

# DALI MC Overview

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## 1. DALI Multi-Controller: DALI MC

The DALI MC is a multifunctional control module for the DALI circuit. It has four independent inputs with freely configurable functions. Any standard switches compatible with mains voltage can be connected to the module. It is also possible to control the inputs of the DALI MC via relays. There is also the option of providing a power supply monitoring system with the DALI MC. When the power supply returns a predefined lighting status is retrieved by the DALI MC. Its compact design means that the DALI MC can be installed together with standard switches in a flush-mounted box. The DALI circuit can therefore be decentralised. The four inputs are configured by means of masterCONFIGURATOR<sup>1</sup> configuration software.



The DALI MC module is multi-master-compatible so several control modules can be used in a DALI circuit.

### 1.1 Function

The behaviour of each of the four inputs can be defined with the aid of the masterCONFIGURATOR<sup>1</sup> software. Possible settings:

The input functions as

- a push to make switch
- a standard switch
- a changeover switch
- a stairwell switch
- a push to make switch that calls up a predefined sequence of DALI commands (macro)

In addition to defining the function you can set further parameters to select the destination address for which the function is intended (broadcast, group or individual address) and the type of DALI command to be performed. For a detailed description of the functions and the DALI commands see "Table 1: Function parameters" and "Table 2: Parameters for commands" in section 1.2.2 Setting the parameters for the inputs.

#### Example: On/off switch

Destination address: Group 1

Function: Switch

DALI command: "Recall max. Level" when switched on and "OFF" when switched off

<sup>1</sup> MasterCONFIGURATOR, V1.10 and higher – available free of charge at [www.tridonic.com](http://www.tridonic.com).

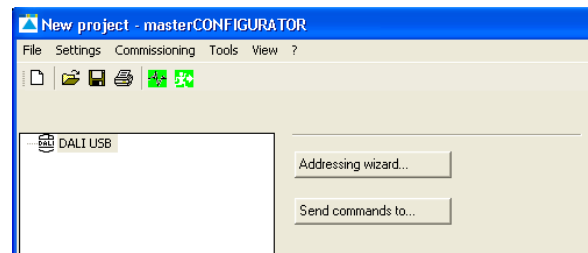
## 1.2 Configuration by masterCONFIGURATOR

The DALI MC can be configured by means of the masterCONFIGURATOR software tool (version 1.10 and higher). To set the parameters for the 4 inputs of the DALI MC you first have to address the DALI MC. The important thing here is that each input is given its own extended address (eAdr.). The input will appear later under this e-address in the DALI bus overview of the masterCONFIGURATOR and can then be parameterised.

**Note: The e-address area does not reduce the DALI address area of the DALI units (ECGs, transformers, etc.). If a DALI MC is connected to the DALI circuit, all 64 DALI short addresses are still available for the ballasts.**

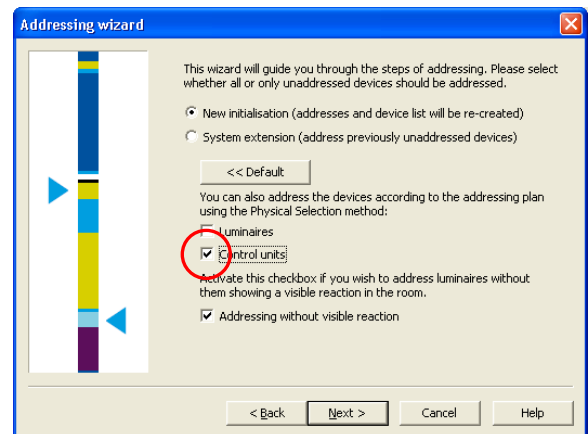
### 1.2.1 Addressing the DALI MC

1. Start the Addressing Wizard



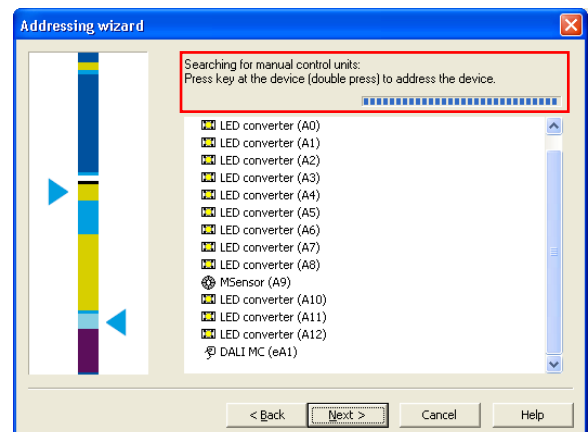
2. Select either “System expansion” or “Complete new installation” and in the advanced settings activate the function: Use “Physical Selection Methode” for “Control Units”

Press “Next” to start the addressing cycle.



