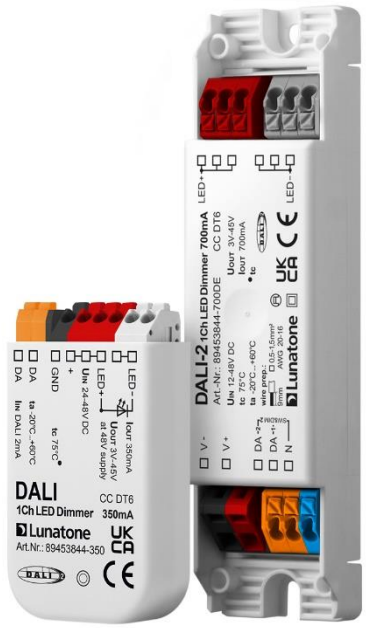
DALI-2 1Ch LED Dimmer CC



Datasheet

Control Gear

1-channel LED Dimmer (CC, DT6)

Art. Nr. 89453844-350 (350mA)
Art. Nr. 89453844-500 (500mA)
Art. Nr. 89453844-700 (700mA)
Art. Nr. 89453844-700DE (700mA)
Art. Nr. 89453844-1000DE (1000mA)
Art. Nr. 89453844-1500DE (1500mA)
Art. Nr. 89453844-2000DE (2000mA)
Art. Nr. 89453844-2500DE (2500mA)

DALI-2 1Ch LED Dimmer CC Control Gear

Overview

- 1 channel DALI LED-Dimmer
- suitable for constant current LED-modules
- **SwitchDim2**: 2 switch-inputs offer control of light level and colour 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 on changed PWM frequencies: 250Hz / 500Hz / 1kHz)
- types for constant currents of 350mA to 2500mA
- compact types for integration in luminaires or remote ceiling
- supply voltage from 12V to 48V DC
- output voltage up to 45VDC
- integrated short circuit protection
- low standby power consumption
- high efficiency
- configuration via PC-software DALI-Cockpit and DALI interface (e.g. DALI USB)
- user-friendly factory default settings

Specification, Characteristics

type	**DALI 1Ch LED-Dimmer CC**		
article number	89453844-350 89453844-500 89453844-700	89453844-700DE 89453844-1000DE 89453844-1500DE	89453844-2000DE 89453844-2500DE

supply: V+, V-			
type of input	supply, DC		
marking terminals	V+, V-		
supply voltage V_{in}	24VDC-48VDC	12VDC-48VDC	
max. input current I_{in_max}	350mA / 500mA / 700mA	700mA/1000mA/1500mA	2000mA/2500mA
rated power @48V	16.8W / 24W / 33.6W	33.6W / 48W / 72W	96W / 120W
standby power consumption	180mW @12V		
power on behaviour	configurable via DALI: 0%-100% or last actual level		

input: DA, DA

input type	DALI, control input
marking terminals	DA, DA
input voltage range	9,5V … 22,5V (according to IEC62386-101)
max. current consumption DALI	2mA
overvoltage protection	250V
number of DALI-addresses	1

input: N, SW&DIM2-1, SW&DIM2-2

input type	-	SwitchDim2 / corridor function
marking terminals	-	N; SW&DIM2-1 (DA); SW&DIM2-2 (DA)
number of inputs	-	2
input voltage	-	230V AC ±10%
frequency of input voltage	-	50Hz
control pulse length	-	short press: >40ms, long press: > 400ms
input resistance	-	200kΩ
max. voltage between inputs	-	230V AC

output: LED+, LED-

output type	LED dimmer, constant current PWM		
marking terminals	LED+, LED-		
number of outputs	1		
PWM frequency	FW: < 4.6. 122Hz/244Hz/488Hz/976Hz FW: ≥ 4.6: 250Hz/ 500Hz / 1kHz		
output voltage range U_{led}	3V-45V (at 48V supply)		
max. output current I_{led}	350mA / 500mA / 700mA	700mA/1000mA/1500mA	2000mA/2500mA
max. output power @45V	15.75W / 22.5W / 31.5W	31.5W / 45W / 67.5W	90W / 112.5W
overload protection	yes		
open circuit protection	yes		
short circuit protection	yes		

insulation data

impulse voltage category	II
pollution degree	2
rated insulation voltage	250V
rated impulse withstanding voltage	4kV
Isolation supply <-> output	no insulation
DALI/Sw&Dim2 <-> output/supply	reinforced isolation
DALI/Sw&Dim2 <-> housing	reinforced isolation
Insulation test voltage	3000V a.c.

