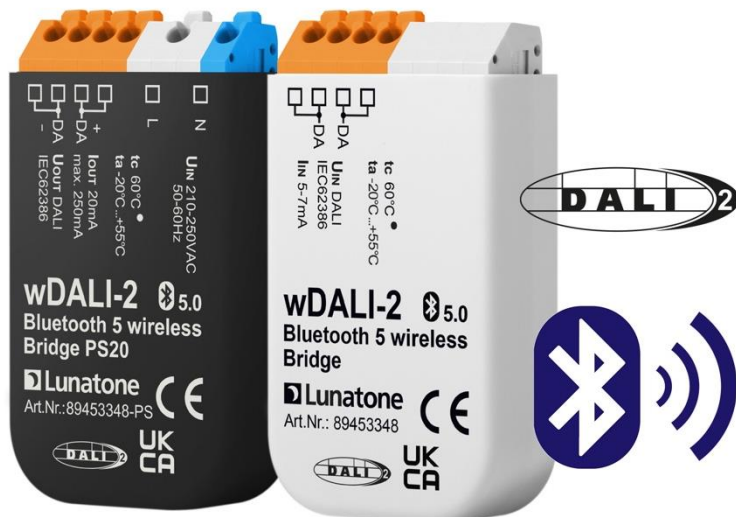


## wDALI-2 Bluetooth 5 wireless Bridge



### Datasheet

#### Wireless DALI

Module for the  
wireless connection  
of spatially separated  
DALI systems

Art.Nr. 89453348

Art.Nr. 89453348-PS

# wDALI-2 Bluetooth 5 Wireless Bridge

## Overview

- Module for the easy connection of one or more spatially separated DALI systems.
- Bidirectional connection - allows control and queries of DALI devices of main and sub DALI lines bidirectionally
- Configurable operating mode as master or slave.
- A master can be connected with multiple slaves (up to 10) – this way multiple DALI sub-lines can be connected
- encrypted communication based on BT5 Long Range
- Range of the wireless connection is up to 300m outdoors, inside buildings, depending on construction 10m to 20m are possible.
- Support of DALI-2 control commands.
- Easy configuration with the DALI Cockpit Software and DALI USB interface.
- The device (Art. Nr. 89453348) is supplied from the main DALI line.
- Version with integrated bus power supply (Art. Nr. 89453348-PS) supplied by mains, provides a 20mA DALI bus power supply for the subnet (up to 10 DALI ballasts). If more power is required, the DALI sub-circuit can be extended with a DALI Expander.
- 2 sets of DALI terminals for easy connection - signal line can be looped through.



## Specification, Characteristics

Type	wDALI-2 Bluetooth 5 wireless Bridge	wDALI-2 Bluetooth wireless Bridge PS20
article number	89453348	89453348-PS
<b>input L,N</b>		
input type	---	supply, mains- voltage
marking terminals	---	L, N
input voltage range	---	210Vac ... 250Vac
input supply frequency	---	50-60Hz
max. power consumption	---	1 Watt
<b>output DA+,DA-</b>		
output type	DALI control	DALI power supply 20mA (for up to 10 standard DALI-ballasts) DALI control
marking terminals	DA, DA	DA+, DA-
voltage range	9,5Vdc ... 22,5Vdc (acc. IEC62386)	12,9Vdc ... 20,5Vdc according to IEC62386
guaranteed DALI supply current		20mA
max DALI supply current	---	250mA <sup>1</sup>

<sup>1</sup> No additional DALI bus power supplied can be connected, a DALI bus extension is possible via a DALI Expander.

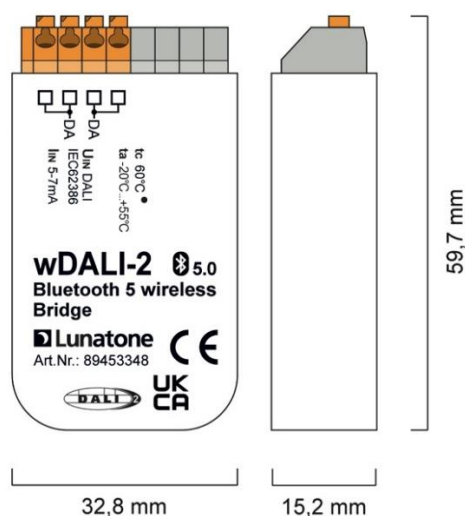
typ. current consumption lin	Slave: 5mA / Master: 7mA	---
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<b>general data</b>	
wireless technology / policy	Bluetooth 5 Long Range
dimensions (l x w x h)	59mm x 33mm x 15mm
mounting	back box installation
rated max. temperature tc	60°C
protection class	II (when used/installed as intended)
protection degree housing	IP40
protection degree terminals	IP20

