end ferrule		0,25 ... 1 mm ²	
stripping length		5 ... 6 mm / 0,2 ... 0,24 inch	
material		PA66, class V0	
release of wire		push back spring with tool	

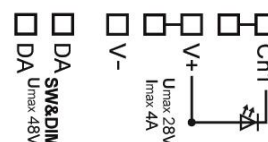
article number	89453826	86459556	86459572	89453829	89453829-HS
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terminals: DA, DA, N, L', Ch1

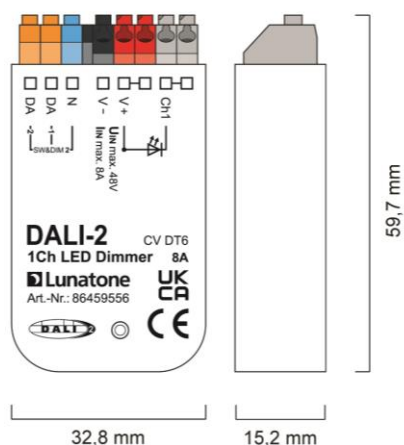
terminals	DA, DA, V+, V-, Ch1	DA, DA, L'	DA, DA, V+, V-, N, LED+, LED-
connection type	spring terminal connector (push in cage clamp)		screw terminal
wire size solid core	0,2 ... 1,5 mm ² (AWG20 ... AWG16)		0,5 ... 2,5 mm ² (AWG20 ... AWG14)
wire size fine wired	0,2 ... 1,5 mm ² (AWG20 ... AWG16)		0,5 ... 2,5 mm ² (AWG20 ... AWG14)
wire size using wire end ferrule	0,25 ... 1 mm ²		0,25 ... 1,5 mm ²
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



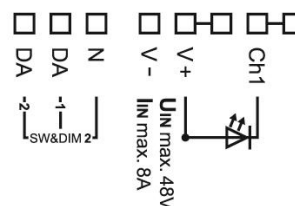
dimensions back box4
Version 4A - Art.Nr.: 89453826



