



wDALI-2 Extra Long Range wireless Bridge



Datasheet

Wireless DALI

Module for the
wireless connection
of spatially separated
DALI systems

Art.Nr. 86452785

Art.Nr. 86452785-PS

wDALI-2 Extra Long Range Wireless Bridge

Overview

- Module for the easy connection of one or more spatially separated DALI systems.
- Semi bidirectional connection - allows addressed control and queries of DALI devices (single addresses, groups, broadcast) from the master DALI line
- Synchronous light control (no time delays)
- Configurable operating mode as master or slave.
- A master can be connected with up to 20 slaves – this way up to 20 DALI sub-lines can be connected.
- Range of the wireless connection is up to 800m outdoors, inside buildings, depending on construction 100m to 500m are possible.
- Easy configuration with the DALI Cockpit Software and [DALI-2 USB](#) interface.
- Support of DALI-2 control commands.
- Version with integrated bus power supply (Art. Nr86452785-PS) 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 Extra Long Range wireless Bridge	wDALI-2 Extra Long Range wireless Bridge PS20
article number	86452785	86452785-PS
Input L,N		
input type	supply, mains- voltage	
marking terminals	L, N	
input voltage range	210Vac ... 250Vac	
max input current	5mA	
input supply frequency	50-60Hz	
max. power consumption	1 W	
Output DA+,DA-		
output type	DALI control	DALI power supply 20mA (for up to 10 standard DALI-ballasts) DALI control
marking terminals	DA, DA	DA+, DA-
output voltage range according to IEC 62386	---	12,0Vdc ... 20,5Vdc according to IEC62386
guaranteed DALI supply current	---	20mA

general data:

wireless technology / policy	E-LORA 868 MHz / RL 2014/53/EU
dimensions (l x w x h)	59mm x 33mm x 15mm
mounting	back box installation
rated max. temperature tc	75°C
protection class	II (when used/installed as intended)
protection degree housing	IP40
protection degree terminals	IP20

terminals:

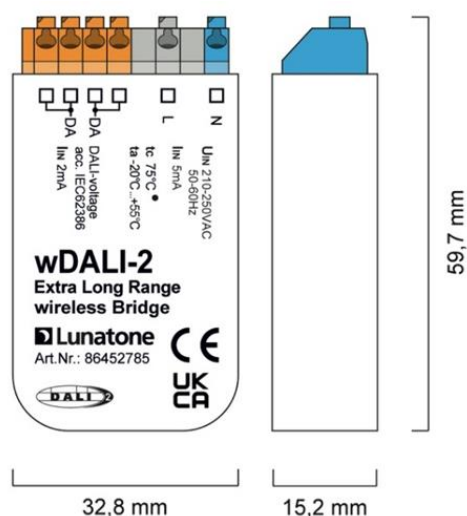
connection type	spring terminal connectors
wire size solid core	0,5 ... 1,5 mm ² (AWG20 ... AWG16)
Wire size stranded wired	0,5 ... 1,5 mm ² (AWG20 ... AWG16)
wire size using wire end ferrule	0,25 ... 1 mm ²
stripping length	8,5 ... 9,5mm / 0,33 ... 0,37inch
release of wire	push button

environmental conditions:

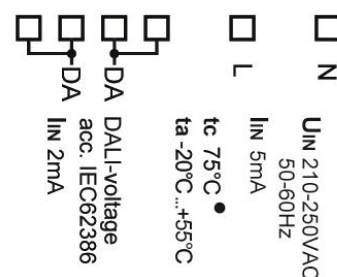
storing and transportation temperature	-20°C ... +75°C
operational ambient temperature Ta	-20°C ... +55°C
rel. humidity, none condensing	15% ... 90%

