JUMITECH

DALI MC

Datasheet

Multi Control Module

DALI control module with four programmable inputs for standard push button switches

Art. Nr. 86458507



DALI MC Multi Control Module

Overview

- Compact DALI control unit with 4 free programmable switch inputs
- Via the programmable switching modes (short, long press; toggle; etc.) a maximum of two options can be assigned to each input. One function can be set as pre-set in each case.
- The following functions are available: dim up, dim down, off, recall min, recall max, goto scene 1-16, direct arcpower in % as well as predefined and self-configured macros
- The DALI MC also has an adjustable "power-up"-function. In other words a user-defined command can be sent on power up (e.g. after a power failure)
- Individual addresses (1-64), group addresses (1-16) or broadcast can be set as destination

- For simple dimming and switching functionality the default configuration can be used (Recall Max / Off / Dim Up / Dim Down / Recall Min -Broadcast).
- Any other configuration of the DALI MC can be set up with "DALI-Cockpit" software and DALI-USB interface
- Multiple DALI MC modules can be used on the same DALI-line
- The DALI MC can be installed in the conduit box behind the momentary switch.
- The DALI MC must not be connected to the mains. It is supplied directly via the DALI signal line.
- The momentary switches are connected directly to the DALI MC (potential free contacts).



connection plan



typical installation

Specification, Characteristics

type	DALI MC
article number	86458507
supply	via DALI signal line
typ. current consumption	4.1 mA
input	4 switches or relays
output	DALI
function	programmable
permitted ambient temperature	0°C-50°C
protection class	IP20
connecting wire cross section	0.5-1.5 mm ²
wiring length to momentary switches	50cm max.



Installation

The DALI MC is connected to the DALI-line. It is powered like all DALI modules directly by a DALI PS via the DALI signal line and does not need a separate power supply. A typical value for the current consumption is 4.1mA.

The DALI-line is polarity free and protected against overvoltage of up to 270Vac. DALI signals are not SELV. Therefore same procedures should be applied as working with main voltage.

Any standard switch compatible with mains voltage can be connected to the module. It is also possible to control the inputs of the DALI MC with relays. The switch-inputs are not overvoltage protected.

DALI MC modules allow multi master operation. Multiple control modules can be used on the same DALI network. When using this option do not ever connect COM-ports of several DALI MCs (potential-free control).

Due to the compact design the DALI MC can be easily placed into the mounting box of a momentary switch.

Functionality and Configuration

By using a DALI MC standard (230V) switch or pushbutton can be transformed into a "DALIswitch". On any switching action DALIcommands can be sent to various desired destinations.

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

When pressing a pushbutton connected to a DALI MC in addressing mode it will be automatically detected and registered by the DALI-Cockpit. The relationship between spatial arrangement of the switch and assigned number in the software is simply established that way.

For each application a high level on flexibility and individualism is offered due to the parameters available. Switching modes, destination addresses and DALI commands belong to the settings that can be configured. Moreover the behaviour after "system recovery" can be set.

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 to more automated systems like lighting based push button dimming keys and

stairwell functions. A complete overview is given in the table below.

Nr	Function	Action	Description
1	Push Button	short/long: 1 * command X	Briefly pressing or holding down the push button will send command X one time
2	Push Button	short: 1 * command X	Briefly pressing or holding down the push-button will send command X one time
		then 1 * command X	then command Y once
3	Push Button	short: 1 * command X	Briefly pressing or holding down the push-button will send command X one time
		long: 1 * command X then repeatedly command Y	Holding down the push button will send command X once and then command Y repeatedly
4	Push Button	short: 1 * command X	Briefly pressing or holding down the push-button will send command X one time
		long: repeatedly command Y	Holding down the push button will repeatedly send command Y
5	Push Button Toggle	short/long: toggle between 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/long: toggle between command X and Y lighting status based	Briefly pressing or holding down the push button will alternate between sending commands X and Y lighting status based: If the light was previously switched off -> command X If the light was previously switched on -> command Y
7	Push Button Dimming Key	short: toggle between command X and Y, lighting status based	Briefly pressing the push button will alternate between sending commands X and Y lighting status based: If the light was previously switched off -> command X If the light was previously switched on -> command Y Holding down the dimmer switch dims or brightens the
		based	lighting.
8	Switch	off: Command X	Switching On will send command X
		on: Command Y	Switching Off will send command Y
9	Toggle- Switch	On/Off: Toggle between command X and Y, lighting status based	Switch On/Off toggles between sending command X and Y – if the light is on command X, if the light is off command Y
10	Stairwell Function	short/long: command X, after run-on time command Y	If the pushbutton is pressed, command X is sent and the run- on time starts. Once the run-on time elapsed, command Y is sent.
	Macro	short/long: call DALI- Macros	predefined macros or user defined DALI command set