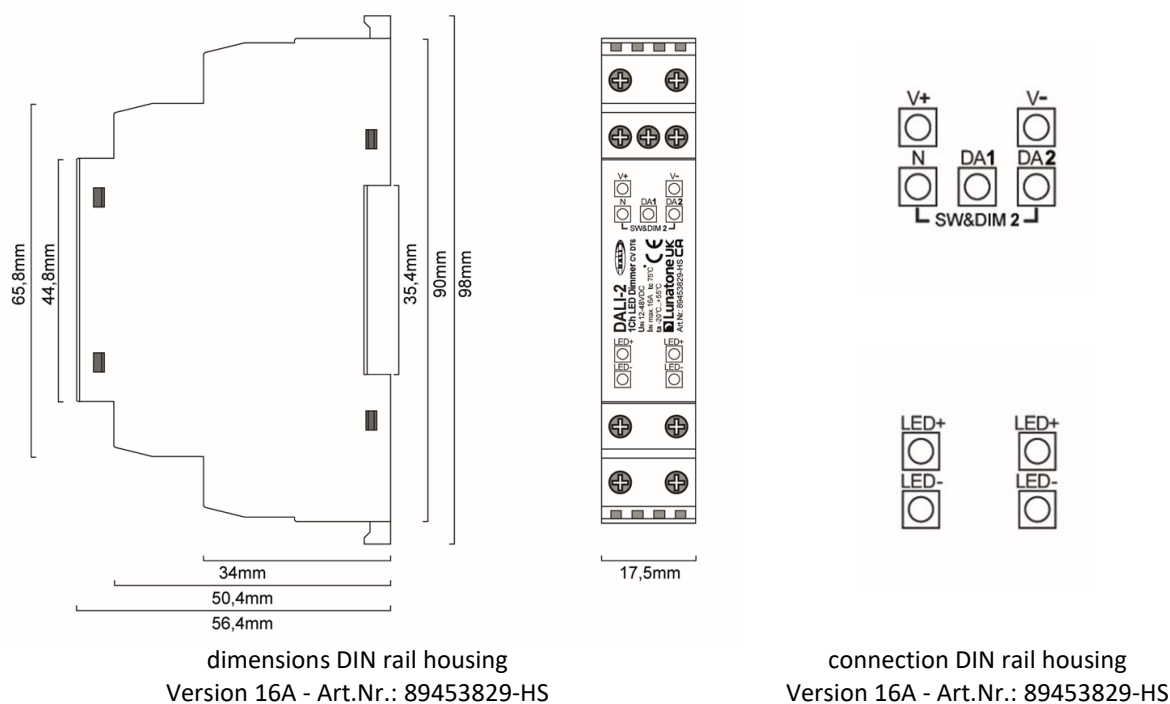
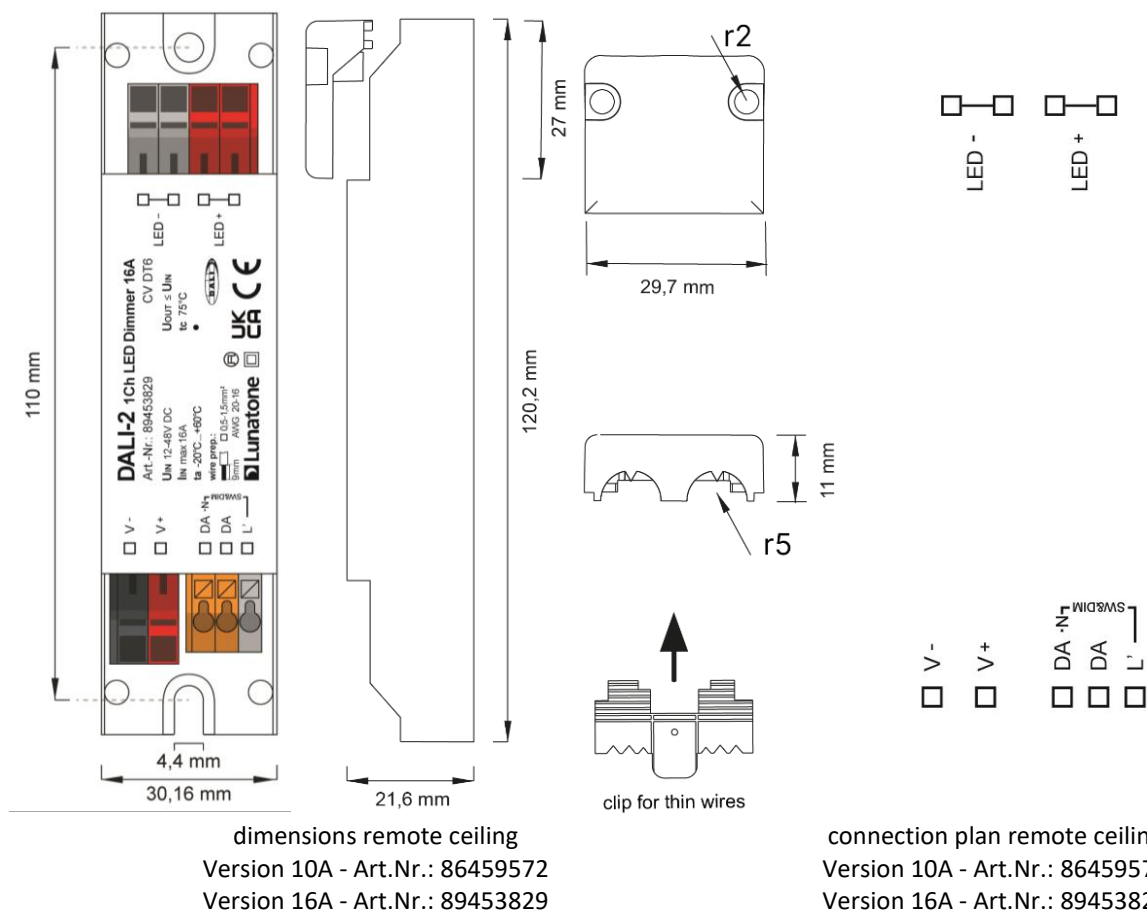
connection plan back box 4A
Version 4A - Art.Nr.: 89453826



dimensions back box 8A
Version 8A - Art.Nr.: 86459556



connection plan back box 8A
Version 8A - Art.Nr.: 86459556



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
- The DALI-interface can handle mains voltage, protecting the device in case wrong wiring
- 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.



