



## DALI MC+

### Datasheet Multi Control Module

DALI control module with four GP-  
inputs for pushbutton switches and  
potentiometers

Art. Nr. 86459532

# DALI MC+ Multi Control Module

## Overview

- Compact DALI control unit with 4 general purpose inputs
- Each input can be configured for digital or analog input signals
- Momentary switches or 100k $\Omega$  potentiometers are connected directly to the DALI MC+
- destination address, switching mode and DALI-commands can be assigned to each input
- DALI DT8 support for adjustable white luminaires with the help of special macros
- For potentiometer use the input signal is converted directly into a DALI arc power level. The conversion can be triggered periodically or by a predefined event.
- A switching action or a change in the input voltage signal (>2%) can be selected as trigger event for the conversion.
- adjustable „power-up“-function
- the function of the switching input can be configured with the help of the DALI Cockpit and a DALI USB interface
- multi-master capability, several modules can be installed on the same DALI-line
- suitable for installation in protection class II devices or back box installation
- The DALI MC+ is supplied directly via the DALI signal line.

## Specification, Characteristics

type	DALI MC+
article number	86459532

### input: T1, T2, T3, T4, COM

input type	potential free input / analog input for potentiometer
number of inputs	4
marking input terminals	T1, T2, T3, T4, COM
control impulse length min.	40ms
control impulse length for long press	>400ms
wire length max.	50cm

### DALI interface, power supply: DALI

output type	DALI, supply
marking terminals	DALI
voltage range	9,5Vdc ... 22,5Vdc
input current DALI	< 4mA

### insulation data:

impulse voltage category	II
pollution degree	2
rated insulation voltage	250V

rated impulse withstanding voltage	4kV
insulation DALI / housing	reinforced insulation
insulation test voltage DALI / housing	3000Vac

**environmental conditions:**

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

**general data:**

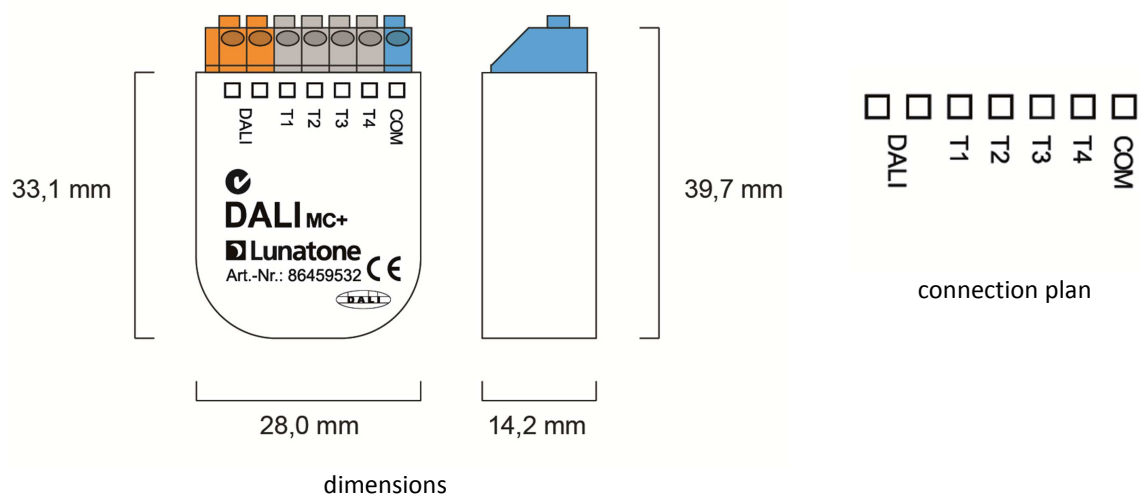
dimensions (l x w x h)	40mm x 28mm x 15mm
mounting	back box installation installation in protection class II devices
rated maximum temperature tc	75°C
expected life time @tc	50.000 h
protection class	II in intended use
protection degree housing	IP40
protection degree terminals	IP20