3. The system now searches the DALI circuit for DALI units. The search starts with the DALI ballasts, followed by other types of DALI unit one after the other, and then the manual input devices (e.g. DALI MC, DALI Touchpanel).

For addressing the manual input devices the masterCONFIGURATOR asks the user to press a button on the manual input device. Pressing the button **twice** (double-clicking) on the DALI MC causes the input to be detected and an e-address to be assigned to it. Repeat this process until e-addresses have been assigned to all the inputs of the DALI MC. The e-addresses are assigned in the sequence in which the buttons on the DALI MC are pressed. After the addressing cycle they are listed in the DALI bus overview under these e-addresses.



Pressing the “Next” button closes the addressing cycle and transfers the devices to the DALI bus overview.

## 1.2.2 Setting the parameters for the inputs

In the DALI bus overview each input of the DALI MC appears as an individual bus user. Clicking on an input opens the relevant parameter window.

The screenshot shows the DALI MC parameter window for 'DALI USB'. The left sidebar lists various devices, including LED converters (A0-A12) and DALI MCs (AA1, eA2). The main window displays configuration options for a selected device (LED converter (A0)).

**Read device data:** The device data is read from the device and displayed.

**Save device data:** The device data is saved to the device.

**Power up behaviour:** Indicates how the DALI MC is to behave when power returns. Options: No change, OFF, Scene 0-15. The function can be parameterised only at input T4.

**Select "address":** Select the destination address to which the command will apply. Options: Broadcast, Group 0-15, Individual address 0-63.

**Select "function":** Select the button function. For possible settings see the table "Explanation of parameters for functions".

**Select "command":** Select which command is sent for CmdX and which for CmdY. For possible commands see the table "Parameters for commands".

**DALI MC:** Each of the four inputs of the DALI MCs appears in the DALI bus overview as an independent user.

### Behaviour on power return:

The "Behaviour on power return" function can be used to define whether the DALI MC is to switch the lighting to a predefined state when power returns.

The following settings are available:

- No change
- OFF
- Scene 0-15

You can use the Delay parameter to specify how long to wait until the selected command is sent. (Allowance for the start-up time of the DALI ballasts when power returns)

The function parameters are set in the parameter window of input T4. The function is not available for any of the other inputs.

**Table 1: Explanation of parameters for functions**

| Function   | Description   |
|--|---|
| 1) Push-button:<br>short or long = 1 * command X                                     | Briefly pressing or holding down the push-button will send command X one time.  |
| 2) Push-button:<br>short = 1 * command X,<br>long = 1 * command X then 1 * command Y | <ul style="list-style-type: none"> <li>• Briefly pressing the push-button will send command X one time.</li> <li>• Holding down the push-button will send command X once, and then command Y once.</li> </ul> |

