

Sensors & controls

basic DIM Wireless- DALI gateway function Manual

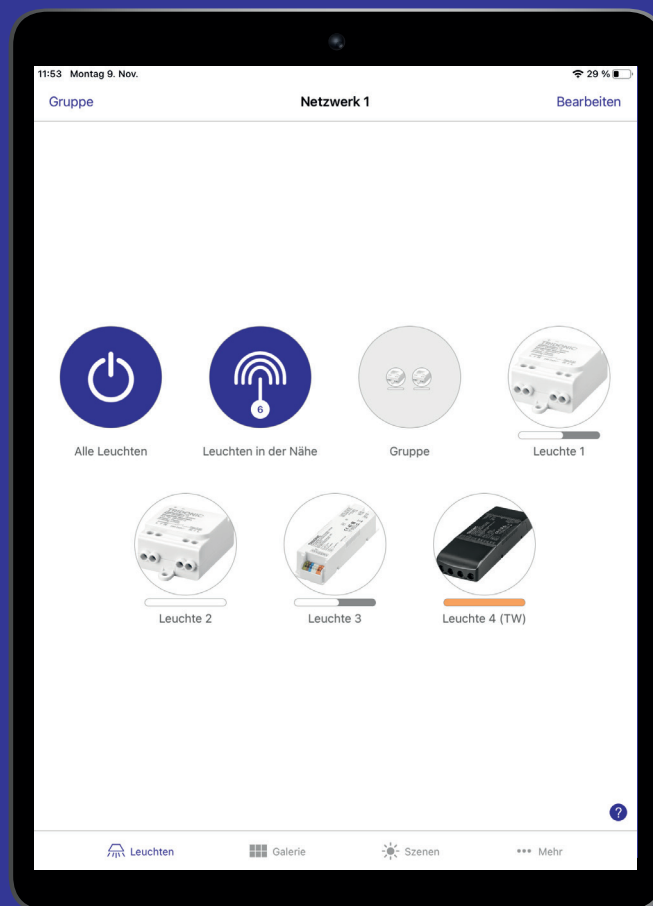


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Validity

1. Validity

This operating instruction is valid for the DALI gateway function of basicDIM Wireless.

TRIDONIC GmbH & Co KG is constantly striving to develop all its products. This means that there may be changes in form, equipment and technology.

Claims cannot therefore be made on the basis of information, diagrams or descriptions in these instructions.

The latest version of these operating instructions is available on our home page.

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We are always open to comments, corrections and requests. Please send them to info@tridonic.com

1.2. Imprint

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How the DALI gateway works

2. How the DALI gateway works

basicDIM Wireless devices with selectable DALI gateway profile can be used as a gateway between a wired DALI line and a wireless basicDIM Wireless network. Each basicDIM Wireless device that is within the scope of control of the DALI gateway is shown with a DALI address on the wired DALI side, regardless of the number of devices connected to the basicDIM Wireless module. This allows the whole installation to be controlled or monitored via a connected DALI controller.

Different topologies can be realized with the DALI gateway:

- _ Pure wireless systems controlled via DALI controller
- _ Hybrid systems consisting of wired and wireless components and controlled via DALI controller
- _ Emergency applications that use the DALI controller to perform and monitor automatic emergency tests

Every basicDIM Wireless module can be used as a DALI gateway. To do this, you only need to select the #bDW (DALI Gateway) profile in the 4remote BT app. Two different hardware versions can be used as a DALI gateway:

- _ A passive module as a DALI gateway has the advantage that it does not require a power supply, but if the DALI Power Supply is built into the DALI controller, this means that the DALI gateway is also restarted every time the controller is restarted. After the restart, the DALI gateway needs a certain amount of time, depending on the network size and performance, until it is fully available in the system again.
- _ Active module as DALI gateway has the advantage that it remains on even if the DALI power supply is switched off, but it requires additional power cables and the internal DALI power supply must be switched on or off depending on the system. After restarting the DALI controller, the DALI gateway is immediately available because it has not been restarted. The DALI power supply is switched off by default. In conjunction with a sceneCOM evo, the DALI power supply must be switched off because the sceneCOM evo has its own DALI power supply. If the active SR module is used, a sceneCOM S can be operated with the integrated DALI Power Supply.