In addition to the switching mode the reaction on a switching action has to be defined. It consists of a DALI command and destination address. Individual addresses (1-64), group addresses (1-16) or broadcast can be set as destination address. As an alternative to the transmission of any single DALI command initiated by a switching action, it is possible to transmit a set of commands within a DALI-macro. This option can be used for either predefined processes (such as a scene sequencer) or any userdefined sequence of DALI-commands. For more details on the selection of predefined macros and the ability to create custom macro files check the manual of the DALI-Cockpit configuration software.

In the table below a summary of the DALI commands available is given.

command	command	
number	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)
		increases light level by one
3	STEP UP	increment
		decreases light level by one
4	STEP DOWN	increment
5	RECALL MAX	recalls MAX value
6	RECALL MIN	recalls MIN value
		decreases light level by one
	STEP DOWN	increment, if value at MIN
7	AND OFF	switch off
	ON AND STEP	increases light level by one
8	UP	increment, if OFF switch on
16-31	GO TO SCENE	go to scene 0-15

Another configurable feature is the "powerup"-function. This is a user-defined reaction on a power up. The following options are available for the DALI MC:

- no action
- OFF
- go to scene 0-15

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.

This functionality of the DALI MC can thus be interpreted as an extension for DALI control gears. Although those ballasts have a POWER ON LEVEL for mains power up, they don't have a predefined dim level for bus voltage return. With the help of this feature the SYSTEM FAILURE LEVEL (which is set at bus voltage loss) can be overruled. On the basis of the described configuration Options the combination of DALI MC and 4 standard switches enables comprehensive and flexible lighting control in a very simple manner.

For simple applications the default configuration is sufficient, in this case a configuration via PC is unnecessary. Using the initial settings the DALI-commands in the table below will be sent broadcast.

Input	Default (Function-Nr)	Action
1	Push Button Toggle (6)	Recall Max / Off
2	Push Button (1)	Dim Up
3	Push Button (1)	Dim Down
4	Push Button (1)	Recall Min

DALI Instruction Set

The DALI MC operates as control device on the DALI-line and transmits the predefined DALIcommands on switching actions. It is based on the standard for DALI Control Gears (IEC 62386-102). In addition to the DALI commands mentioned above the special command for writing the data transfer register and command 47 (STORE DTR AS FADE RATE) are implemented. This is necessary in order to transmit the respective fade rate for various dimming speeds before each dimming action.

Additional Information

Datasheets and manuals <u>https://jumitech/produkter</u>

DALI-Cockpit – free configuration tool from Lunatone for DALI systems <u>http://lunatone.at/en/downloads/Lunatone</u> DALI-Cockpit.zip

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.

JUMITECH

DALI MC+

Datasheet Multi Control Module

DALI control module with four GPinputs 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 100kΩ 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 mm² (AWG20 AWG16)
wire size fine wired	0,5 1,5 mm² (AWG20AWG16)
wire size using wire end ferrule	0,25 1 mm ²
stripping length	8,5 9,5 mm / 0,33 0,37 inch

standards:

EMC.	EN 61547	
EMIC	EN 50015 / IEC CISPR15	
cofoty	EN 61347-2-11	
Salety	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.



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

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.



Settings for Button Function:

Definition:

button	duration		
definiton	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	switch to 2
					sends CmdY after long press delay	different levels
3	CmdX	-	CmdY	CmdY	sends CmdX on key press	switch on and
					sends CmdY with 200ms repetition after	dim
					long press delay	
4	CmdX /	-	-	-	sends CmdX and CmdY alternating on key	toggle push
	CmdY				press	button (impulse
	toggle					switch)
5	CmdX /	-	-	-	CmdX/Y depending on bus status	changeover push