standards

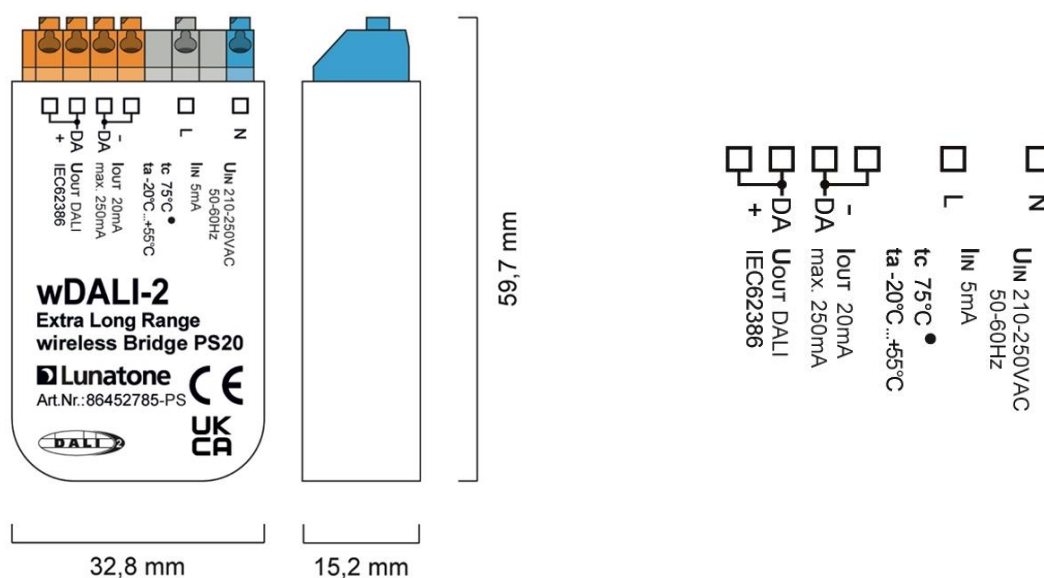
DALI	EN 62386-101
EMC	EN 61547 EN 50015 / IEC CISPR15
Safety	EN 61347-2-11 EN 61347-1
markings	CE



dimensions **wDALI-2 Extra Long Range wireless Bridge - 86452785**



connection plan **wDALI-2 Extra Long Range wireless Bridge - 86452785**



dimensions **wDALI-2 Extra Long Range wireless Bridge PS20**
86452785-PS

connection plan **wDALI-2 Extra Long Range wireless Bridge PS20**
86452785-PS

Typical Application

The system is ideal for use where DALI controls are to be implemented without having to lay long cables for the DALI bus, e.g. sports field lighting, garden lighting, garage doors, etc.
Distances of up to 800m in the open field are feasible. The control of single devices and the

query of error states (e.g. lamp errors) is supported.

Compared to other radio systems, this system offers the advantage of being able to achieve a greater range, even indoors. Remote areas can thus be easily connected. Additional radio repeaters or mesh extensions can be omitted.

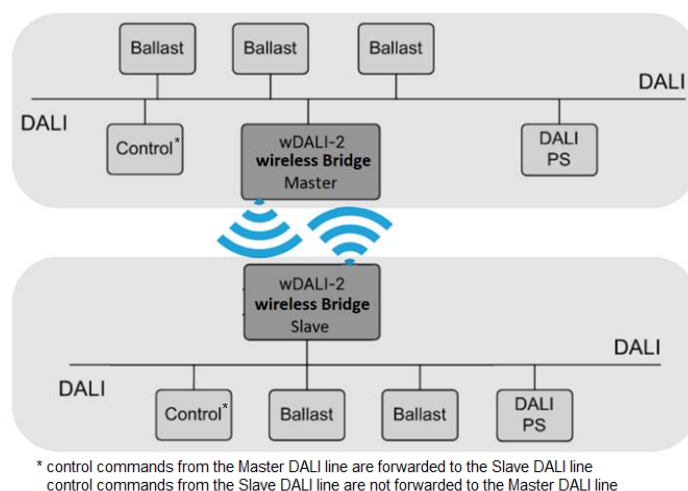


Figure 1 Typical application: wireless connection of spatially separated DALI-lines