How the DALI gateway works

CAUTION!

- _ To minimize errors and problems, it is recommended to follow the commissioning sequence described in this manual.
- _ It is essential to check the compatibility between DALI gateway and DALI controller! The DALI gateway is only tested with sceneCOM evo DA2 and sceneCOM S.
- _ The used firmware must be 43.00 or higher!
- _ **Before the wireless system can be connected to a DALI controller, the wireless system must be working problem-free!**
- _ **Since the DALI gateway requires a lot of performance due to the high data volume, it is always recommended to use only one DALI gateway in a network. Two small networks are always preferable to one large network.**

Characteristics and peculiarities of the DALI gateway

3. Characteristics and peculiarities of the DALI gateway

In order to use the DALI gateway and its functions effectively, it is important to understand the limitations and how it works. The DALI gateway emulates the devices on the DALI side, which are in the control scope of the respective DALI gateway. This means that the parameters that can be read out via a DALI controller do not have to correspond to what is in the real DALI driver. An example here is the Global Trade Identification (GTIN), which is always emulated by the DALI gateway!

CAUTION!

The DALI Gateway does not function as a DALI bridge!

3.1. Representation of basicDIM Wireless luminaires on DALI line

Each basicDIM Wireless device only gets one DALI address, regardless of how many DALI drivers are connected to the basicDIM Wireless device. Everything that is within the set control scope of the DALI gateway is displayed on the DALI page.

- _ When using multi-channel profiles, the DALI parameters that can be read via DALI are always emulated.
- _ lumDATA values are always only read and displayed from address A0, even with multi-channel profiles [available as BETA from September].
- _ Emergency devices that have been connected are always displayed as multi device type (DT1 and DT6).

Characteristics and peculiarities of the DALI gateway

3.2. Representation of basicDIM Wireless sensor and push buttons on DALI line

Please note that every DALI gateway always displays all sensors and buttons that are active in the system!

Deactivated sensors are not displayed. Buttons cannot currently be deactivated!

Please also note that the DALI gateway can map a maximum of 80 instances to DALI!

The following table illustrates the address assignment of the DALI gateway:

	Profile (example)	DALI address	DALI-2 address	DALI-2 instances
Luminaire profile	bDW (2ch/Dim,Dim)	1 (lamp)	-	
Luminaire profile with sensor	bDW (DALI2 /BC+Sensors)	1 (lamp)	1 (sensor)	2 (movement / light)
Luminaire profile with push button	bDW (1pB - 1ch/Dim)	1 (lamp)	1 (push button)	1 (push button)
Luminaire profile with sensor and push button	bDW (4pB - DALI2 /BC+Sensors)	1 (lamp)	1 (sensor) 1 (push button)	2 (movement / light) 4 (push button) 6 sum

Commissioning

4. Commissioning

4.1. Step 1: Preparing the DALI gateway module

Follow the steps below to use a basicDIM Wireless device as a DALI gateway in a network:

1. Unpair module, if paired.
2. Change the profile of the module to the DALI gateway profile. In this step, the DALI gateway firmware is automatically loaded in the background, this may take some time.
3. Connect the module used as a DALI gateway to the DALI line of the DALI controller (if necessary also to mains if it is an active module)
4. Pair the gateway module to the basicDIM Wireless network.

If the basicDIM Wireless device with DALI gateway profile is paired with the network, it appears in the 'More' tab in the gateways. This still needs to be configured. This is done under More > Gateway > DALI Gateway.

4.2. Step 2: Configuration of the DALI gateway in the network

'Control scope':

With a click on 'Control scope' you can set which basicDIM Wireless devices are addressed via the gateway.

- _ **All Luminaires** - By default, all devices in the network are addressed via the DALI gateway.
- _ **Scene** - A scene can also be selected in which you can define the devices that are addressed via the DALI gateway.

CAUTION!

It is possible to split a larger basicDIM Wireless network (> 64 luminaires) via scenes in smaller DALI controllable parts. It is recommended to use multiple small networks (< 64 devices) instead of one big one.

Since the DALI gateway requires a lot of performance due to the high data volume, it is always recommended to use only one DALI gateway in a network. Two small networks are always preferable to one large network.