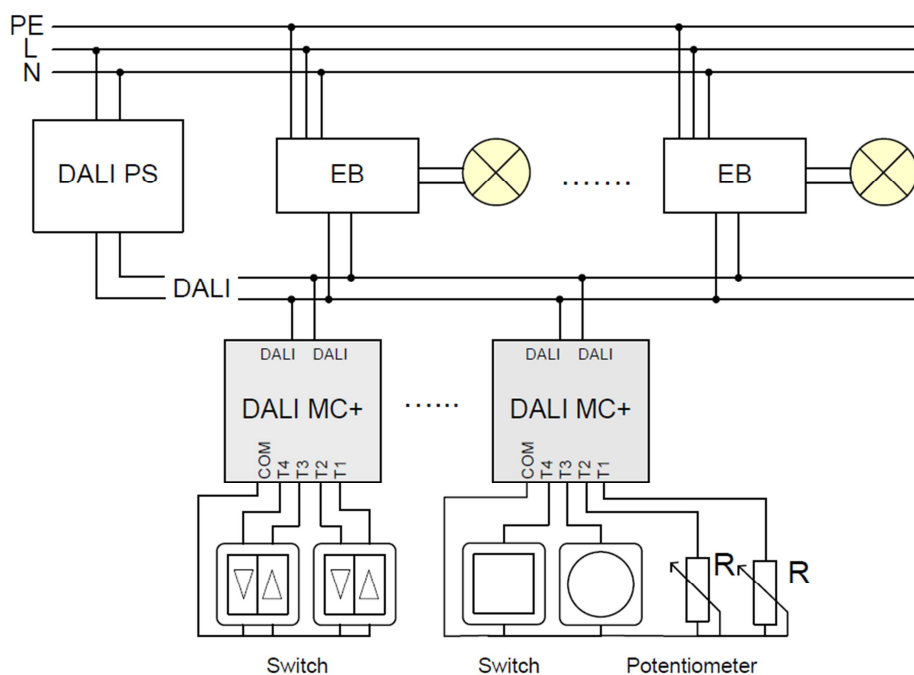
**terminals:**

connection type	spring terminal connectors
wire size solid core	0,5 ... 1,5 mm <sup>2</sup> (AWG20 ... AWG16)
wire size fine 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 ... 9,5 mm / 0,33 ... 0,37 inch

**standards:**

EMC	EN 61547 EN 50015 / IEC CISPR15
safety	EN 61347-2-11 EN 61347-1
markings	CE





typical application

## Installation

The DALI MC+ is supplied via the DALI-line. A typical value of the DALI Switch current consumption is <4 mA.

The connection to the DALI-line is polarity free and protected against overvoltage of up to 270Vac.

The compact DALI MC+ can easily be installed in recessed conduit boxes.

## Addressing and Configuration

Via a DALI-USB interface the DALI-Cockpit software tool can communicate with the DALI MC+. So the desired functionality can be configured easily on PC.

DALI-Cockpit and DALI-USB Interface are required for configuration only and can be removed for standard operation.

For simple applications the factory settings can be sufficient. In this case there is no need for a DALI USB interface and a configuration tool.

## Factory default settings:

Destination Address: Broadcast

Input T1: digital, BF6 push and dim button dependent on bus status, RECALL MAX/OFF and UP/DOWN

Input T2: digital, BF10 – push button, short: RECALL MAX, long: UP

Input T3: digital, BF10 – push button, short: OFF, long: DOWN

Input T4: digital, BF13 – TW push and dim button – alternating COOLER/WARMER

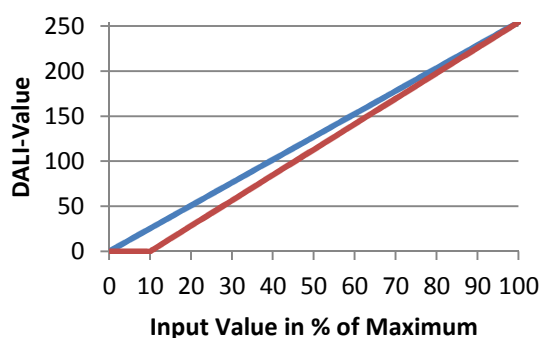
## Adjustable Functionality

With the help of the DALI-Cockpit the DALI MC+ can be configured. Any input can be configured for analogue or digital input signals.

When used as analogue input the input signal is either converted directly to a DALI dim level

or be processed by a threshold algorithm and handled like a digital input signal.

When configured as analogue input an offset value for the input value range can be defined. Below this value the DALI output is 0, furthermore the trigger for the conversion can be defined.

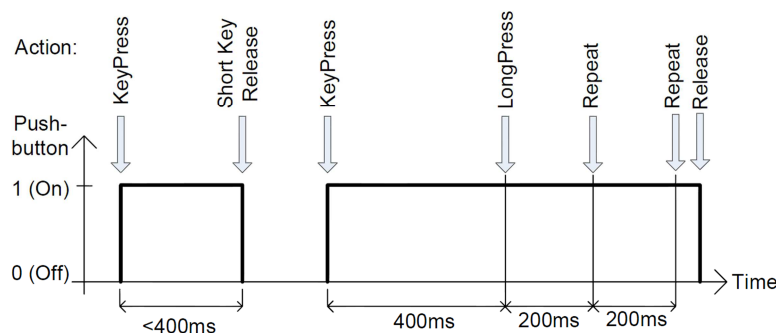


For each digital input a high level on flexibility and individualism is offered due to the parameters available.