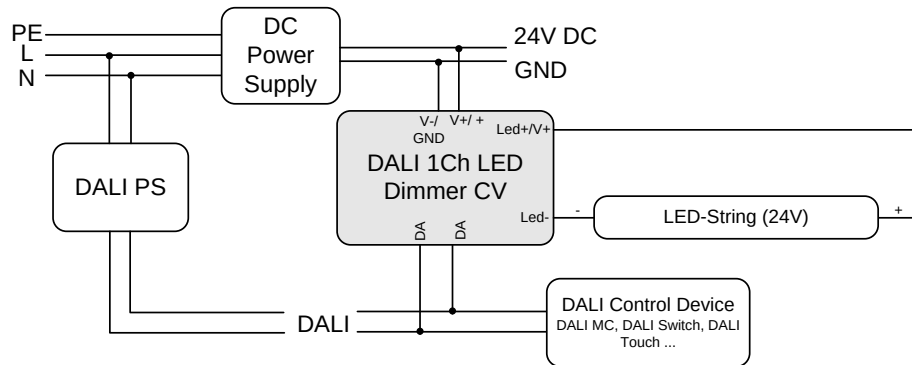
Attention: The DALI-signal is not classified as SELV circuit (Safety Extra Low Voltage). Therefore, the installation regulations for low voltage apply



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

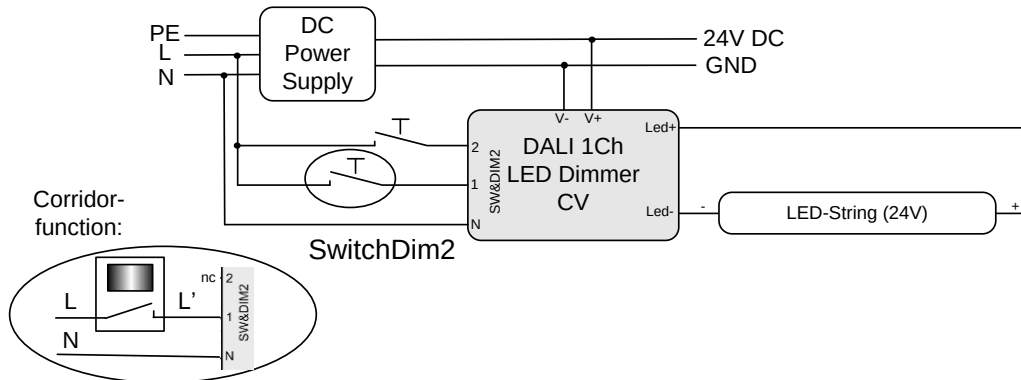
Typical Application

Control via DALI (all device versions)



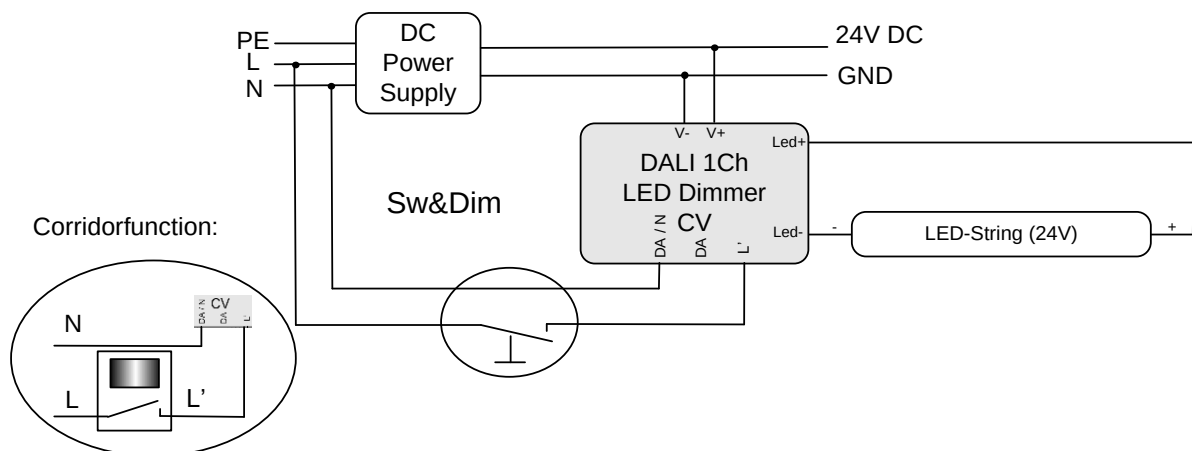
Control via SwitchDim2 (8A Version art. nr.: 86459556 and 16A HS Version art nr.: 89453829-HS)

