# wDALI-2 2Ch BT LED Dimmer CC

# **Datasheet**

**Wireless Control Gear** 

2-channel BT LED Dimmer (CC, DT6)

common plus connector Art. Nr. 89453845-BT-350 (350mA)



# wDALI-2 2Ch BT LED-Dimmer CC Control Gear

#### Overview

- 2 channel DALI LED-Dimmer
- suitable for control of constant current LED-modules wirelessly via DALI
- wireless DALI connection via <u>wDALI-</u>
  2 Bridge
- Operating Mode DT6: individual channel control via 2 DALI addresses
- Operating Mode Balance&Dim: control by 2 DALI-addresses, one for adjusting the light level and one for adjusting the channel balance (e.g. colour temperature)
- Operating Mode Dim2Warm: one DALI-address for simultaneous adjustment of light level and colour temperature
- dimming range 0.1%-100%

- adjustable PWM-frequency 122Hz / 250Hz / 500Hz / 1kHz
- compact housing for integration in luminaires
- 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

#### Common plus connector (GP)

type	DALI 2Ch BT CC 350 mA			
article number	89453845-BT-350			
supply: V+, V- (GND)				
type of input	supply, DC			
marking terminals	V+, V-			
supply voltage V <sub>in</sub>	12V DC 48V DC (SELV)			
max. input current I <sub>inmax</sub>	350mA			
rated power @12W	4.2W			
rated power @48W	16.8W			
standby power consumption	~ 180mW @12V			
power on behaviour	configurable via DALI: 0%-100% or last actual level			

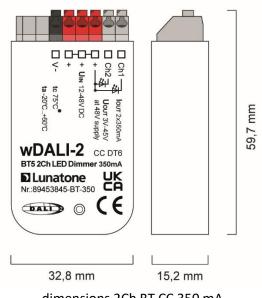


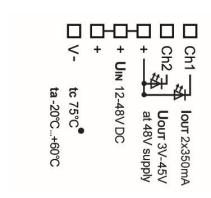
	LED.	Ch 1	Cha
output:	LED+.	Cn1-	. Cnz-

output: LED+, Cn1-, Cn2-	LED dimensor and the second DAMA			
output type	LED dimmer, constant current PWM			
marking terminals	LED+, Ch1-, Ch2-			
number of outputs	2			
PWM frequency	122Hz/250Hz/ 500Hz / 1kHz			
output voltage range V <sub>led</sub>	3V-45V (at 48V supply)			
max. output current per channel	350mA			
lled				
max. output power per channel @45V	15,75 W			
overload protection	yes			
open circuit protection	yes			
short circuit protection	yes			
insulation data				
impulse voltage category	II			
pollution degree	2			
rated insulation voltage				
rated impulse withstanding voltage	4kV			
Isolation	TIV			
supply <-> output	no insulation			
Insulation test voltage	3000VAC			
environmental conditions				
operational ambient temperature	-20°C +60°C			
Ta	20 0 100 0			
storing and transportation	-20°C +75°C			
temperature				
rel. humidity, none condensing	15% 90%			
general data				
dimensions (I x w x h)	59 x 33 x 15mm			
mounting	back box			
rated maximum temperature tc	75°C			
expected lifetime (T <tc)< td=""><td colspan="2">&gt;100.000h</td></tc)<>	>100.000h			
housing material	PC, class V0			
protection class	II in intended use			
protection degree housing	IP40			
protection degree terminals	IP20			
	mode: DT6, Balance&Dim: 2			
number of DALI-addresses	mode: Dim2Warm: 1			
wireless technology / policy	Bluetooth 5			
terminals: V-, V+, LED+, Ch1-, Ch2- / CW-				
connection type	spring terminal connector (push in cage clamp)			
wire size solid core	0,2 1,5mm <sup>2</sup> (AWG 24 AWG 16)			
wire size fine wired	0,2 1,5mm <sup>2</sup> (AWG 24 AWG 16)			
wire size using wire end ferrule	0,25 1mm²			
stripping length	8,5 9,5mm / 0,33 0,37 inch			
housing material	PA66, class V0			



actuation type	push button			
standards				
	EN 61547			
EMC	EN 55015 / IEC CISPR15			
	EN 61347-2-13			
electrical safety	EN 61357-1			
performance	EN 62384			
markings	CE, UKCA, DALI-2			



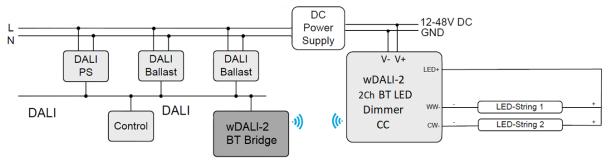


dimensions 2Ch BT CC 350 mA 89453845-BT-350

connection plan 2Ch BT CC 350 mA 89453845-BT-350

# **Application Example**

#### wDALI-2 2Ch BT LED Dimmer CC 350 mA - art.no.: 89453845-BT-350



#### Installation

- The wDALI-2 BT LED Dimmer is intended for back box installation or integration in luminaires. Ensure proper working cable relief for installation in protection class II devices
- When installing and positioning, attention must be paid to the environment; metal housings and moisture impair the radio functionality. On problems with reception, check alternative orientation of the device.
- Range of the wireless connection up to 150m outdoors, inside buildings, depending on construction 8-12m. The communication is encrypted and based on BT5 protocol.