	CmdY toggle					button
6	-	CmdX /	ON and	UP/	CmdX/Y depending on bus status,	push and dim
		CmdY	STEPUP	DOWN	UP/DOWN alternating, ON AND STEPUP, if	button
		toggle			bus state is OFF before UP	
7	CmdX	CmdY (any	-	-	sends CmdX on press ("switch on"-	switch
		release)			transition), sends CmdY on release	
					("switch off"-transition)	
8	CmdX /	CmdX /	-	-	sends CmdX/Y on press or release ("switch	changeover
	CmdY	CmdY			on/off" -transition) depending on bus	switch
	toggle	toggle (any			status	
		release)				
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	push and dim
					press delay	button
12	CmdX	CmdY	-	CmdX	CmdX with repeat; if button is released	dim button
					within short press time, CmdY is finally	
					sent	
13	CmdX	CmdY	ON and	COOLER /	Alternating COOLER / WARMER	Tunable white
			STEPUP	WARMER		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
	STEP DOWN AND	
7	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
	GOTO LAST ACTIVE	
10	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:

	macro	
Nr	(required memory)	function
M1	Go Home	Light dims down to DAP 0 with predefined fade time, then fade time is set
	(2 Byte)	back to a programmable value
M2	Sequential Scenes	
	(3Byte)	Selectable scenes (or OFF) will be sent sequentially with each button press.
M3	Dynamic Scenes	Dynamic sequence of up to 16 selectable scenes, fadetimes and delays,
	(33 Byte)	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,	A user defined macro file can be loaded to the switch (only commands to
	19 Befehle max.)	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	MEMORY FUNCTION
	(4 Byte)	Switches to last recent level, works only in combination with Switch Off
M9	Memory Switch Off	MEMORY FUNCTION
	(3 Byte)	Stores last recent level and switches off
M10	Memory Dim Up	MEMORY FUNCTION
	(after Switch Off)	Allows to Dim Up from Off-State to MAXLEVEL, when having used Switch
	(3 Byte)	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 "powerup"-function. This is a user-defined reaction on a power up on the DALI Bus. The following options are available:

reaction	Adjustable
after Power Up	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).

Device Setti	Settings ngs Button 1 Button 2 Button 3 E	Button 4		
Dest 1:	nation Address All (DALI Broadcast)		Power up Action after power up:	
2:	none	v	no change	-
3:	none 👻	▼]	Delay:	
4:	none 🔻		0	sec [07sec]
Function Cm RE	m: [BF10 - Pushbutton: CmdX on short press a ending ON AND STEP UP as Start-Cmd d X (ON Cmd) CALL MAX •	nd release, CmdY on long pres	s with repetition	•

Operating modes

Besides the standard use as an active control device (direct control of ballasts in the DALI line \rightarrow 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.

Device Settings	utton 2 Button 3 Button 4
Module Access Mode	
Master Mode	Destination Address (default own address)
Event Message Mode	DALI Switch (eA1)
Slave Mode	
DALI Address	
🔘 Enable	DALI-Address: DALI RGB-PWM 16A (A0)
Oisable	Search

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

Datasheets and manuals https://jumitech/produkter

DALI-Cockpit – free configuration tool from Lunatone for DALI systems <u>http://lunatone.at/en/downloads/Lunatone</u> DALI-Cockpit.zip

Contact

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

JUMITECH

DALI MC1L

Datasheet

Multi Control Module

Programmable DALI control module with switching input for mains voltage

> Art. Nr. 86458507-1L Art. Nr. 228800008831



DALI MC1L Multi Control Module

Overview

- DALI control module with switching input for mains voltage
- galvanic isolation between switching input and DALI-line
- the module can act as application controller or as digital input instance sending event messages only (according to IEC62386-301)
- application controller: destination address, switching mode and DALIcommands can be assigned to the input
- DALI DT8 support for adjustable white luminaires with the help of special macros

- 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



Specification, Characteristics

type	DALI MC1L	
article number	86458507-1L	
	228800008831	

inpu	ıt: L	.', N

switching input
1
L', N
230Vac +10% / -15%
50Hz 60Hz
40ms
>500ms
180V
150kΩ (withstands 6kV surge pulses)
10nF
100m @100pF/m

DALI interface, power supply: DA, DA

output type	DALI interface / power supply
marking terminals	DA, DA
voltage range	9,5Vdc 22,5Vdc (according to DALI)
input current	3,5mA
overvoltage withstand capability	250V

insulation data:

impulse voltage category	II
pollution degree	2
rated insulation voltage	250V
rated impulse withstanding voltage	4kV
insulation DALI / mains	reinforced isolation max. rated withstanding isolation voltage (1min): Viso=5000Vrms max. rated transient isolation voltage: Viotm=8000V max. repetitive peak isolation voltage: Viorm=1050V isolation resistance @Vio=500VDC and Ta=25°C: 10 ¹² Ω
insulation test voltage DALI / mains	3000V a.c.