environmental conditions

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

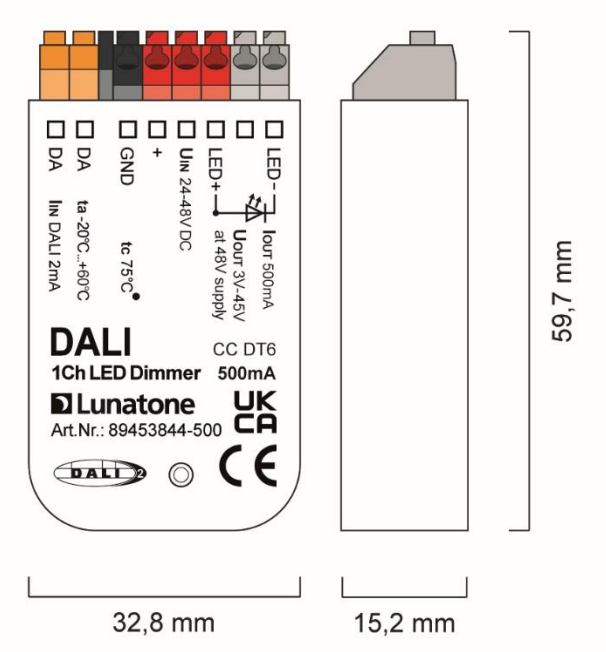
general data			
dimensions (l x w x h)	59 x33 x15 mm	120 x 30 x 22 mm	120 x 41 x 22 mm
mounting	back box	remote ceiling	
rated maximum temperature tc	75°C		
expected lifetime (T<Tc)	>100.000h		
housing material	PC, class V0		
protection class	II in intended use		
protection degree housing	IP40		
protection degree terminals	IP20		

terminals: V+, V-		
connection type	See section terminals DA,DA, N, LED+, LED-	spring terminal connector (cage clamp)
wire size solid core		0,08 … 2,5mm^2 (AWG 28 … AWG 12)
wire size fine wired		0,08 … 2,5mm^2 (AWG 28 … AWG 12)
wire size using wire end ferrule		0,25 … 1,5mm^2
stripping length		5 … 6mm / 0,2 … 0,24 inch
housing material		PA66, class V0
actuation type		operating tool

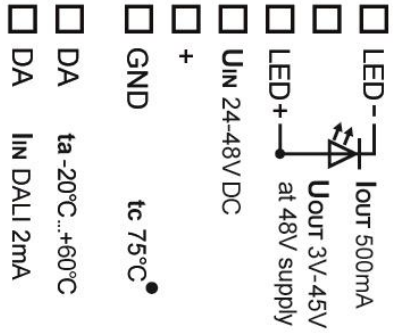
terminals: DA, DA, N, LED+, LED-	
connection type	spring terminal connector (push in cage clamp)
wire size solid core	0,2 … 1,5mm^2 (AWG 24 … AWG 16)
wire size fine wired	0,2 … 1,5mm^2 (AWG 24 … AWG 16)
wire size using wire end ferrule	0,25 … 1mm^2
stripping length	8,5 … 9,5mm / 0,33 … 0,37 inch
housing material	PA66, class V0
actuation type	push button

standards	
DALI	EN 62386-101, EN 62386-102, EN 62386-207
EMC	EN 61547 EN 55015 / IEC CISPR15
electrical safety	EN 61347-2-13 EN 61357-1
performance	EN 62384
markings	CE, UKCA, DALI-2