Switching mode, destination addresses and DALI commands belong to the settings for a momentary switch. By means of the switching mode different actions for brief and long depress time can be defined for the momentary switches for miscellaneous applications. The functions vary from simple push buttons or toggle push buttons via lighting based push button dimming keys to standard stairwell function with configurable delay time. A complete overview is given in the table below.

Options for the trigger are periodic conversion or event based trigger.

*Settings for Button Function:*



Definition:

button	duration	
	min	max
short	40 ms	400 ms
long	>400 ms	

button function number	event: key press	event: release after short press	event: long press	event: repeat	function	typical application
0	-	-	-	-	-	
1	CmdX	-	-	-	sends CmdX on key press	master off
2	CmdX	-	CmdY	-	sends CmdX on key press sends CmdY after long press delay	switch to 2 different levels
3	CmdX	-	CmdY	CmdY	sends CmdX on key press sends CmdY with 200ms repetition after long press delay	switch on and dim
4	CmdX / CmdY toggle	-	-	-	sends CmdX and CmdY alternating on key press	toggle push button (impulse switch)
5	CmdX /	-	-	-	CmdX/Y <b>depending on bus status</b>	changeover push

	CmdY toggle					button
6	-	CmdX / CmdY toggle	ON and STEPUP	UP / DOWN	CmdX/Y <b>depending on bus status</b> , UP/DOWN alternating, ON AND STEPUP, if bus state is OFF before UP	push and dim button
7	CmdX	CmdY (any release)	-	-	sends CmdX on press ("switch on"-transition), sends CmdY on release ("switch off"-transition)	switch
8	CmdX / CmdY toggle	CmdX / CmdY toggle (any release)	-	-	sends CmdX/Y on press or release ("switch on/off" -transition) <b>depending on bus status</b>	changeover switch
9	CmdX	-	-	-	Staircase control. CmdY is sent after a programmable delay.	staircase control
10	-	CmdX	CmdY	CmdY	CmdX after short press, CmdY for repeat	push and dim button
11	CmdX	-	-	CmdY	Sends CmdX; repeats CmdY without long press delay	push and dim button
12	CmdX	CmdY	-	CmdX	CmdX with repeat; if button is released within short press time, CmdY is finally sent	dim button
13	CmdX	CmdY	ON and STEPUP	COOLER / WARMER	Alternating COOLER / WARMER	Tunable white dim button



**Note:** All effective areas assigned to one specific input will receive the same DALI commands.

### Settings for CmdX/CmdY

CmdX and CmdY are commands or a set of commands, which are sent at the defined button utilisation. Available commands:

- DALI commands
- predefined macros (sequence of commands)
- user defined macros

### DALI-Commands:

Command number	Command name	function
-	DIRECT ARC POWER	direct arc power Level in %
0	OFF	off
1	UP	dim up (using fade rate)
2	DOWN	dim down (using fade rate)
3	STEP UP	increases light level by one increment
4	STEP DOWN	decreases light level by one increment
5	RECALL MAX	recalls MAX value
6	RECALL MIN	recalls MIN value
7	STEP DOWN AND OFF	decreases light level by one increment, if value at MIN switch off

8	ON AND STEP UP	increases light level by one increment, if OFF switch on
10	GOTO LAST ACTIVE LEVEL (DALI-2)	DALI-2-Cmd for switching on to the last active level (Memory-Function)
16-31	GO TO SCENE	go to scene 0-15

*Macros:*

Nr	macro (required memory)	function
M1	Go Home (2 Byte)	Light dims down to DAP 0 with predefined fade time, then fade time is set back to a programmable value
M2	Sequential Scenes (3Byte)	Selectable scenes (or OFF) will be sent sequentially with each button press.
M3	Dynamic Scenes (33 Byte)	Dynamic sequence of up to 16 selectable scenes, fadetimes and delays, stops with next button press
M4	DALI-Reset (1 Byte)	Sends DALI-Reset (address can be deleted optionally)
M5	User Defined Cmd-List (5 Byte je Befehl, 19 Befehle max.)	A user defined macro file can be loaded to the switch (only commands to DALI control gear (16-Bit forward frames) supported)
M6	3x Cooler (DT8) (0 Byte)	Activates DT8 and sends STEP COOLER command 3x
M7	3x Warmer (DT8) (0 Byte)	Activates DT8 and sends STEP WARMER command 3x
M8	Memory Switch On (4 Byte)	MEMORY FUNCTION Switches to last recent level, works only in combination with Switch Off
M9	Memory Switch Off (3 Byte)	MEMORY FUNCTION Stores last recent level and switches off
M10	Memory Dim Up (after Switch Off) (3 Byte)	MEMORY FUNCTION Allows to Dim Up from Off-State to MAXLEVEL, when having used Switch Off before



**Hint:** The limit for the maximum number of commands in macros is 19. This limit applies to the accumulated number of CmdX and CmdY macros.