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)	59mm x 33mm 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 mm² (AWG 20 AWG 16)
wire size fine wired	0,5 1,5 mm ² (AWG 20AWG 16)
wire size using wire end ferrule	0,25 1 mm ²
stripping length	8,5 9,5 mm / 0,33 0,37 inch

standards:

EN 62386-101
EN 62386-103
EN 62386-301
EN 61547
EN50015 / IEC CISPR15
EN 61347-2-11
EN 61347-1
CE, ENEC-11, UR
E495950

IEC62386 3,5mA

 $t_c = 75^{\circ}C$

connectors MC1L



Installation

- The DALI MC1L is intended for back box installation or for integration in protection class 2 devices
- Ensure proper working cable relief for installation in protection class II equipment
- Wiring as fixed installation in a dry and clean environment
- Installation only by qualified person when no voltage is applied
- Attend regulations regarding electrical installations of national authorities
- the DALI MC1L is powered by the DALI-line - no separate power supply needed
- the connection to the DALI-line is polarity free
- DALI-line wiring with standard low voltage installation material
- The DALI-interface can handle mains voltage, protecting the device in case wrong wiring



Γ.

Din=230VAC

z

- Switching input L' is intended for use with line voltage, it is galvanic separated from the DALI-line
- Line voltage shall be fused appropriate to the cross section of the wiring, we recommend a fuse or circuit breaker to be placed in the electrical circuit (mains voltage)
- Connect only one wire on each terminal, if twin ferrules are used take care to the maximum wire size
- Release of wires with push button



HINT: The DALI-signal is not classified as SELV circuit. Therefore the standards for installation in low voltage system apply.



The DALI-Circuit in its full length shall not exceed a voltage drop of more than 2V.



wiring diagram

Commissioning

• After installation the DALI MC1L can already be used with the factory default settings:

Mode of	Applicationcontroller
Operation	
Destination	Broadcast
Function	BF7: Switch (CmdX/CmdY)
	CmdX: 3x GOTO SCENE1
	CmdY: 3x GOTO SCENE 0
Power Up	GOTO SCENE 0, immediately

• The configuration can be adapted with the help of the DALI-Cockpit software (interface module to DALI-line required, e.g. DALI USB, DALI SCI RS232, DALI4Net)

- The DALI MC1L is automatically detected during the addressing procedure and is then shown in the component tree
- The DALI MC1L can be selected and the desired function can be configured. First of all in the "General" tab the basic operating mode has to be selected
- application controller: setup consists of 3 parts: effective range, button function and command selection
- Input device: definition of available events according to IEC 62386-301

Tab General:

💡 💼 💷 auslesen	🔤 📷 💡 speichern
Land the second	Device Info Update Name DALI-2 MC1L Artikelnummer 86458507-1L Update Hersteller Lunatone Seriennummer 1 Firmware Ver 4.6.2 DALI Device Type N/A Short Address $A0^2$ Set Allgemein Button 1 Sugehoerigkeit zu Gruppen fuer DALI-2 Steuergeraete 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 Application Controller Active Power cycle notification Power cycle notification Set Set

In the "General"-tab the device can be assigned to groups (control device groups) and the type of use can be defined:

Option	Behaviour
Application Controller Inactive	Input Device sends Event Messages depending on the input state for further
	processing
Application Controller Active	Device sends control commands depending on input button press
Power cycle notification	Device sends information about Power Cycle Event if activated

If the application controller is set inactive, further configuration is done in tab "Instance0".

Tab "Instance0":

Device Info Name DALI2 MC11 Manufacturer Lunatone DALI Device Type N/A	L	Article N Serial N Short A	umber 8 umber 1 ddress 4	36458507-1L 1009 40 ² ~	Update. Firmware Set	 Ver 0.1
General Instance 0						
Enable Instance						
Primary Group:	Group 1:			Group 2:		
none 🗸 🗸	none		\sim	none	~	
Event scheme:						
Instance addressing $ \lor $						
Event Filters	Timers					
Button released		Short				200 mS
Button pressed						
Short press		Double				200 mS
Long press Start					_	
Long press Repeat		Repeat				160 mS
Long press Stop					Г	
Button stuck/free		Stuck				20 S

When working as instance (application controller inactive) predefined event messages event messages will be sent on the DALI Line. These messages can be processed by a central control unit. The light will not be directly controlled by the input device.