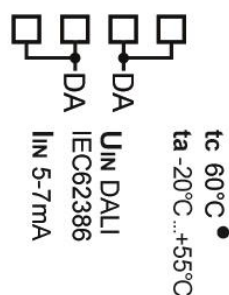
<b>terminals</b>	
connection type	spring terminal connectors
wire size solid core	0,5 ... 1,5 mm <sup>2</sup> (AWG20 ... AWG16)
Wire size stranded wired	0,5 ... 1,5 mm <sup>2</sup> (AWG20 ... AWG16)
wire size using wire end ferrule	0,25 ... 1 mm <sup>2</sup>
stripping length	8,5 ... 9,5mm / 0,33 ... 0,37inch
release of wire	push button

<b>environmental conditions</b>	
storing and transportation temperature	-20°C ... +75°C
operational ambient temperature ta	-20°C ... +55°C
rel. humidity, none condensing	15% ... 90%

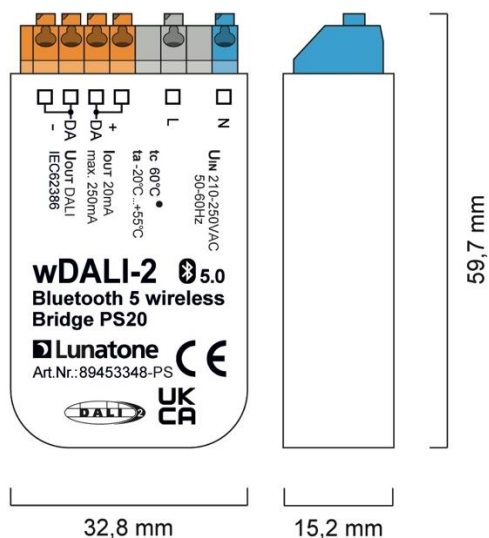
<b>standards</b>	
DALI	EN 62386-101 /104 Dali+
EMC	EN 61547 EN 50015 / IEC CISPR15
Safety	EN 61347-2-11 EN 61347-1
markings	CE



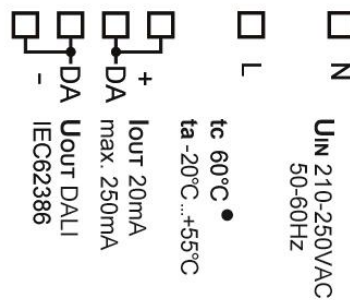
dimensions  
wDALI-2 BT5 Wireless Bridge  
art.nr.: 89453348