Commissioning

'Control Priority':

- _ **Higher than manual** - The affected basicDIM Wireless devices can only be controlled via the DALI gateway. No control with app, sensors, switches / buttons and timers possible.
- _ **Manual (standard)** - Control of the affected basicDIM Wireless devices via DALI gateway as well as the app, sensors, switches / buttons and timers possible.
- _ **Higher than automation** - Allows the DALI controller to control basicDIM Wireless devices that are located in the automation. Devices that are in manual control are not affected.
- _ **Lowest-priority Automation** - Allows the DALI controller to control the network with the lowest level of automation. Any lighting control in the 4remote BT app (manual, timer, sensor) overwrites the previously set value of the DALI controller.

'Export sensors':

If this option is activated, basicDIM Wireless sensors can be mapped as DALI-2 sensors in the DALI controller software.

'Export switches':

If this option is activated, basicDIM Wireless push buttons can be mapped as DALI-2 push-buttons in the DALI controller software.

'Export light control':

If this option is activated, control commands from the basicDIM Wireless network are sent to the DALI line.

'Export changes of CCT':

If this option is activated, color control commands from the basicDIM Wireless network are sent to the DALI line.

'BETA - Export DALI device data':

If this option is activated, lumDATA values (DALI Part 251, 252, 253) are provided via DALI gateway.

CAUTION!

This is only possible for a full DALI line with a DALI gateway which contains an nRF52840 chip!

'BETA - DALI emergency mode':

If this option is activated, only emergency functions are supported via the DALI gateway. Only emergency lighting is exported, no other lights, sensors or push buttons. This may be necessary if the normal lighting is controlled via basicDIM Wireless and only the emergency lighting is monitored by a DALI controller.

Commissioning

NOTICE

Up to 64 devices can be addressed with one DALI gateway device. However, only 80 DALI-2 instances can be processed by the DALI gateway. This means that the number of possible input devices in the basicDIM Wireless network may be limited depending on how many instances the devices use.

CAUTION!

- _ To save the configuration for the DALI gateway, tap 'Back'. The settings are only accepted after exiting the menu!
- _ [Notes on system limitations](#), p. 17 must be observed.

Commissioning

4.3. Step 3: Addressing in the DALI controller software

If addressing is started, each basicDIM Wireless device that is paired into the network of the gateway module and is included in the Control Scope is assigned with a DALI address. basicDIM Wireless devices that can control multiple channels with their profile also appear in the software of the DALI controller as 1-channel drivers. Therefore, the individual channels can only be controlled with the 4remote BT app. With the DALI controller all connected luminaires are controlled together.

Each device in the network with a luminaire profile occupies a DALI address - the gateway module, however, does not. The gateway module is not recognized by the DALI controller and is therefore transparent.

A maximum of 64 DALI addresses can be assigned via each DALI gateway (DALI limitation). If luminaires / devices are also connected in front of the DALI gateway on the wired DALI bus, these must be taken into account.

basicDIM Wireless devices that use a Tunable White, RGB or XY profile are represented as DALI DT8 (Tc / RGB / XY) devices. Devices with emergency drivers are displayed as Multi Device Type (DT6+DT1).

4.3.1. Luminaire profile examples

	Profile (example)	DALI address	DALI-2 address	DALI-2 instances
Luminaire profile	bDW (2ch/Dim,Dim)	1 (lamp)	-	
Luminaire profile with sensor	bDW (DALI2 /BC+Sensors)	1 (lamp)	1 (sensor)	2 (movement / light)
Luminaire profile with push button	bDW (1pB - 1ch/Dim)	1 (lamp)	1 (push button)	1 (push button)
Luminaire profile with sensor and push button	bDW (4pB - DALI2 /BC+Sensors)	1 (lamp)	1 (sensor) 1 (push button)	2 (movement / light) 4 (push buttons) 6 sum

The DALI gateway always addresses in the same way. Dependent on the control scope, 'all luminaires' or 'Scene'.

- _ 'All luminaires': Top left luminaire is always address A0 increasing from left to right.
- _ 'Scene': Same as with 'all luminaires', but here the content of the scene is valid, always top left address A0 increasing from left to right.