If the application controller is set active, further configuration is done in tab "Button 1".

Tab "Button1":

Dev	vice Info				
	Name DALI-2 MC1L		Artikelnummer	86458507-1L	Update
	Hersteller Lunatone		Seriennummer	1	Firmware Ver 4.6.2
DA	LI Device Type N/A		Short Address	$A0^2$ \vee	Set
Allg	emein Button 1				
Zie	ladresse				Power up Verhalten nach Netzwiederkehr:
1:	Alle (DALI Broadcast) 🛛 🗸			\sim	Szene 0 V
2:	keine \vee			\sim	Verzögerung:
3:	keine 🗸			\sim	0 [07sec]
4:	keine 🗸			\sim	
4: Fur	keine v nktion: BF7 - Schalter: CmdX be	im Einscl	halten, CmdY beim Au	v	~
4: Fur Cm	keine v	im Einscl	halten, CmdY beim Au Cmd Y (OFF Cmd)	vschalten	~
4: Fur Cm Lict	keine v ktion: BF7 - Schalter: CmdX be d X (ON Cmd) httpegel (DAP)	im Einsch	halten, CmdY beim Au Cmd Y (OFF Cmd) OFF	usschalten	

This tab contains the configuration settings for target destination, switching modalities, command selection, macro settings and power up function.

Selection target address (target destination)

Option	Event: key press
All (DALI Broadcast)	Send command to all devices on the bus
Group G0 G15	Send command to the selected group
Single Address A0 A63	Send command to the selected address

Action:	KeyPress	Short Key Release	KeyPress		LongPress	Repeat	Repeat Release	
Push- button ∕								
1 (On) +		Ť	Ĩ			Ť		
0 (Off)							т	ime
	ب <400m	≯ ∖s	←	400ms	* 200r	ns [*] 200	ms	

Definition:

button	dura	ition
definiton	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	switch on and

Settings for Button Function:

4 CmdX / CmdX / toggle						sends CmdY with 200ms repetition after long press delay	dim
CmdY togglepressbutton (impu switch)5CmdX / CmdY toggleCmdX/Y depending on bus statuschangeover p button6-CmdX / CmdYON and CmdYUP / DOWNCmdX/Y depending on bus status, UP/DOWN alternating, ON AND STEPUP, if bus state is OFF before UPpush and dim button7CmdXCmdY (any release)sends CmdX on press ("switch on" transition), sends CmdY on release ("switch off"-transition)switch8CmdX / CmdYsends CmdX/Y on press or release ("switch on/off" -transition) depending on bus statuschangeover switch9CmdXStaircase control. CmdY is sent after a programmable delay.staircase control push and dim button10-CmdXCmdYCmdYCmdY and CmdYpush and dim button11CmdXCmdYCmdY after short press, CmdY for repeat press delaypush and dim button12CmdXCmdY-CmdXCmdX is press time, CmdY is finallypush and dim button	4	CmdX /	-	-	-	sends CmdX and CmdY alternating on key	toggle push
toggletoggleswitch5CmdX / CmdY toggleCmdX/Y depending on bus statuschangeover p button6-CmdX / CmdYON and CmdYUP / DOWNCmdX/Y depending on bus status, UP/DOWN alternating, ON AND STEPUP, if bus state is OFF before UPpush and dim button7CmdXCmdY (any release)sends CmdX on press ("switch on"- transition), sends CmdY on release ("switch off"-transition)switch8CmdX / CmdYCmdX / release)sends CmdX/Y on press or release ("switch on/off" -transition)changeover switch9CmdXsends CmdX/Y on press or release ("switch on/off" -transition) depending on bus statuschangeover switch9CmdXstaircase control. CmdY is sent after a programmable delay.staircase control button10-CmdXCmdYCmdYCmdYCmdX after short press, CmdY for repeat push and dim button11CmdXCmdYSends CmdX; repeats CmdY without long press delaypush and dim button12CmdXCmdY-CmdXCmdXCmdX if repeat; if button is released within short press time, CmdY is finallydim button		CmdY				press	button (impulse
5 CmdX / CmdY toggle - - CmdX/Y depending on bus status changeover pubutton 6 - CmdX / CmdY toggle ON and CmdY STEPUP DOWN UP / DOWN alternating, ON AND STEPUP, if button push and dim button 7 CmdX CmdY (any release) - - sends CmdX on press ("switch on"-transition) switch 8 CmdX / CmdY CmdY toggle - - sends CmdX/Y on press or release ("switch off" -transition) changeover pubuton 9 CmdX - - Statrcase control. CmdY is sent after a programmable delay. staticcase control cmdY sis sent after a programmable delay. push and dim button 10 - CmdX CmdY - - Staircase control. CmdY for repeat programmable delay. push and dim button 11 CmdX - - CmdY Sends CmdX; repeats CmdY without long press delay push and dim button 12 CmdX CmdY - - CmdX CmdY is finally dim button		toggle					switch)
CmdY toggleCmdX / CmdYON and CmdYUP / DOWNCmdX/Y depending on bus status, UP/DOWN alternating, ON AND STEPUP, if bus state is OFF before UPpush and dim button7CmdXCmdY (any release)sends CmdX on press ("switch on"- transition), sends CmdY on release ("switch off"-transition)switch8CmdX / CmdYCmdY / release)sends CmdX/Y on press or release ("switch on/off" -transition)changeover switch9CmdXsends CmdX/Y on press or release ("switch on/off" -transition) depending on bus statusstaircase control9CmdXStaircase control. CmdY is sent after a programmable delay.staircase control10-CmdXCmdYCmdYCmdYCmdY is sent after a programmable delay.push and dim button11CmdXCmdYSends CmdX; repeats CmdY without long press delaypush and dim button12CmdXCmdY-CmdXCmdXCmdY12CmdXCmdY-CmdXCmdXCmdY is finally	5	CmdX /	-	-	-	CmdX/Y depending on bus status	changeover push
toggleCmdX / CmdYON and STEPUPUP / DOWNCmdX/Y depending on bus status, UP/DOWN alternating, ON AND STEPUP, if bus state is OFF before UPpush and dim button7CmdXCmdY (any release)sends CmdX on press ("switch on" transition), sends CmdY on release ("switch off"-transition)switch8CmdX / CmdYCmdY / CmdYsends CmdX/Y on press or release ("switch on/off" -transition)changeover switch9CmdXStaircase control. CmdY is sent after a programmable delay.staircase control10-CmdXCmdYCmdYCmdYCmdY is sends CmdX; repeats CmdY without long push and dim button11CmdXCmdXCmdY is sends CmdX; repeats CmdY without long press delaypush and dim button12CmdXCmdY-CmdXCmdX is released within short press time, CmdY is finallydim button		CmdY					button