connection plan  
wDALI-2 BT 5Wireless Bridge  
art.nr.: 89453348

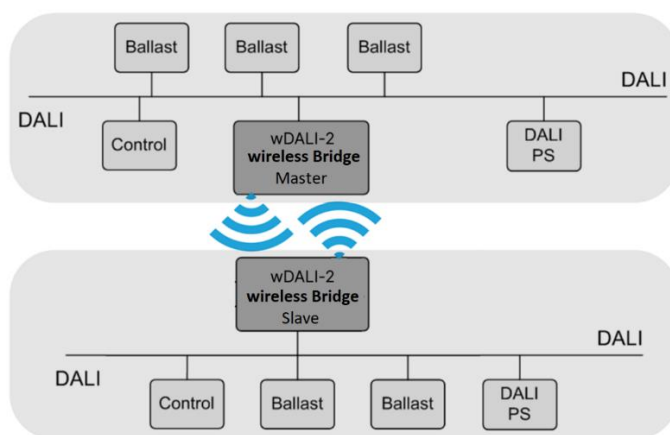


dimensions  
wDALI-2 BT 5 Wireless Bridge PS20  
art.nr.: 89453348-PS

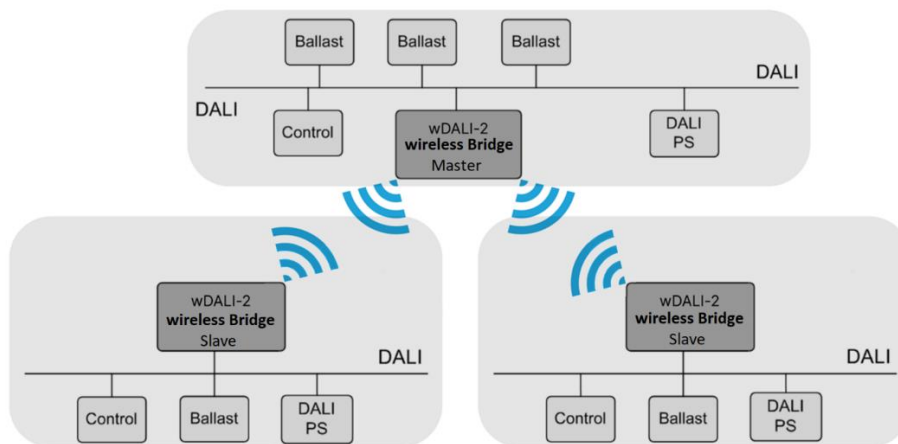


connection plan  
wDALI-2 BT 5 Wireless Bridge PS20  
art.nr.: 89453348-PS

### Typical Application






Typical application: wireless connection of spatially separated DALI-lines



Typical application: wireless connection of multiple spatially separated areas

## Installation

- The wDALI-2 Bluetooth 5 Wireless Bridge is intended for back box installation or in an enclosure, ensure proper 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. The antenna is located on the front of the housing (the side of the device with print). On problems with reception, check alternative orientation of the device.
  - 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.
  - **wDALI-2 Bluetooth 5 Wireless Bridge PS20:**
    - connect power supply terminals L and N to mains voltage according to the labelling
    - the polarity of the output voltage is marked on the housing (DA+, DA-)
  - **wDALI-2 Bluetooth 5 Wireless Bridge:**
    - the connection to the DALI terminals can be made regardless of polarity
  - The DALI inputs are protected against overvoltage (mains voltage).
  - The DALI line may be routed together with the mains voltage (in one cable or as single wires in a tube)
  - The DALI-line must **not** be connected to mains or an extra low voltage system (SELV)
  - Only 1 wire may be connected to each terminal. When using double wire end ferrules, the connection capacity of the terminal must be considered.
  - The DALI wiring can be realised with standard low-voltage installation material. No special cables are required.
  - Wiring topology of the DALI-line: Line, Tree, Star
  - There are two sets of DALI terminals for easy connection, the signal line can be looped through.
-  **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).
- Do not use standard DC power supplies on the DALI-line, since they do not meet the requirements for DALI communication
-  **Attention:** an unsuitable DALI power supply can cause damage of the DALI devices!

## Commissioning

The wireless bridge Art. Nr. 89453348 is connected directly to the DALI bus and powered by it. The version Art. Nr. 89453348-PS includes a DALI bus power supply. The modules are ready for operation after connection.

When delivered, the device is in slave-mode and can be found by a device in master-mode and connected to it.

The master-mode can be activated via the DALI Cockpit.

The configuration of the device is described in the next section “Function and Configuration”.

The range of the radio connection depends on the structural conditions. It is up to 300m outdoors and depending on construction ranging from 10 m to 20m indoors.

The communication is encrypted and based on BT5 Long Range protocol.

## Function and Configuration

With the wDALI-2 Bluetooth Wireless Bridge devices, spatially separated DALI lines can be linked wirelessly. The wireless connection is bidirectional - control and queries are possible from both DALI main and sub lines.

**Note:** Function in a system with gateways / central controls or similar may only be possible to a limited extent – see also section “Troubleshooting & FAQ”

### System Configuration

For set up and configuration of the system the software tool [DALI Cockpit](#) is required and the PC must be connected to the DALI bus via a [DALI-2 USB](#).

The wDALI-2 Bluetooth 5 Wireless Bridge is automatically recognized by the DALI Cockpit during the addressing process and displayed in the device overview.

The device can then be set to master mode on the device page (by delivery default the device is in slave mode).

The master searches for all other modules (slaves) within its range, these can be displayed by selecting "Pair Devices..." and assigned to the master, see Figure 1 below. Up to 10 Slave devices can be paired to one Master.

Currently only one Bridge Master is supported per DALI line

After the assignment, the addressing and subsequent configuration of the devices on the sub-circuits is possible wirelessly. To do so, addressing with “system extension” must be started again in the DALI Cockpit.