There are 2 ways to start the DALI addressing of the DALI gateway:

Commissioning

- _ Start addressing via connected DALI controller
- _ Start addressing via 4remote BT app

⚠ CAUTION!

The DALI gateway needs some time after starting up until it has read all the data from the network. If the addressing is started too early, this can lead to problems due to lack of data!

4.3.2. Addressing via DALI-Controller

When addressing is started on the DALI controller, all devices in the control scope are given a DALI address. In addition, addresses are assigned to the sensors and buttons.

Please note to start addressing only when all data has actually been collected by the DALI gateway. The amount of time it takes for the DALI gateway to collect the data depends mainly on two factors:

- _ The number of devices to be displayed via DALI
- _ The performance of the network

⚠ CAUTION!

If all data is still not available after 15 minutes, this indicates poor performance in the network. This can affect the entire network or just areas.

DALI controllers are often static, which means that what has been collected on the DALI line once remains until it is collected again. If this is the case, addressing too early can result in the addressing having to be carried out again at a later point in time. To avoid this problem, it is recommended to first carry out the addressing via the 4remote BT app and to check in the app whether all devices have been addressed correctly. This is particularly useful in relation to emergency applications!

4.3.3. Addressing via 4remote BT app



Addressing via the 4remote BT app can be started in the **More tab / Gateways /** for the respective DALI gateway. To do this, press **details** in the DALI gateway. A whole list of information is displayed in the details. Further down in the details, press **DALI Configuration**.

The following menu is displayed in which changes can be made to the DALI bus!

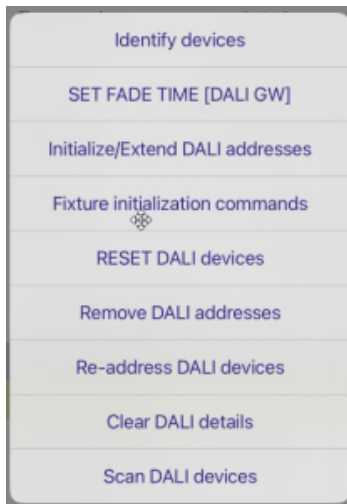
With the function 'Re-address DALI devices', the addressing of the DALI bus can be started.

Commissioning

⚠ CAUTION!

If the DALI gateway is configured, changes here can lead to a new commissioning!

4.3.4. Functional descriptions in "DALI Configuration" menu



'Identify devices'

This function can be used to identify devices connected to the DALI gateway.

'SET FADE TIME [DALI GW]'

This function can be used to set the fade time to be used by devices connected to the DALI gateway.

'Initialize/Extend DALI addresses'

This function allows to identify if there are new devices connected to the DALI gateway that haven't been identified

'Fixture initialization commands'

This function allows to initialize fixture default settings before use. This can include setting their default colors, brightness levels, or other parameters.

'RESET DALI devices'

This function performs a DALI reset and resets the devices to factory default.

'Remove DALI addresses'

This function removes the DALI addresses from the DALI gateway.

Commissioning

'Re-address DALI devices'

This function re-addresses the DALI gateway or starts the addressing.

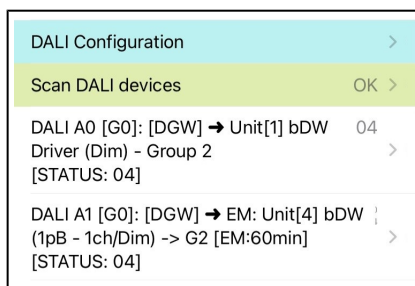
'Clear DALI details'

This function removes specific configuration settings, data, or parameters that have been programmed into DALI devices. This is typically done to reset the device's operational data without necessarily performing a full factory reset.

'Scan DALI details'

This function perform a full scan of DALI devices by detecting all the addressed DALI devices on the DALI interface.

4.3.5. Check DALI bus via 4remote BT app



In the 4remote BT app it is possible to display all luminaires that are displayed on the DALI bus in a list. To do this, select in the 4remote BT app the relevant DALI gateway in the **More tab / Gateways /**. Then, in the DALI gateway, press **details** and scroll all the way down. A list of all the luminaires connected to the DALI bus plus additional information will then be displayed.

If nothing is displayed, the bus is either not yet addressed or the data has not yet been read and displayed. The reading of the DALI bus can be started manually using 'Scan Dali devices'.