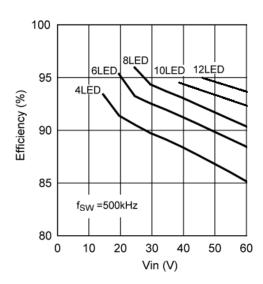
- The wiring should be carried out as a permanent installation in a dry and clean environment.
- Installation may only be carried out in a voltage-free state of the system and by qualified specialists.
- National regulations for setting up electrical systems must be followed.
- Connect the terminals V+ and V- only to a DC supply voltage of category SELV (Safety Extra Low Voltage).
- Connect only one wire on each terminal, if twin ferrules are used take care to the maximum wire size.



#### 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



# Commissioning

- After connection the Dimmer needs to be paired to a wDALI-2 BT Bridge for control over DALI. Settings and device configuration can then be applied via DALI, with the wDALI-2 BT Bridge in the DALI Cockpit.
- For configuration of the device the PC with the <u>DALI Cockpit Software</u>, must be connected to the DALI bus with the wDALI-2 Bridge, via a suitable interface module (<u>DALI-2 USB</u>; <u>DALI USB</u>, <u>DALI-2 WLAN</u>, <u>DALI-2 Display</u>, <u>DALI-2 IoT</u>, <u>DALI 4Net</u>, <u>DALI SCI RS232</u>). Information on addressing and pairing to the wDALI-2 BT Bridge see section "Pairing".

- The wDALI-2 BT Dimmer needs to be paired with the wDALI-2 BT Bridge and can then be found during the addressing process. The device is then available in the DALI Cockpit device overview
- Scene values, groups, DALI parameters and device specific settings can be configured in the DALI Cockpit, see section DALI Cockpit: General Settings page 8 and following.
- The "Identify" function can be used for localization after addressing. With the DALI command IDENTIFY, or selecting the checkbox "localise" in the DALI Cockpit.

## **Pairing**

- Connect the DALI interface (e.g. DALI-2 USB) to the DALI bus and the PC and start the DALI Cockpit software.
- 2. Start device addressing. An address is assigned to the DALI bridge and the device is displayed in the device tree.
- 3. Open the wDALI-2 Bridge device page, in the settings select the mode "Master"



At section "BT long range" select option "off"



- and save the changes to the device
- Start the search for the surrounding devices with "Pair Devices".



The found devices are listed, the search can be ended by selecting "stop"

- Select the desired devices (up to 10 devices) via the checkbox and press save to pair them with the master device.
- If the sub-lines should be addressed: in section "DALI Queries", enable the option "forward DALI-Queries to Slave devices"



and save the changes to the device

- 8. Restart the addressing as "System extension" via or the DALI interface device "Addressing".
- 9. The wDALI-2 devices are found and listed in the DALI Cockpit device tree as subitems of the master bridge.



10. The respective device pages can be selected, read and configured via the DALI Cockpit and master bridge, identical to other DALI bus devices.



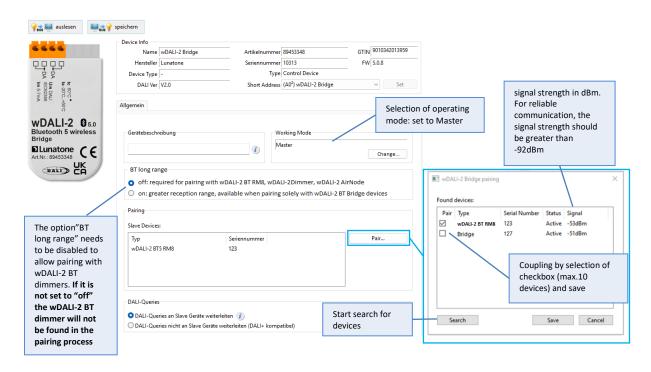


Figure 1 Coupling wDALI-2 Bridge – Master device page

## **Operating Modes**

The device offers several operating modes:DT6, Balance&Dim and Dim2Warm.