The devices of the sub-lines are displayed in the DALI Cockpit device list on the left as sub-items of the master bridge.

See also “step by step instructions” on the next page.

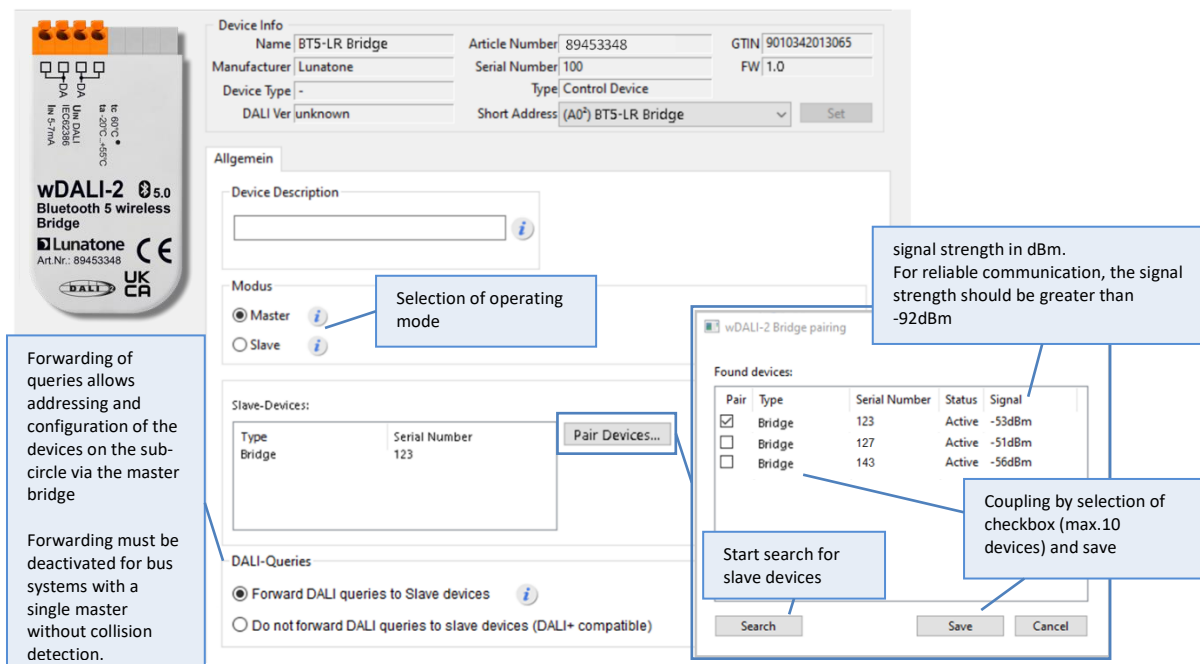



Figure 1 DALI Cockpit device page of the wDALI-2 BT5 wireless bridge

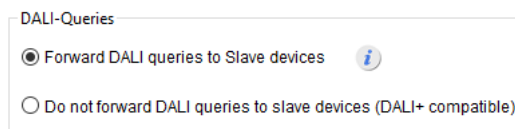
### Setup - Step by Step

1. Connect the DALI interface 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 DALI bridge device page, in the settings select the mode "Master" and save the changes to the device .
4. Start the search for the surrounding slave devices with "Pair Devices".




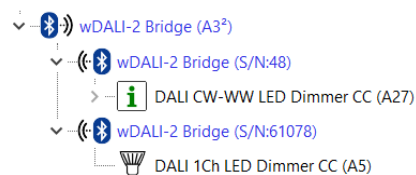
The found slave devices are listed, the search can be ended by selecting "cancel".



5. Select the desired devices (up to 10 devices) via the checkbox and press save to pair them with the master device.
6. 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 

7. Restart the addressing as "System extension" via  or the DALI interface device "Addressing".
8. The devices on the DALI buses of the paired slave devices are found and listed in the DALI Cockpit device tree as sub-items of the master bridge.



9. The respective device pages can be selected, read  and configured  via the DALI Cockpit and master bridge, identical to other DALI bus devices. (eDALI devices cannot be addressed or configured via the bridge.)

## Add or Remove a Slave Bridge

The assigned slave devices can be changed at any time via the DALI Cockpit – Master bridge by selecting the option "Pair Devices" and changing the selection.

See also "Setup - Step by Step" - steps 4.&5.