| Function  | Description   |
|---|---|
| 3) Push-button:<br>short = 1 * command X,<br>long = 1 * command X then<br>repeatedly command Y                | <ul style="list-style-type: none"> <li>Briefly pressing the push-button will send command X one time.</li> <li>Holding down the push-button will send command X once, and then command Y repeatedly.</li> </ul>   |
| 4) Push-button:<br>short = 1* command X,<br>long = repeatedly command Y                                       | <ul style="list-style-type: none"> <li>Briefly pressing the push-button will send command X one time.</li> <li>Holding down the push-button will repeatedly send command Y.</li> </ul>  |
| 5) Push-button (toggle):<br>short or long = toggle between<br>command X and Y                                 | Briefly pressing or holding down the push-button will alternate between sending commands X and Y.   |
| 6) Push-button (toggle): short or<br>long = toggle<br>between command X and Y,<br>lighting-based              | <p>Briefly pressing or holding down the push-button will alternate between sending commands X and Y. The command sent in each case depends on the status of the lighting:</p> <ul style="list-style-type: none"> <li>If the lighting was previously switched off, command X is sent.</li> <li>If the lighting was previously switched on, command Y is sent.</li> </ul>   |
| 7) Push-button (dimming key):<br>short = toggle between<br>command X and Y,<br>long = dimming, lighting-based | <p>SwitchDIM mode</p> <ul style="list-style-type: none"> <li>Briefly pressing on the dimming key will alternate between sending commands X and Y. The command sent in each case depends on the status of the lighting.</li> <li>If the lighting was previously switched off, command X is sent.</li> <li>If the lighting was previously switched on, command Y is sent.</li> </ul> <p>Holding down the dimmer switch dims or brightens the lighting.</p>  |
| 8) Switch:<br>close = command X,<br>open = command Y  | <ul style="list-style-type: none"> <li>When the switch is closed, command X is sent.</li> <li>When the switch is opened, command Y is sent.</li> </ul>  |
| 9) Changeover switch:<br>close = command X,<br>open = command Y, lighting-<br>based                           | <p>Each time the switch is pressed, the commands X and Y are sent in alternating order. The command sent in each case depends on the status of the lighting:</p> <ul style="list-style-type: none"> <li>If the lighting was previously switched off, command X is sent.</li> <li>If the lighting was previously switched on, command Y is sent.</li> </ul>  |
| 10) Stairwell function:<br>close = command X, start run-<br>on time,<br>run-on time elapsed =<br>command Y    | If the push-button is pressed, command X is sent and the run-on time starts. Once the run-on time has elapsed, command Y is sent.   |
| Macros  | <p>8 DALI macros can be called up</p> <ul style="list-style-type: none"> <li>- Macro 1: Go Home</li> <li>- Macro 2: MSensor automatic</li> <li>- Macro 3: Sequential scene recall</li> <li>- Macro 4: Dynamic scene</li> <li>- Macro 5: DALI reset</li> <li>- Macro 6: e-Power ON Level</li> <li>- Macro 7: PCA compatibility</li> <li>- Macro 8: User-defined DALI commands</li> </ul> <p>For a more detailed description see Section 3.4.2.3 Macros</p> |

**Table 2: Parameters for commands**

| <b>Function</b>   | <b>Description</b>  |
|-------------------|---|
| Light level (DAP) | Calls up a particular light value in percent  |
| Off               | Switches the light off  |
| Up                | Increases the light value by the dimming steps defined in the fade rate   |
| Down              | Reduces the light value by the dimming steps defined in the fade rate   |
| Step up           | Increases the light value by one step   |
| Step down         | Reduces the light value by one step   |
| On and step up    | Switches the light to the Minimum Level if the device was already off. If the device is on, the light value is increased by one step. |
| Step down and off | Reduces the light value by one step. If the device is at Minimum Level it is switched off.  |
| Recall min.       | Calls up the minimum level  |
| Recall max.       | Calls up the maximum level  |
| Go to scene X     | Calls up lighting scene "X"   |

**Note: After the input has been configured the parameters have to be transferred to the DALI MC by pressing the "Save" button.**

### 1.2.3 Macros

The inputs of the DALI MC can also be parameterised so that they call up a predefined macro. The following macros are available:

- Macro 1: Go Home

|                               |                                    |   |
|-------------------------------|------------------------------------|---|
| <b>Function:</b>              | Delayed light off (slow fade down) |   |
| <b>Adjustable parameters:</b> | <b>Name</b>                        | <b>Description</b>  |
|                               | Fade Time                          | Fade time for the off command   |
|                               | Reset Fade Time                    | Time to which the cross-fade time is to be reset after execution of the off command |

- Macro 2: MSensor automatic

|                  |   |
|------------------|---|
| <b>Function:</b> | Lighting control for the selected DALI MSensor is activated |
|------------------|---|

- Macro 3: Sequential scene recall

|                  |  |
|------------------|--|
| <b>Function:</b> | The next scene is called up each time button connected to the input is pressed.<br>At the end of the sequence the process starts again from the beginning. |
|------------------|--|

|                 |  |
|-----------------|--|
| <b>Process:</b> | Press => Scene 0 => Press => Scene 1 => etc. |
|-----------------|--|

|                               |             |  |
|-------------------------------|-------------|--|
| <b>Adjustable parameters:</b> | <b>Name</b> | <b>Description</b>   |
|                               | Scenes 0-15 | Selection of the scenes to be recalled   |
|                               | OFF         | Selection as to whether an off command is to be sent at the end of the sequence. |