*Memory function*

DALI Switch Cross support several memory functions.

Method 1: Macros M8-M10, the current level is being saved as MAX-LEVEL before turning 'off', when turned 'on' the MAX-LEVEL (=last active level) is recalled, in addition the 'old' MAX-LEVEL is restored (Firmware version 1.14 and up)

Method 2: Support of DALI 2.0 command Nr. 10 - GOTO LAST ACTIVE LEVEL. Suitable for ballasts that support these commands (Firmware version 2.0 and up)

Method 3: A scene can be used a temporary storage. Before turning 'off' the current level is being saved as SCENE-VALUE, when turned 'on' this SCENE VALUE (=last active level) is being recalled.

*Power Up Function:*

Another configurable feature is the “power-up”-function. This is a user-defined reaction on a power up on the DALI Bus. The following options are available:

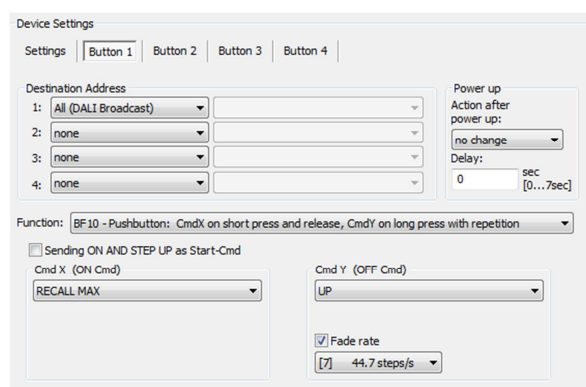
reaction after Power Up	Adjustable delay time
no action	0 ... 7 seconds

OFF	0 ... 7 seconds
GOTO SCENE 0-15	0 ... 7 seconds

To take the startup-time of DALI-ballasts into account, a delay time can be configured between power up and the start of transmission of the selected command.

### DALI-Cockpit

With the use of the DALI Cockpit Software the functionality of each individual push button can be set. The available settings are decided in the following two groups: effective area (destination addresses) and functions (switching options, detail settings of button behaviour).



### Operating modes

Besides the standard use as an active control device (direct control of ballasts in the DALI line → Master Mode), the DALI MC+ can be used in central control systems. Therefore two additional operating modes are offered: Slave Mode und Event Message Mode.

#### Master Mode (Default)

In this operating mode the DALI MC+ functions as DALI control device and sends event triggered DALI commands to DALI addresses, as defined in the setup.

#### Event Message Mode

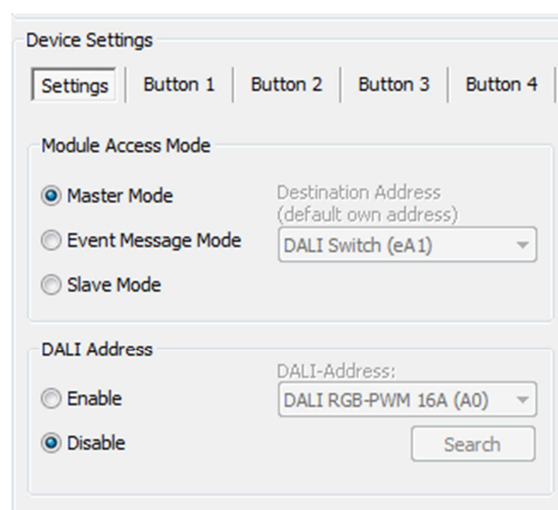
This mode enables the recall of predefined event commands within the framework of a proprietary protocol extension. The results can be analysed by a central control unit. The light is not being controlled directly.



**Note:** every command (DALI or proprietary protocol extension) can be defined in the Master mode by the user in a custom command list (Macro M5)

### Slave Mode

The DALI MC+ will only answer on queries, it is not active by itself. The change can be set in the DALI Cockpit.



### Purchase Information

**Art.Nr. 86459532:** DALI MC+, DALI control device with 4 potential free switching inputs, back box installation and class II device integration

**Art.Nr. 86459532-WA:** DALI MC+, WAGO compatible version



## Additional Information and Equipment

Lunatone datasheets and manuals  
<http://lunatone.at/en/downloads/>

Lunatone DALI products  
<http://www.lunatone.at/en/>

## Contact

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## 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.