#### DT6 (factory default)

In this operating mode each channel can be controlled by its own DALI address (Device Type 6). The dimmers support DALI 2 commands.

#### Balance&Dim

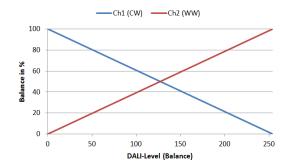
This operating mode is also suitable for operating tunable white luminaires using two DALI-addresses. The first controls the light level and the second is used for changing the distribution on the output channels (e.g. for tunable white applications or balancing direct/indirect lighting).

The Balance&Dim mode allows colour temperature adjustments without affecting the light level and vice versa. For each channel only DALI-standard commands like dim up/down but also DAP are used. Thus, the device can be used with all common controls

and gateways (e.g. KNX). The Balance&Dim mode provides an alternative to the DT8-Tc mode.

#### Can be operated via DALI

DALI-address 1: light level DALI-address 2: balance



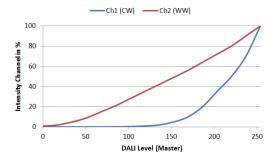
#### Dim2Warm

Both output channels are controlled by one DALI-address. The balance is coupled directly to the DALI dim level – the smaller the dim level the warmer the light.

DALI-address: Dim2Warm (Master)



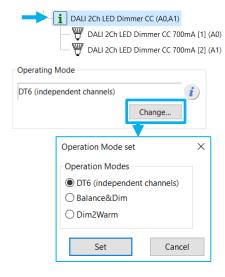
short press: On/Off long press: dimming



The dim2warm table can be edited in the DALI Cockpit Software – see section DALI Cockpit: General Settings and page 8 (Overview operating mode Dim2Warm).

#### Selection of operating mode

With the help of the PC-software tool DALI-Cockpit the operating mode can be easily set on the general settings page.



Switching between operating modes can also be done with the help of the DALI-command SET OPERATING MODE (IEC 62386-102 Ed.2). When changing the operating mode the number of used DALI-addresses can change as well and this requires a new addressing procedure. In the DALI-Cockpit this address assignment is performed automatically.

#### **Operating Modes:**

Number	Operating Mode	
0x0	DT6 (factory default)	
0x90	DT6	
0x94	Balance&Dim	
0x95	Dim2Warm	

## **DALI Cockpit: General Settings**

On the overview page respective control elements are available for each operating mode

- DT6: 2 sliders, one for the light level of each respective channel
- Balance&Dim: 2 sliders, one for level and one for balance,
- Dim2Warm: slider for input value adaption and Edit-Function for the Dim2Warm-table.

#### **PWM Frequency**

The PWM frequency can be selected: 122Hz / 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

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)

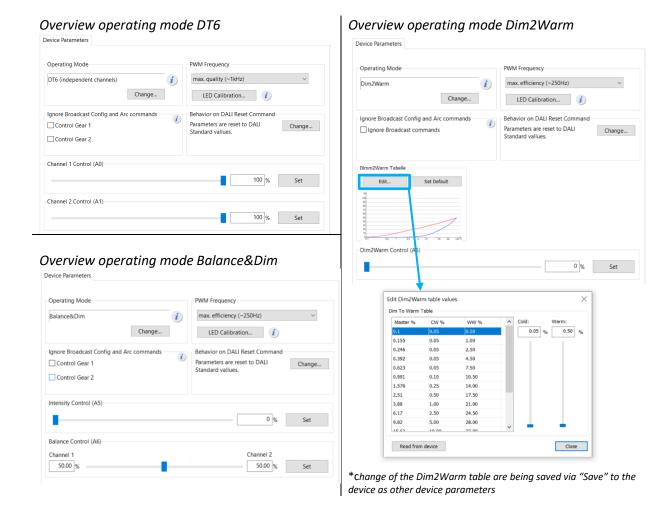
 Custom settings: the current device settings can be saved. With a DALI Reset command, the selected parameters (6 check boxes) are then reset to these saved values.

#### 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 2



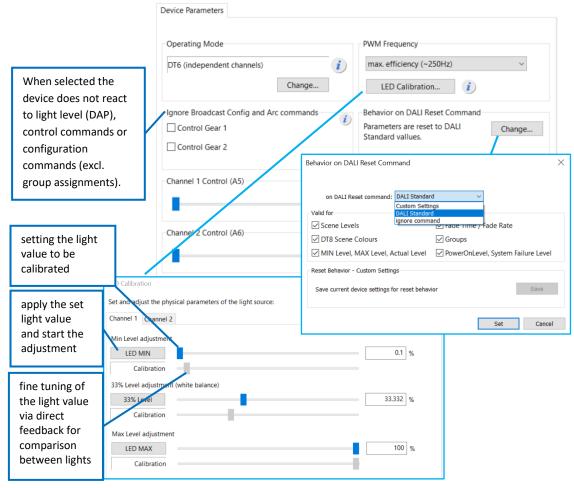


Figure 2 Cockpit overview page – LED calibration and settable RESET behaviour

#### **DALI Cockpit: Additional Settings**

Besides the settings on the general page each channel can be selected separately in the component tree for individual configuration.