Dimensions for constant currents up to 700mA (DALI) in housing 59mmx33mmx15mm

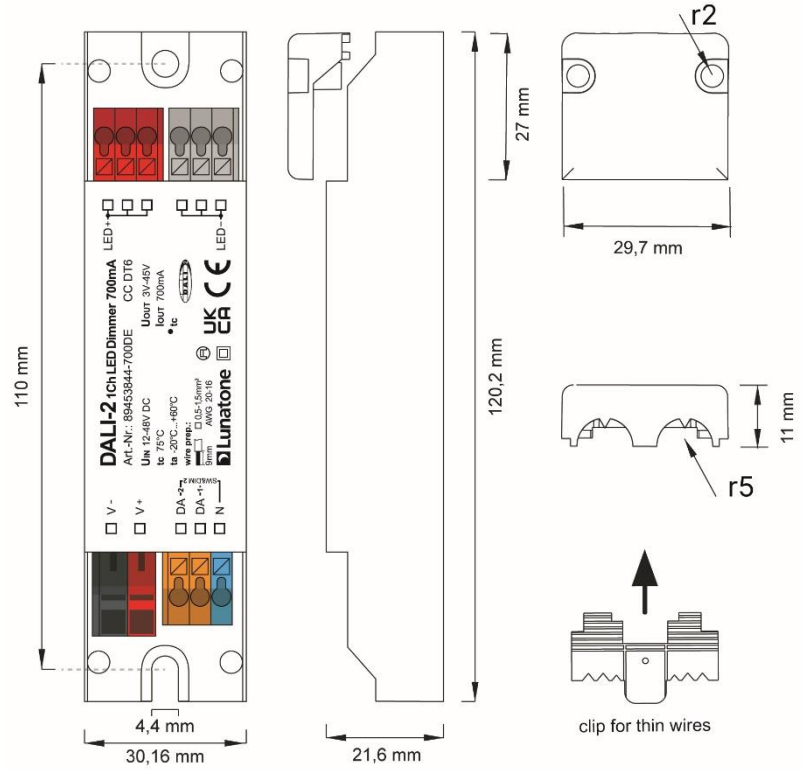


dimensions

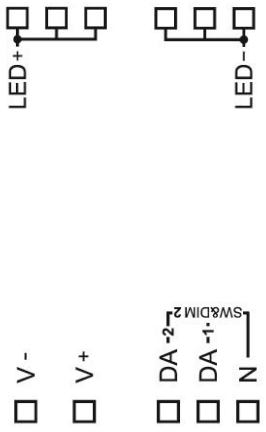


connection plan

Dimensions for constant currents up to 1500mA (DALI&SwitchDim2) 120mmx30mmx22mm

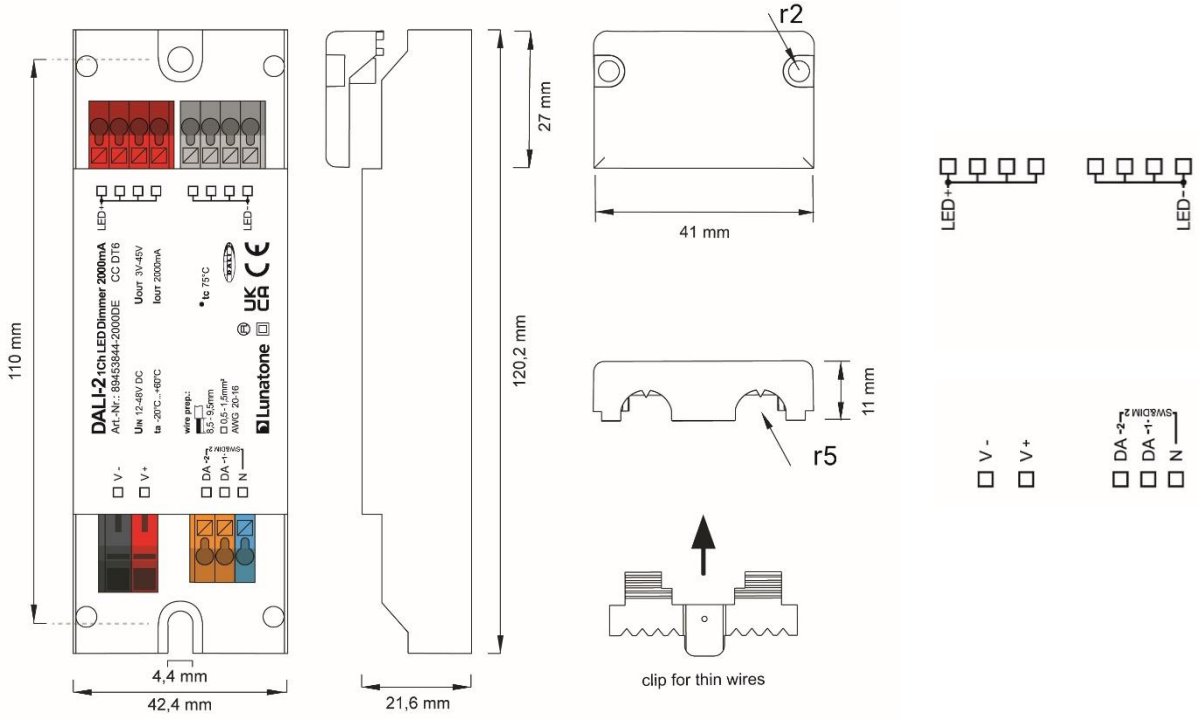


Dimensions



connection plan

Dimensions for constant currents from 1500mA (DALI&SwitchDim2) 120mmx41mmx22mm



Dimensions connection plan

Installation

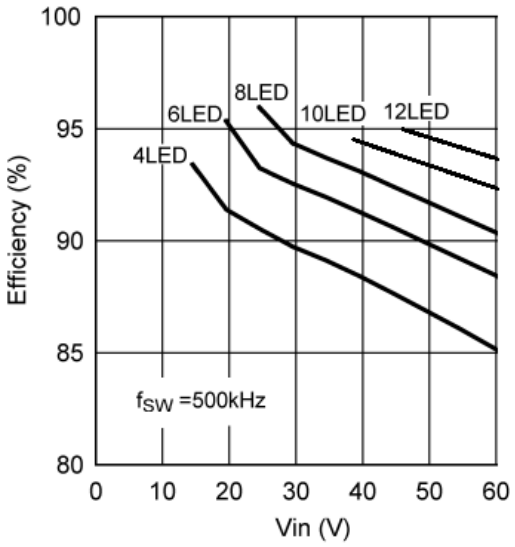