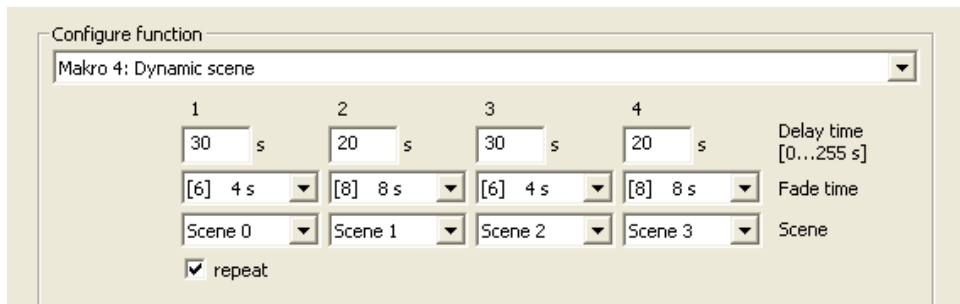
**Note: The sequence of the scenes cannot be influenced. The scenes are always sent in ascending order.**

• Macro 4: Dynamic scene

|                  |  |
|------------------|--|
| <b>Function:</b> | Pressing the button calls up a sequence of four scenes. The cross-fade time and dwell time can be freely defined for each scene. |
|------------------|--|

|                 |  |
|-----------------|--|
| <b>Process:</b> | Short press => Starts the sequence<br>Short press (with sequence running) => Stops the sequence<br>Long press (with sequence running) => Stops the sequence and sends an OFF command |
|-----------------|--|

|                               | Name      | Description   |
|-------------------------------|-----------|---|
| <b>Adjustable parameters:</b> | Delay     | Delay time until the scene is called up. The delay time of the second scene is therefore the dwell time of the first scene, etc. The delay time of the first scene is effective only if the sequence is repeated (the dwell time of the fourth scene before the first scene is called again) and is ignored when the sequence is started by means of the button |
|                               | Fade Time | Fade time for the new scene   |
|                               | Scene     | Selection of which scene is to be called up   |
|                               | Repeat    | The sequence is started again at the first scene after the last scene has been reached  |



• Macro 5: DALI reset

|                  |  |
|------------------|--|
| <b>Function:</b> | Reset for the defined devices<br>As an option all the DALI addresses can be deleted<br><br>The following parameters are reset to the factory setting:<br>- Group and scene settings<br>- max. Level, min. Level, Power On Level, System Failure Level<br>- Fade Time and Fade Rate<br>If the DALI ballast has any other parameters (e.g. ePower On Level for PCA Ip) they are not reset. |
|------------------|--|

|                               | Name                  | Description                                     |
|-------------------------------|-----------------------|---|
| <b>Adjustable parameters:</b> | Delete DALI addresses | Reset the devices and delete the DALI addresses |

• Macro 6: e-Power ON Level

|                  |  |
|------------------|--|
| <b>Function:</b> | Sets the Power ON Level of the DALI ballast to the predefined value<br>DALI devices that do not support this function ignore the command |
|------------------|--|

|                               | Name                 | Description                            |
|-------------------------------|----------------------|--|
| <b>Adjustable parameters:</b> | Memory value         | Sets the Power ON Level to DALI Memory |
|                               | Fixed Power ON value | Light level in percents                |

• Macro 7: PCA compatibility

|                  |   |
|------------------|---|
| <b>Function:</b> | Sets the "PCA compatibility" parameter in PCA EXCEL Ip devices to the predefined value<br>DALI devices that do not support this function ignore the command |
|------------------|---|

• Macro 8: User-defined DALI commands

|                  |  |
|------------------|--|
| <b>Function:</b> | This macro executes a COT file that can be created by the user. Note the following: <ul style="list-style-type: none"> <li>- The COT file must not exceed ten commands.</li> <li>- The destination address must be specified in the COT file</li> <li>- The send delay time from one command to the next is fixed at 100 ms and cannot be changed</li> </ul> |
|------------------|--|