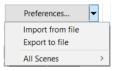


For each address the group membership can be set as well as scene values and DALI-parameters. In Balance&Dim operating mode all values assigned to channel 2 are representing the balance.

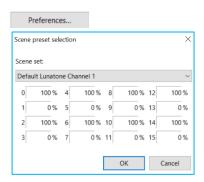
Figure 3 on page 11 shows settings for each channel for all operating modes: DT6, Balance&Dim and Dim2Warm.

#### **Scene settings**

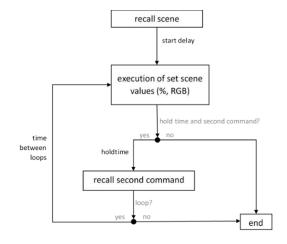
Via the arrow button the scene settings can be imported and exported.

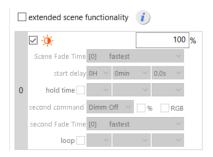


Via the button "Preferences" the default scene settings can be loaded.



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.

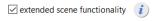




Extended Scenes are available for each of the 16 scenes on the second tab:



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



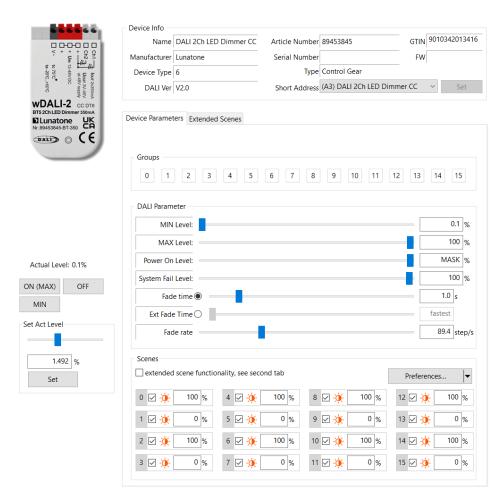
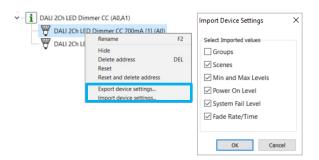


Figure 3 Cockpit settings for each channel



#### **Import/Export settings**

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



## **Factory Default Settings**

The factory default values as well as the DALInorm values are summarised in *Table 1* below. By sending a DALI-Reset command the device is set to DALI default values as defined in the standard.

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

	Delivery de	fault	DALI norm	
Operating mode	DT6			N/A (remains unchanged)
Min Level	0.1%			0.1%
Max Level	100%			100%
PowerOn Level	Last light le	vel (= MASK)		100%
System Failure Level	100%		100%	
Fade Time	1s [2]			none
Fade Rate	89.4 steps/s	s [5]		44.7 steps/s
PWM-Frequency	250 Hz			N/A (remains unchanged)
Scene values	Scene	Ch1	Ch2	All scenes MASK
	0	100%	0%	
	1	0%	100%	
	2	100%	0%	
	3	0%	100%	
	4	100%	0%	
	5	0%	100%	
	6	100%	0%	
	7	0%	100%	
	8	100%	0%	
	9	0%	100%	
	10	100%	0%	
	11	0%	100%	
	12	100%	0%	
	13	0%	100%	
	14	100%	0%	
	15	0%	100%	
Behaviour on DALI RESET command	set DALI Sta	ndard values,	N/A (remains unchanged)	
Ignore Broadcast commands	no			N/A (remains unchanged)



#### **Purchase Order Information**

#### Art.Nr. 89453845-BT-350:

DALI 2Ch LED Dimmer CC Konstantstrom 350mA Versorgung 12V-48V DC, Ausgangsspannung: 3V-45V, Dose;

# Accessories

wDALI-2 Bluetooth Wireless DALI Bridge

Art. Nr. 89453348: Art. Nr. 89453348-PS

https://www.lunatone.com/en/product/wdali-2-bluetooth-5-wireless-bridge/

# Additional Information and Equipment

Lunatone datasheets and manuals <a href="https://www.lunatone.com/en/downloads-a-z/">https://www.lunatone.com/en/downloads-a-z/</a>

Lunatone DALI products <a href="https://www.lunatone.com/en/">https://www.lunatone.com/en/</a>

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

#### Contact

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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.