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

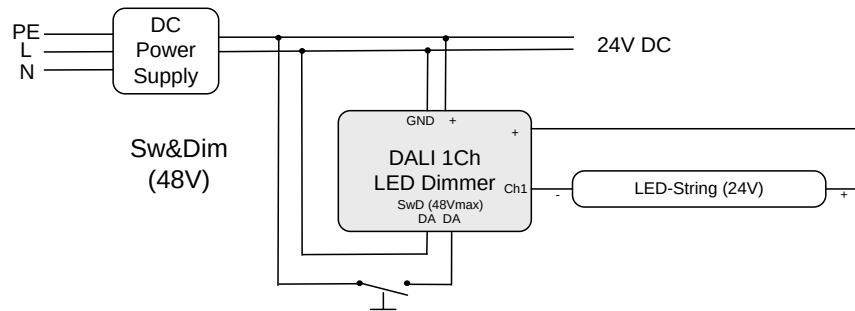


Control via Sw&Dim (Version for 10A/16A, art. nr.: 86459572 and art. nr.: 89453829 respectively)

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



Control via Sw&Dim 48V (4A Version, art.nr.: 89453826): – Switch and Dim



Commissioning

- After connection the 1Ch Dimmer is ready to use. Delivery default settings see page 12
- 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 9 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. Nr.: 89453826
Art. Nr.: 86459572
Art. Nr.: 89453829

SwichDim2:

Art. Nr.: 86459556
Art. Nr.: 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 12.

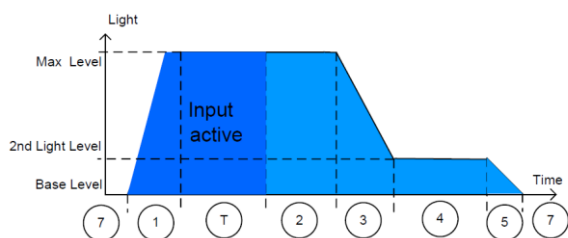
With a long press > 30s several devices can be synchronized in Sw&Dim mode.

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:	immediat
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.

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.

The image shows the 'Extended Scenes' tab of the Lunatone Cockpit. It features a 'Groups' section with buttons 0-15, a 'DALI Parameter' section with sliders for MIN Level (0.1%), MAX Level (100%), Power On Level (100%), System Fail Level (100%), Fade time, Ext Fade Time (fastest), and Fade rate (44.7 step/s). Below is a 'Scenes' section with a grid of 16 scene buttons (0-15), each with a light icon and 'MASK %'. At the bottom, there's a 'PWM Freq' section with a slider set to 44.7 and a 'Change...' button. A 'LED Calibration...' button is also present.

Four callout boxes provide instructions:

- When selected the device does not react to light level (DAP), control commands or configuration commands (excl. group assignments).** (Points to the 'extended scene functionality, see second tab' checkbox)
- setting the light value to be calibrated** (Points to the 'LED Calibration...' button)
- apply the set light value and start the adjustment** (Points to the 'LED MIN' slider in the LED Calibration dialog)
- fine tuning of the light value via direct feedback for comparison between lights** (Points to the '33% Level' slider in the LED Calibration dialog)

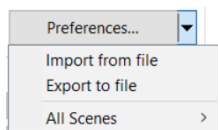
The 'LED Calibration' dialog shows 'Channel 1' with sliders for 'Min Level adjustment' (LED MIN, 0.1%), '33% Level adjustment (white balance)' (33% Level, 33.332%), and 'Max Level adjustment' (LED MAX, 100%). Each slider has a 'Calibration' button.

The 'Behavior on DALI Reset Command' dialog shows a dropdown for 'on DALI Reset command:' with options: DALI Standard, Custom Settings, DALI Standard, and ignore command. It includes checkboxes for 'Valid for' (Scene Levels, DT8 Scene Colours, MIN Level, MAX Level, Actual Level, Fade time / Fade Rate, Groups, PowerOnLevel, System Failure Level) and a 'Reset Behavior - Custom Settings' section with a 'Save current device settings for reset behavior' checkbox and a 'Save' button.