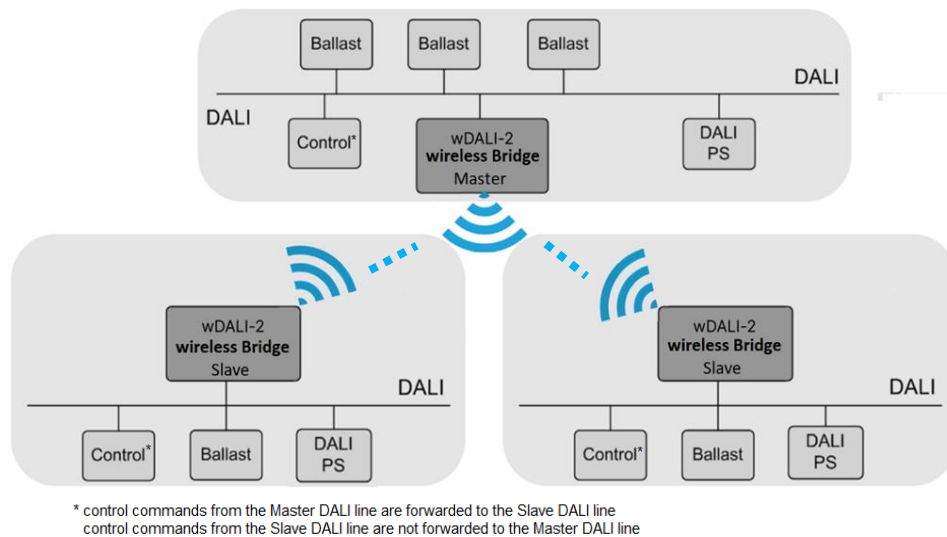


Figure 2 Typical application: wireless connection of multiple spatially separated areas

Installation

- The wDALI-2 wireless DALI 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.
- On each wired DALI line only one wDALI-2 bridge device can be connected independent of the operating mode (Master or Slave)
- 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 power supply terminals L and N to mains voltage according to the labelling.
- **wDALI-2 Extra Long Range wireless Bridge PS20:** the polarity of the output voltage is marked on the housing (DA+, DA-)
- **wDALI-2 Extra Long Range 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 a extra low voltage systems (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 wDALI-2 Extra Long Range wireless Bridge is connected directly to the DALI bus. The module is ready for operation after connection.

Only one DALI Bridge device may be connected to each wired DALI line, regardless of whether it is a master or slave.

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

The master mode can be configured via the DALI Cockpit.

The configuration of the device is described in the next section "Function".

The range of the radio connection depends on the structural conditions. It is up to 800m outdoors and depending on construction ranging from 100m to 500m indoors.

Each master device can have max. 20 coupled slave devices. Only up to 20 slaves can be found and shown during pairing. If multiple masters and slaves are commissioned in the entire system only max. 20 unpaired devices should be powered at a time.

The speed of the radio connection is lower than the DALI communication. To avoid commands being lost, a maximum of 1 command per 3s should be sent, including all master bridge devices in range.

Function

With the wDALI-2 Extra Long Range wireless Bridge, spatially separated DALI lines can be linked wirelessly. The wireless connection is semi-bidirectional - control and queries are possible from the Master DALI line, queries will if enabled receive answers from the slave DALI 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 suitable Lunatone interface module ([DALI USB](#), [DALI 4Net](#), [DALI SCI RS232](#), [DALI-2 IoT](#), [DALI-2 WLAN](#),...).



Note: To address the sub-line wirelessly via the "master" Bridge a [DALI-2 USB](#) is required as interface module

The wDALI-2 Extra Long Range 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).



Hint: It can be freely selected which device is made the master. The master device should be on the DALI bus, from which all future configurations will also be made.

The master searches for all other modules, slaves, within its range, these can be assigned to the master by selecting "Pair Devices...", see Figure 3 below.

Only 20 unpaired devices can be found and shown at a time. To assign the correct devices, each wireless system should be powered and assigned one after the other.

After the assignment, the addressing and subsequent configuration of the devices on the sub-lines is possible wirelessly, if a DALI-2 USB DALI-Cockpit interface is used. To wirelessly address the sub-line, addressing with "system extension" must be started 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 wDALI-2 Extra Long Range wireless Bridge.