In this section you can also check if the luminaire is already recognized as Emergency luminaire with the correct data. If a luminaire which should be an Emergency luminaire don't show up as emergency here, don't start the addressing / picking up the addresses to a DALI controller.

Subsequent changes to the basicDIM Wireless network

5. Subsequent changes to the basicDIM Wireless network

Changes in a basicDIM Wireless network after addressing with a DALI controller can lead to malfunctions in the system. Below information explains what happens at the DALI bus if luminaires are removed, added or replaced.

A basicDIM Wireless luminaire is removed from mains but not unpaired:

- _ As long as the luminaire is not in the basicDIM Wireless network, the associated address also disappears from the DALI bus.
- _ As soon as this luminaire is back on and is available in the basicDIM Wireless network, the associated DALI address is visible again.
- _ The behavior is comparable with a wired DALI luminaire.

A basicDIM Wireless luminaire is unpaired from the network and paired again later:

- _ If a basicDIM Wireless luminaire is unpaired from the network, this address disappears from the DALI bus.
- _ If the same luminaire is paired to the network again, the luminaire must be addressed so that the luminaire on the DALI bus receives an address again.

A new basicDIM Wireless luminaire is added to the 'Control-Scope' of the DALI gateway:

- _ If a new luminaire is paired to the network, the luminaire must be addressed so that the luminaire on the DALI bus receives a DALI address.

A basicDIM Wireless luminaire is replaced:

- _ If a defective basicDIM Wireless luminaire is changed using the replace function, all parameters of the old luminaire are taken over and transferred to the new luminaire.
- _ After replacement, this luminaire appears with the same address as the previous luminaire.

Resetting the DALI bus:

- _ To reset the DALI bus, the DALI gateway must be unpaired and then paired again to the network. When it is paired again, the DALI bus is reset.

Replacing the DALI gateway

6. Replacing the DALI gateway

A defective DALI gateway or one that is no longer in the network can be replaced like luminaires or a sensor. To do this, simply select the grayed out DALI gateway in the 'More' tab under 'Gateways' and click 'Replace device'. A selection of available devices appears. A DALI gateway can only be replaced with another DALI gateway which uses the same fixture ID and is not linked to a network!

If such a DALI gateway is available, select it and use it to replace the old one in the system.

The DALI gateway always addresses in the same way. Dependent on the control scope, 'all luminaires' or 'Scene'.

- _ 'All luminaires': Top left luminaire is always A0 increasing from left to right.
- _ 'Scene': Same as with all luminaires, but here the content of the scene is valid, always top left A0 increasing from left to right.

This means if the order of the luminaires is not changed during addressing and replacement, the same luminaires as before get the the same address!

CAUTION!

- _ After the replacement, DALI bus must be re-addressed!
- _ If the order of the luminaires is not changed, the luminaires get the same address as before.

Wireless Emergency and DALI gateway

7. Wireless Emergency and DALI gateway

The DALI gateway functionality offers the possibility of integrating emergency luminaires into the wireless system and then monitoring and testing them with an emergency-capable DALI application controller. In general, two applications are possible:

- _ DALI controller as Emergency only controller
- _ DALI controller controls the complete network

Basically, the basicDIM Wireless system only transmits emergency lighting control commands via DALI gateway to a DALI emergency controller; basicDIM Wireless itself has not implemented any emergency functions (test book, automatic tests, etc.).

When commissioning a DALI gateway with emergency lights in the control scope, it should be noted that it takes a certain amount of time after configuration before all the data from the individual basicDIM Wireless modules is collected. Each basicDIM Wireless module is a "normal" lamp by default. Only when an emergency device is found on the module does it become a multi device type DT6 and DT1 on the DALI gateway. This means that if addressing is started too early, DT1 luminaires may be displayed as DT6. The time until all lights are displayed as emergency lights must be awaited before a controller is connected. The DALI line can be checked in advance in the DALI gateway section of the 4remote BT app or with the masterCONFIGURATOR.