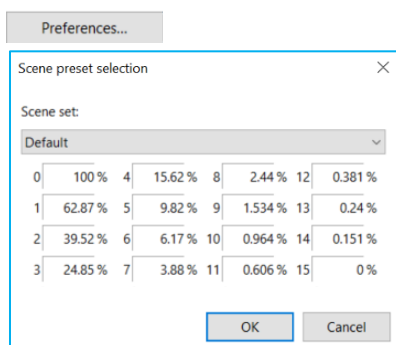
Figure 1 Cockpit overview page – LED calibration and settable RESET behaviour

Scene settings

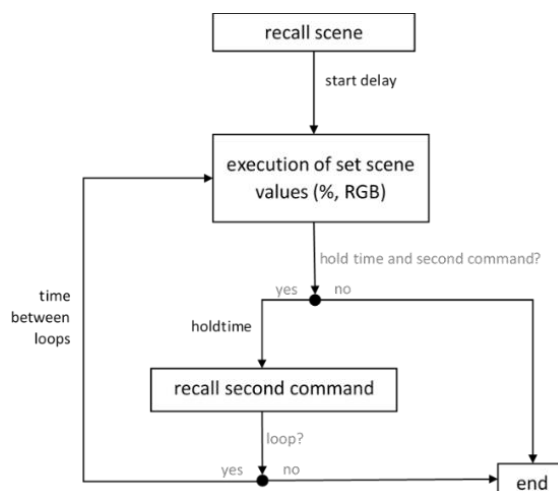
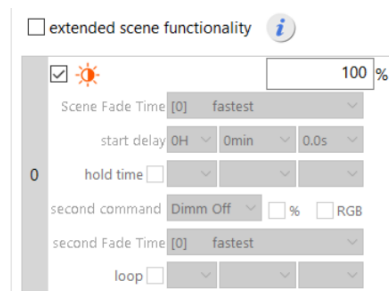
Via the arrow button the scene settings can be imported and exported.



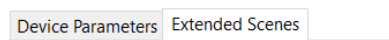
Via the button „Preferences“ the default scene settings can be loaded.



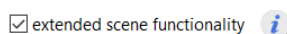
From FW 6.0 on, extended scene settings can be configured. With extended scenes it is possible to automatically change between 2 scene values (once or looped). Thereby enabling configuration of blinking lights, time delayed switch off or light repetitions, as well as traveling lights with multiple dimmers.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



Extended Scenes are available for each of the 16 scenes on the second tab:

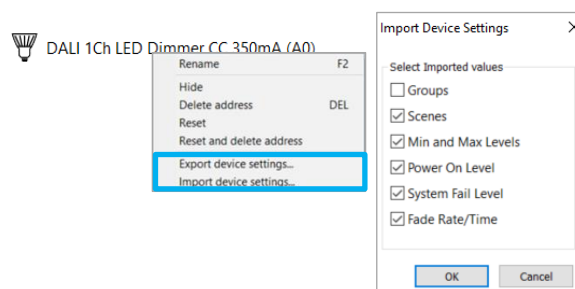


By enabling the extended scenes these are used instead of the standard scenes on the “Device Parameters” tab



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		N/A (remains unchanged)
SwitchDim/ SwitchDim2	SwD1: brightness SwD2: scene selector		N/A (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	122Hz or 1kHz for FW 4.6 and up		N/A (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		N/A (remains unchanged)

Purchase Order Information

Art. Nr. 89453826: 1-channel LED Dimmer, CV, max. input current 4A, 12V-28V DC, Sw&Dim 48V, back box
GTIN 9010342011528

Art. Nr. 86459556: 1-channel LED Dimmer, CV, max. input current 8A, 12V-48V DC, Sw&Dim2, back box
GTIN 9010342011535

Art. Nr. 86459572: 1-channel LED Dimmer, CV, max. input current 10A, 12V-48V DC, Sw&Dim, remote ceiling & integration in luminaires
GTIN 9010342011542

Art. Nr. 89453829: 1-channel LED Dimmer, CV, max. input current 16A, 12V-48V DC, Sw&Dim, DALI-2, remote ceiling & integration in luminaires
GTIN 9010342011559

Art. Nr. 89453829-HS: 1-channel LED Dimmer, CV, max. input current 16A, 12V-48V DC, Sw&Dim2, DIN rail housing
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

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The datasheet refers to the current delivery.

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