- The DALI 1Ch LED Dimmer is an independent control gear, it is suitable for remote ceiling and integration in luminaires
- Ensure proper working cable relief for installation in protection class II equipment
- The wiring should be carried out as a permanent installation in a dry and clean environment.
- 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)

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).

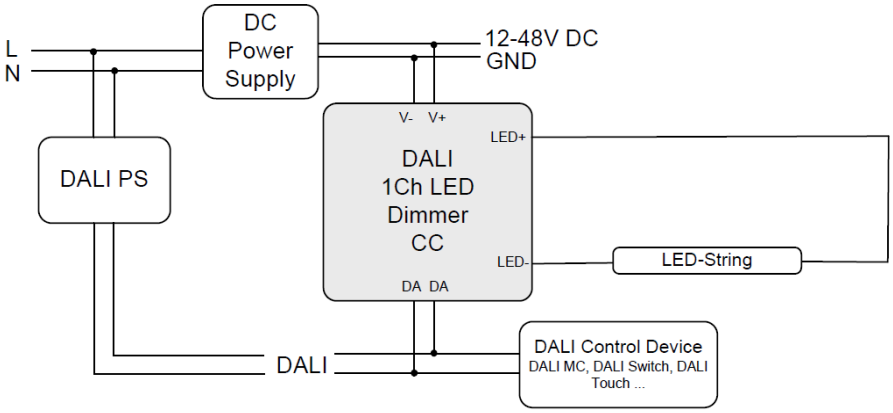
Hint:
For highest efficiency the input voltage should range between 3V and 10V above the LED-voltage:

4-6 LEDs: 24V
6-9LEDs: 36V
10-12 LEDS: 48V



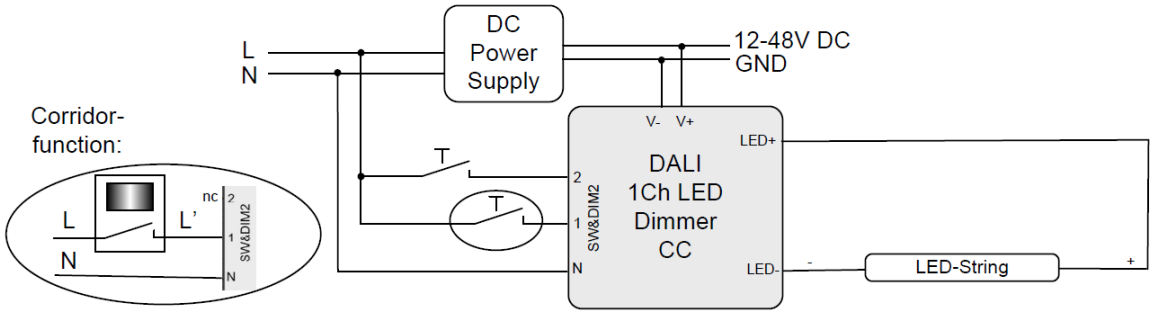
Application Example

Control via DALI



Control via SwitchDim2

Control via 2 pushbuttons or alternatively by a motion sensor with relay output (on input SW&DIM2-1)



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 page 9 and following.

Operating Modes

DALI DT6

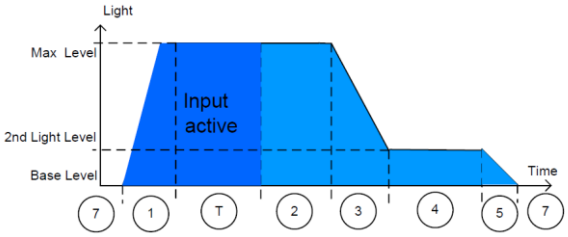
The output is controlled by its DALI address (Device Type 6). From FW version 4.6 on Lunatone LED Dimmer are DALI 2 compatible and support DALI 2 commands.

SwitchDim2: Alternatively the device can be controlled using 2 switch-inputs for mains voltage (SwitchDim2):

SW&DIM2-1: light level
short press: On/Off
long press: dimming
SW&DIM2-2: scene selector (short press)
scene pre-set see *Table 1* page 12

Corridor Function (up from FW 4.0)
If the SW&DIM2-1-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 operation 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 the output switches to a second light value 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%

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 DALI 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: 250Hz / 500Hz / 1kHz.

Ignore Broadcast Commands
The broadcast control of each channel 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 reaches from 0.1% to 100%. From FW version 4.6 on, it is possible to calibrate different light sources, with the option: “LED Calibration”.
For each channel, 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 below