In order to be able to use the emergency functionality in basicDIM Wireless networks, certain points must be observed:

- _ In combination with emergency lights, a profile that addresses the connected devices must always be used on the basicDIM Wireless module in the emergency light. This is the only way to recognize an emergency lighting device. Profiles with broadcast addressing or group addressing do not work!
- _ For emergency luminaires a 1ch/dim-Profil must be used!
- _ The firmware used must be version 44.00 or higher!
- _ The compatibility between Wireless Emergency and the DALI controller used must be ensured!
- _ Only the sceneCOM evo DA2 controller has been tested and approved by Tridonic.
- _ **Before the DALI gateway can be put into operation, the basicDIM Wireless system must be working properly.**

If lights are not displayed on the DALI gateway after a long time, this indicates a connection problem. In this case, it must be checked whether the signal quality of the lamp is sufficient. See the document [basicDIM Wireless At a Glance](#) for more information.

Notes on system limitations

8. Notes on system limitations

- _ DALI limitation of 64 addresses per DALI bus
- _ 80 DA2 instances per network
- _ **Only one DALI gateway per network allowed in Emergency applications**
- _ DALI addresses are emulated and sometimes combined from multiple devices. This has the result that:
 - _ Parameters that are read out do not always correspond to the actual value in the driver (e.g. Global Trade Identification number, GTIN).
 - _ DALI parameters, which are displayed by a 0-10 V module, for example, are completely emulated.
 - _ In the case of DALI 2 controls, not all instances are always emulated.
- _ Each basicDIM Wireless module only ever receives one DALI address, regardless of the number of drivers actually connected.
- _ User interface via DALI gateway has only 4 instances, so not all buttons can be used via DALI.
- _ Signal propagation times in wireless systems can vary! This can lead to problems with the application controllers.
- _ Signal propagation times become longer, the worse the connection to the network is!
- _ Compatibility with the DALI controller used and the functions used must be ensured in advance!
- _ If the emergency functionality is used, it must be noted that the DT1 is only recognized after a certain time. As a result, a basicDIM Wireless device that is within the control range of the DALI gateway is always a luminaire without DT1 at first. Once this is detected, it will be dynamically added.
For this reason, the system must be given sufficient time during commissioning until all emergency lights are properly recognized. If luminaires are not recognized as DT1 for a long time, this is a sign of insufficient signal quality from the luminaire concerned.
- _ It should be noted that when identifying an emergency light, the binary code of the DALI address used in the driver is output and not the address assigned by the DALI gateway!
- _ Changing network settings in the control area of the DALI Gateway (coupling / decoupling of devices, etc...) after the basicDIM Wireless devices have been addressed by the DALI Controller software via the DALI Gateway leads to changes on the DALI Side!
- _ Changes to lights in the control area of the DALI gateway can make re-addressing necessary.
- _ **It is recommended to use several small basicDIM Wireless networks (< 64 lights) and not one large subdivided network!**