**Note: Macro 8 requires a very good knowledge of the DALI command set.**

### 1.2.4 Default setting:

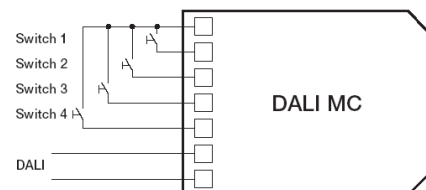
The DALI MC has the following factory default input settings:

**Table 3: Default settings**

|                            | Input 1  | Input 2  | Input 3               | Input 4                          |
|----------------------------|--|--|-----------------------|----------------------------------|
| <b>Destination address</b> | Broadcast  | Broadcast  | Broadcast             | Broadcast                        |
| <b>Function</b>            | Button:<br>CmdX on press,<br>repeats CmdY on<br>long press | Button:<br>CmdX on press,<br>repeats CmdY on<br>long press | Button:<br>sends CmdX | Macro 2:<br>MSensor<br>automatic |
| <b>CmdX</b>                | Recall max   | Off  | Scene 1               | ---                              |
| <b>CmdY</b>                | Up   | Down   | ---                   | ---                              |

### 1.3 Connection

The DALI MC switch module is connected directly to the DALI control line and does not need a separate power supply. It is powered via the DALI circuit (current draw = 6 mA). It can be connected to the DALI circuit with either polarity.



**Note: The connection leads between the switch or button and the DALI MC must not be longer than 50 cm.**

**The DALI circuit is not SELV. This means that the switches and cabling must be suitable for mains voltage.**

## 1.4 Example: Conference room with DALI MSensor and DALI MC

### Requirement

- Switch on via momentary switch
- Switch off via motion detector (off-only function)
- Daylight-dependent control of illuminance
- Retrieval of user-defined lighting scenes (e.g. the presentation scene)

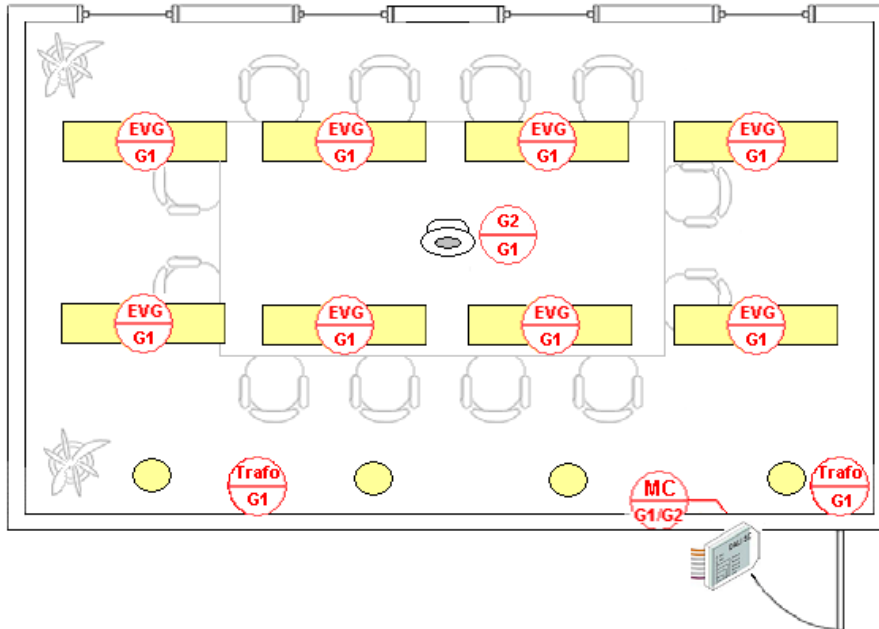


Fig. 1: Overview of a conference room set-up

Table 4: Assignment of DALI MSensor and DALI MC

| Controls     | Assignment  |
|--------------|---|
| DALI MSensor | Luminaire group: Group 1<br>Sensor group: Group 2<br>Rotary switch setting 1 (Groups 1+2):  |
| DALI MC      | Input 1: Destination address: Broadcast<br>Function: Macro 2: MSensor automatic<br>Inputs 2-4: Destination address: Broadcast<br>Function: Button<br>Command: Go to Scene 1-3 |