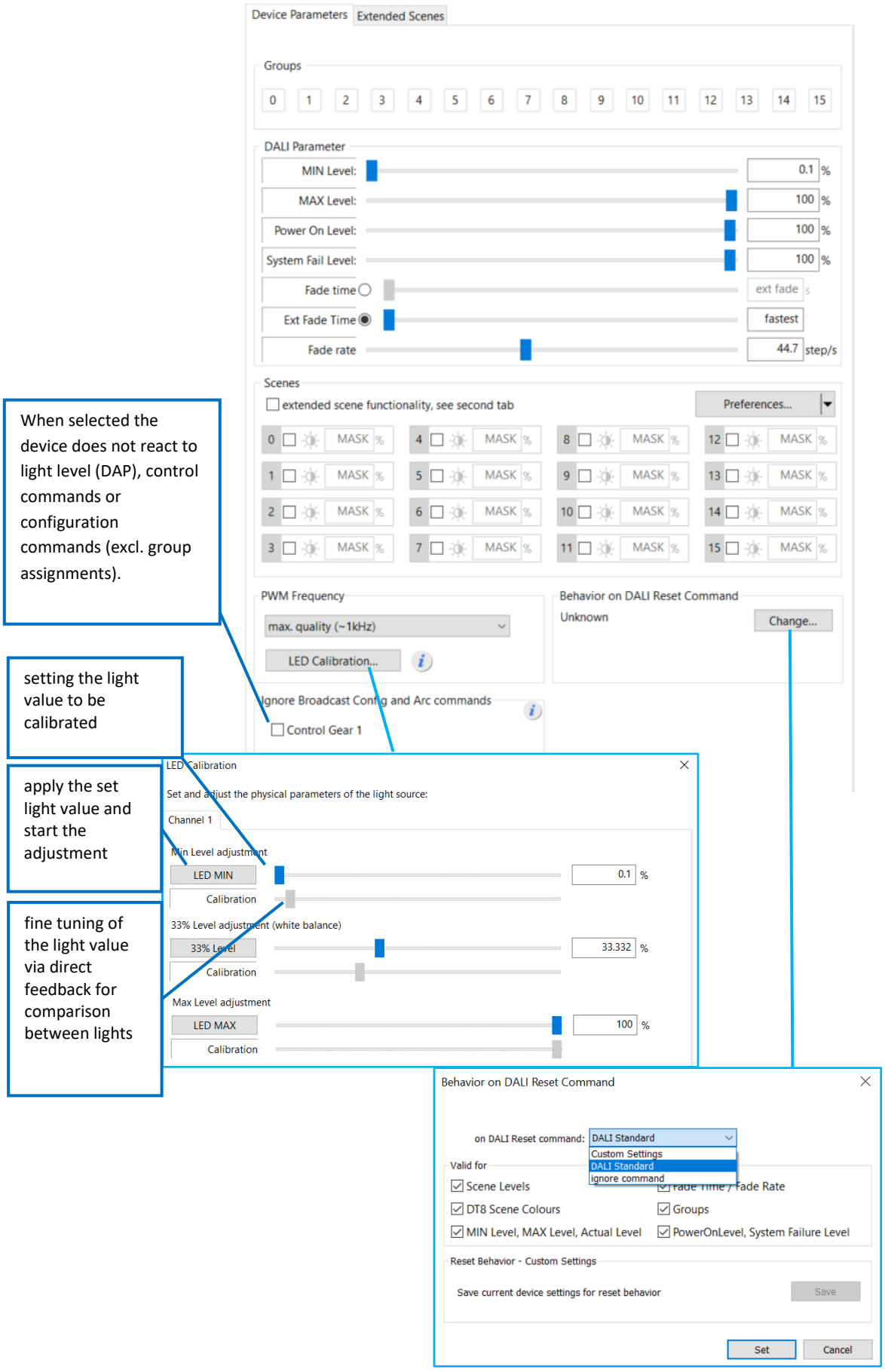
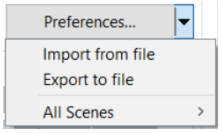


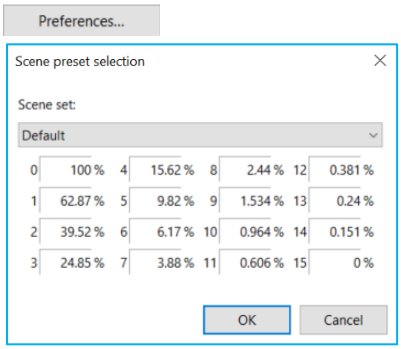
Figure 1 Cockpit overview page – LED calibration and settable RESET behaviour

Scene settings

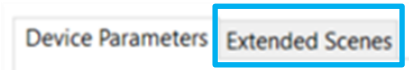
Via the arrow button the scene settings can be imported and exported.