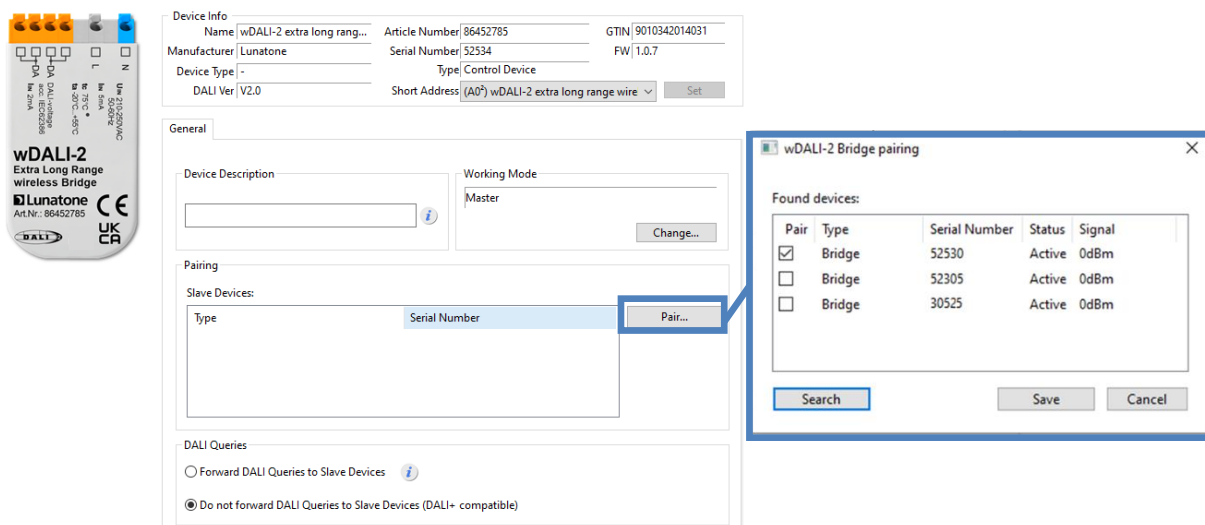




Figure 3 DALI Cockpit DALI-2 Extra Long Range wireless Bridge – Master

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".

5. The found slave devices are listed.

6. Select the desired devices via the checkbox and press save to pair them with the master device.

The settings are adopted in the master and the associated slave bridges.

The following steps 7-9 (wireless addressing and configuration) are only possible with the DALI-2 USB interface module. With other interface-modules, to configure devices on the DALI sub-line, the DALI sub line needs to be connected to the DALI Cockpit via the interface module.

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. (Slave bridges are not displayed and do not receive an address)
9. The respective device pages can be selected, read  and configured  via the DALI Cockpit and master bridge, identical to other DALI bus devices.

Add or Remove a Slave Bridge

The assigned slave devices can be changed at any time via "Pair Devices", by changing the selection and then saving.

See also "Setup - Step by Step" 4.-6.

DALI Control Commands

The master bridge creates a semi bidirectional addressed network with the slave bridges. A control command from the master DALI line is always transmitted to all other slave DALI lines. Control commands originating at a slave DALI line, are not forwarded to any other wireless DALI line. The control commands can be sent as in a wired network to single DALI addresses, DALI groups or

broadcast. The lighting is controlled synchronously, there is no noticeable time delay between the DALI lines, regardless of how many slave bridges are assigned to the master.

DALI Queries

When activated, queries on the master DALI line will be forwarded to the slave DALI lines, to return the answer.

This forwarding of DALI queries to the slave DALI lines is deactivated as delivery default.

Whether forwarding of query commands is supported or not can be specified in the master bridge settings. The setting also applies to all slave bridges, i.e. to the entire network.

DALI queries can be activated if the devices sending queries fulfill 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).

Due to the time delay in communication, queries must be repeated multiple times if no valid response is received.

Troubleshooting & FAQ

- **No devices are found on "Pairing" or only occasionally found, or 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, please try alternative installation/orientation.
- **Addressing of Sublines fails:** For addressing of the sublines, a DALI-2 USB interface is required. If there is a Building Management system or central control unit (Single Master without

collision detection) in the system, the sublines cannot be addressed wirelessly. If addressing is necessary (Broadcast control of Sublines is not sufficient) the lines need to be addressed by connecting an interface to each Subline.

- **Can the DALI Sublines 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 system, building management system or central control unit used are DALI-2 Multimasters 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 with directly is not possible. To enable such a system, the LORA devices must be supplied and configured separately.

Overview and comparison to similar devices

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

[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-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 Group Transmitter + Receiver](#)

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

Purchase Information

Art. Nr. 86452785: wDALI-2 Extra Long Range wireless Bridge, back box installation

Art. Nr. 86452785-PS: wDALI-2 Extra Long Range 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/>

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The datasheet refers to the current delivery.

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