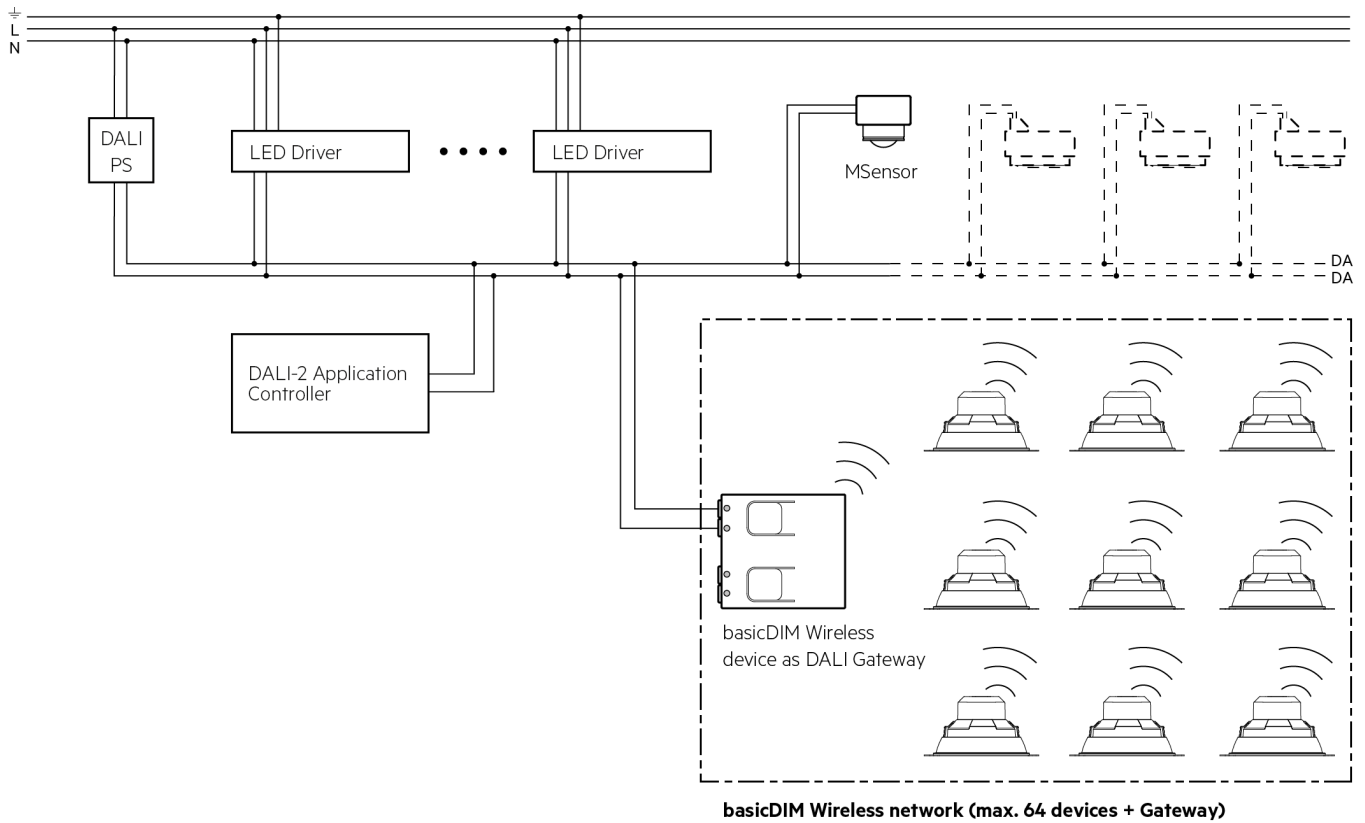
Conventional DALI controller and software

Depending on the DALI controller and the software used, each device in the basicDIM Wireless portfolio can be displayed and controlled as a DALI address.

Application examples

9. Application examples

Addressing of a small basicDIM Wireless network - max. 64 devices (recommended)



If there is a maximum of 64 basicDIM Wireless luminaires in a network, each of these devices can be addressed. The 'Control scope' option can be set to 'All luminaires'.

Application examples

Addressing of basicDIM Wireless network and devices on the DALI bus

The total number of the basicDIM Wireless and the wired DALI devices must not exceed the maximum of 64 assignable addresses.

If this is exceeded, some drivers are no longer addressed and can ONLY be controlled with broadcast commands. To expand the number of addressable devices, another application controller must be used.