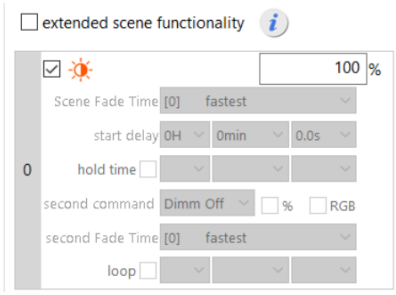


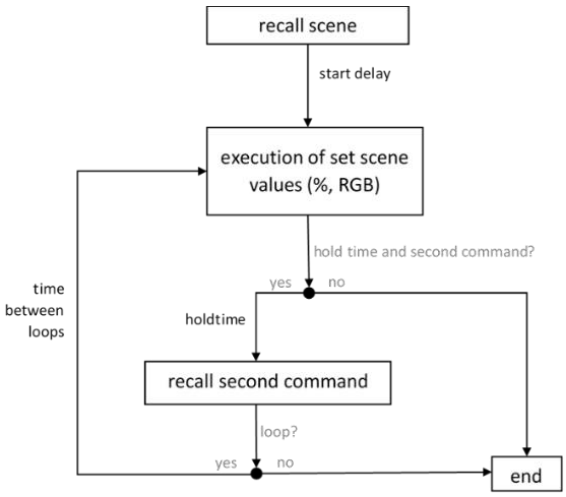
Via the button „Preferences“ the default scene settings can be loaded.



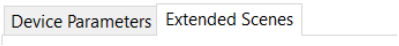
From FW 6.0 on, extended scene settings can be configured. With extended scenes it is possible to automatically change between 2 scene values (once or looped). Thereby enabling configuration of blinking lights, time delayed switch off or light repetitions, as well as traveling lights with multiple dimmers.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



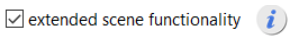




Extended Scenes are available for each of the 16 scenes on the second tab:

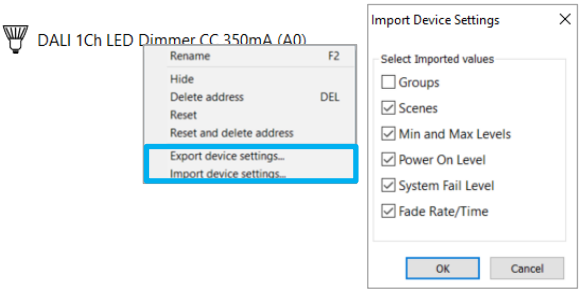


By enabling the extended scenes these are used instead of the standard scenes on the “Device Parameters” tab



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.

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

	Delivery default	**DALI norm**
Operating mode	DT6	N/A (remains unchanged)
SwitchDim2	SW&DIM2-1: light level SW&DIM2-2: scene selector	N/A (remains unchanged)
Min Level	0.1%	0.1%
Max Level	100%	100%
Power On Level	Last light level (= MASK)	100%
System Failure Level	100%	100%
Fade Time	1s [2]	none
Fade Rate	89.4 steps/s [5]	44.7 steps/s
PWM-Frequency	FW ≥ 4.6: 1kHz FW < 4.6: 122Hz, type back box: 976Hz	N/A (remains unchanged)
Control before initial addressing	G0	none
Scene values	**Scene** / **Value** 0 / 100% 1 / 63% 2 / 40% 3 / 25% 4 / 16% 5 / 10% 6 / 6% 7 / 4% 8 / 2,5% 9 / 1,5% 10 / 1% 11 / 0,6% 12 / 0,4% 13 / 0,24% 14 / 0,15% 15 / 0%	All scenes MASK
Behaviour on DALI RESET command	set DALI Standard values, see column 2	N/A (remains unchanged)

Purchase Order Information

Art.Nr. 89453844-350/500/700:
DALI 1Ch LED Dimmer CC
constant current 350/500/700mA
(other currents from 100mA-700mA on request),
supply 12V-48V DC,
output voltage range 3V-45V,
back box

Art.Nr. 89453844-700DE/1000DE/1500DE
DALI 1Ch LED Dimmer CC
constant current 700/1000/1500mA (other currents from 100mA-1500mA on request)
supply 12V-48V DC,
output voltage: 3V-45V,
SwitchDim2 / Corridor-function,
remote ceiling & integration in luminaires

Art.Nr. 89453844-2000DE/2500DE
DALI 1Ch LED Dimmer CC
constant current 2000mA/2500mA (other currents from 1500mA-2800mA on request),
supply 12V-48V DC,
output voltage: 3V-45V,
SwitchDim2 / Corridor-function,
remote ceiling & integration in luminaires

Additional Information and Equipment

Lunatone DALI Cockpit
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.