## DALI Control Commands

The master bridge creates a fully bidirectional network with the slave bridges. A control command is always transmitted to all other DALI lines, regardless of which DALI line it originated from.

## DALI Queries

Forwarding of DALI queries to the sub-lines is deactivated as delivery default (DALI+ compatible mode).

Whether forwarding of query commands is supported or not can be specified in the master bridge settings.

DALI queries can be activated if the devices sending queries fulfil the multi-master functionality according to DALI-2 (62386-101) or have collision detection. The query functionality must be deactivated for applications with a single master (without collision detection).

## Troubleshooting & FAQ

- **No devices are found on "Pairing" or only occasionally found, devices were found during installation but do not respond in application afterwards:**

the device reception might be instable, metal and humidity impair the radio functionality. If the reception in the DALI Cockpit is shown below -85dBm the reception might become instable. Check the installation situation and test alternative orientation of the device.

- **Can the DALI sub-lines be addressed other Configuration Software other than the DALI Cockpit – No**

- **Should "Forward DALI Queries" be enabled or disabled**

Forward DALI Queries is needed for 1) addressing of the sub-busses with the DALI Cockpit, and 2) if there are status queries in the system for monitoring.

If only 1) applies, the functionality should be turned off again after addressing with the DALI Cockpit.

If 2) applies, please ensure that the Monitoring, Building Management system or central control unit used are DALI-2 Multimaster or have a collision detection.

If there are Single Master without collision detection in the system the functionality "Forward DALI Queries" cannot be used and needs to remain disabled. also addressing wirelessly will not be possible. If addressing is necessary the lines need to be addressed by connecting an interface to each subline.

- **Mixing wDALI-2 extra long range bridge and wDALI-2 Bluetooth bridge in one system:** If a wDALI-2 Bluetooth 5 wireless bridge and wDALI-2 extra long range bridge are used in a system, addressing via the DALI Cockpit directly is not possible. To enable such a system, the LORA devices must be supplied and configured separately.

- How can Slave-bridge devices be re-paired if the Master-bridge is no longer available?** If the Slave-bridge loses connection to its Master-bridge for more than 10 minutes, it is possible to find and pair the Slave-bridge with another Master-bridge. If the connection to the Master-bridge is re-established, and the Slave-bridge has not been paired with another Master-bridge in the meantime, the Slave-bridge remains paired with the existing Master-bridge. When connecting to a new Master-bridge, the previous connection is only terminated on the Slave-bridge side. The previous Master-bridge will still contain the configuration. The Slave-bridge has to be manually deleted from the Master-bridge via the DALI Cockpit. Otherwise, the Master-bridge will repeat commands for the former Slave-bridge up to a time out, which makes transmission very slow.
- Support for eDALI devices:** addressing and configuring eDALI devices via the bridge is not supported (eDALI queries are not forwarded). eDALI devices must be addressed and configured on the respective buses. The devices can be used for control, and the control commands are forwarded.

**Overview and comparison to similar devices**

**wDALI-2 Bluetooth 5 wireless Bridge**

range	300m / 10-20m in buildings
configuration	DALI Cockpit PC Software
amount subnets	max. 10
wireless connection	bidirectional, addressed subnets

**wDALI Group Transmitter + Receiver**

range	150m / 8-12m in buildings
configuration	rotary switch on device
amount subnets	unlimited
wireless connection	unidirectional, broadcast forwarding

**wDALI-2 BT5 Long Range Transmitter + Receiver**

range	300m / 10-20m in buildings
configuration	DALI Cockpit PC Software
amount subnets	unlimited
wireless connection	unidirectional, broadcast forwarding

**wDALI-2 Extra Long Range wireless Bridge**

range	800m/100-500m in buildings
configuration	DALI Cockpit PC Software
amount subnets	max. 10
wireless connection	unidirectional, addressed subnets

## Purchase Information

**Art. Nr. 89453348:** wDALI-2 Bluetooth 5 Wireless DALI Bridge, back box installation

**Art. Nr. 89453348-PS:** wDALI-2 Bluetooth 5 Wireless Bridge PS20, integrated 20mA DALI bus power supply, back box installation

## 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 DALI products  
<https://www.lunatone.com/en>

Lunatone Datasheets and Manuals  
<https://www.lunatone.com/en/download-s-a-z/>

## Contact

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## Disclaimer

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

The function in installations with other devices must be tested for compatibility in advance.