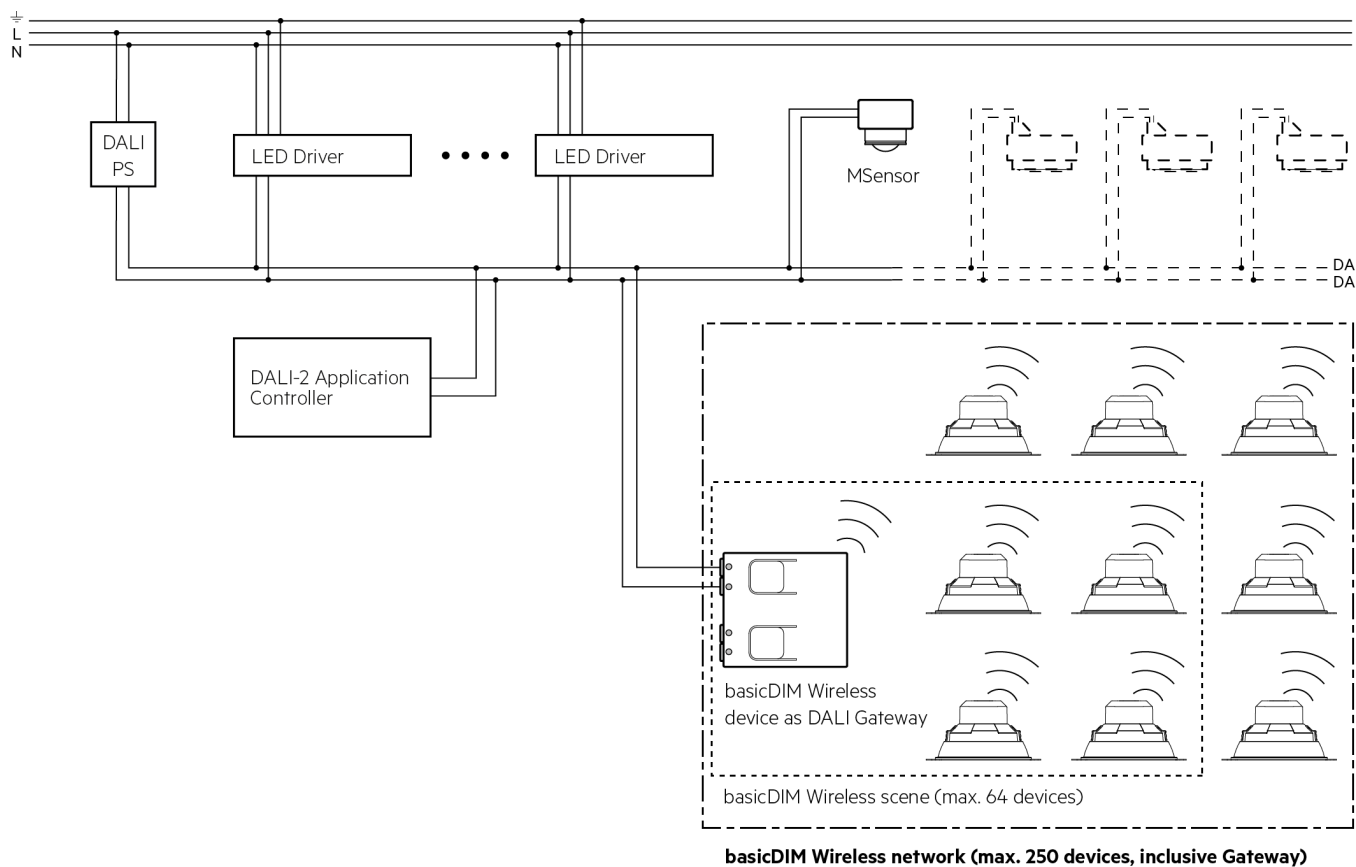
Example: basicDIM Wireless network with 40 luminaires + 24 luminaires on the wired DALI bus

i NOTICE

Requirements for the chosen example:

- _ max. 64 devices in the basicDIM Wireless Evolution network
- _ max. 64 luminaire addresses via application controller (wired + wireless)
- _ **This is the recommended use case if addressing of the luminaires via DALI is needed!**

Addressing of certain devices in the basicDIM Wireless network (recommended for Emergency only on DALI)



Application examples

If only certain devices of a basicDIM Wireless network are to be addressed, the Control scope must be set to a scene that contains those luminaires. To do this, create a scene and only activate the devices that are to be addressed by the DALI gateway. Then select this scene in the 'Control scope' option.

Make sure that you do not exceed the maximum number of 64 luminaires per gateway, otherwise not all of them can be addressed by the application controller.

Addressing of basicDIM Wireless network and devices on the DALI bus

The total number of the basicDIM Wireless and the wired DALI devices must not exceed the maximum of 64 assignable addresses.

NOTICE

Requirements for the chosen example:

- _ max. 64 devices via DALI gateway
- _ max. 64 luminaire addresses via application controller (wired + wireless)

CAUTION!

It is possible to address only a part of the basicDIM Wireless network, but this is NOT recommended!
Consider that in this case 2 control systems work in parallel!

Application examples

Addressing of basicDIM Wireless network and devices on the DALI bus

The total number of the basicDIM Wireless and the wired DALI devices must not exceed the maximum of 64 assignable addresses.

NOTICE

Requirements for the chosen example:

- _ max. 64 devices via DALI gateway
- _ max. 64 luminaire addresses via application controller (wired + wireless)