6 - CmdX / CmdY ON and CmdY UP / DOWN CmdX/Y depending on bus status, UP/DOWN alternating, ON AND STEPUP, if button 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 (CmdY / CmdY / CmdY / CmdY toggle (any release) - - sends CmdX/Y on press or release ("switch off" - transition) depending on bus status changeover switch 9 CmdX - - - Staircase control. CmdY is sent after a programmable delay. staircase control programmable delay. push and dim button 10 - CmdX - - CmdY is sends CmdX; repeats CmdY without long push and dim button 11 CmdX - - CmdY is fully in the press time, CmdY is finally push and dim button 12 CmdX CmdY - CmdX CmdY is finally dim button		toggle					
CmdY toggleSTEPUP toggleDOWNUP/DOWN alternating, ON AND STEPUP, if bus state is OFF before UPbutton7CmdXCmdY (any release)sends CmdX on press ("switch on"- transition), sends CmdY on release ("switch off"-transition)switch8CmdX / CmdYCmdX / CmdYsends CmdX/Y on press or release ("switch on/off" -transition) depending on bus statuschangeover switch9CmdXStaircase control. CmdY is sent after a programmable delay.staircase control10-CmdXCmdYCmdYCmdYCmdY11CmdXCmdXCmdY12CmdXCmdY-CmdXCmdX12CmdXCmdY-CmdXCmdX12CmdXCmdY-CmdXCmdX12CmdXCmdY-CmdXCmdY is finally	6	-	CmdX /	ON and	UP/	CmdX/Y depending on bus status,	push and dim
togglebus state is OFF before UP7CmdXCmdY (any release)sends CmdX on press ("switch on"- transition), sends CmdY on release ("switch off"-transition)switch8CmdX / CmdYCmdX / CmdYsends CmdX/Y on press or release ("switch on/off" -transition) depending on bus statuschangeover switch9CmdXStaircase control. CmdY is sent after a programmable delay.staircase control10-CmdXCmdYCmdYCmdYpush and dim button11CmdXCmdYSends CmdX; repeats CmdY without long press delaypush and dim button12CmdXCmdY-CmdXCmdXCmdX			CmdY	STEPUP	DOWN	UP/DOWN alternating, ON AND STEPUP, if	button
7 CmdX CmdY (any release) - - sends CmdX on press ("switch on"- transition), sends CmdY on release ("switch off"-transition) switch 8 CmdX / CmdY / - - sends CmdX/Y on press or release ("switch off" - transition) changeover on/off" - transition) 8 CmdY / CmdY / - - sends CmdX/Y on press or release ("switch off" - transition) changeover on/off" - transition) depending on bus switch 9 CmdX - - - Staircase control. CmdY is sent after a programmable delay. staircase control programmable delay. 10 - CmdX CmdY CmdY CmdY push and dim button 11 CmdX - - CmdY Sends CmdX; repeats CmdY without long press delay push and dim button 12 CmdX CmdY - CmdX CmdX dim button			toggle			bus state is OFF before UP	
release)transition), sends CmdY on release ("switch off"-transition)8CmdX / CmdYCmdX / CmdY-6CmdY / CmdYCmdY-7CmdY / toggletoggle (any release)-9CmdX9CmdX9CmdX10-CmdXCmdY11CmdX12CmdXCmdY-12CmdXCmdY-12CmdXCmdY-13CmdXCmdYCmdX14CmdX15CmdXCmdY1617CmdX-18CmdY-19CmdX-10-CmdX11CmdX-12CmdXCmdY12CmdXCmdY12CmdXCmdY12CmdXCmdY12CmdXCmdY12CmdXCmdY12CmdXCmdY13CmdY14CmdY15CmdY16CmdY17CmdX18CmdY19CmdY19CmdY10CmdY10CmdY11CmdX12CmdX13CmdY14CmdY15CmdY15CmdY <td< td=""><td>7</td><td>CmdX</td><td>CmdY (any</td><td>-</td><td>-</td><td>sends CmdX on press ("switch on"-</td><td>switch</td></td<>	7	CmdX	CmdY (any	-	-	sends CmdX on press ("switch on"-	switch
8CmdX / CmdYCmdX / sends CmdX/Y on press or release ("switch on/off" -transition) depending on bus statuschangeover switch9CmdXStaircase control. CmdY is sent after a programmable delay.staircase control.10-CmdXCmdYCmdYCmdYpush and dim button11CmdXCmdYSends CmdX; repeats CmdY without long press delaypush and dim button12CmdXCmdY-CmdXCmdXCmdYCmdX with repeat; if button is released within short press time, CmdY is finallydim button			release)			transition), sends CmdY on release	
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CmdY toggleCmdY toggle (any release)cmdY toggle (any release)on/off" -transition) depending on bus statusswitch9CmdX PStaircase control. CmdY is sent after a programmable delay.staircase control10-CmdX PCmdYCmdYCmdYCmdX after short press, CmdY for repeat press delaypush and dim button11CmdX PCmdYSends CmdX; repeats CmdY without long press delaypush and dim button12CmdXCmdY-CmdXCmdX with repeat; if button is released within short press time, CmdY is finallydim button	8	CmdX /	CmdX /	-	-	sends CmdX/Y on press or release ("switch	changeover
toggletoggle (any release)status9CmdXStaircase control. CmdY is sent after a programmable delay.staircase control10-CmdXCmdYCmdYCmdX after short press, CmdY for repeat buttonpush and dim button11CmdXCmdYSends CmdX; repeats CmdY without long press delaypush and dim button12CmdXCmdY-CmdXCmdX with repeat; if button is released within short press time, CmdY is finallydim button		CmdY	CmdY			on/off" -transition) depending on bus	switch
release) release) release) 9 CmdX - - Staircase control. CmdY is sent after a programmable delay. staircase control. 10 - CmdX CmdY CmdY CmdX after short press, CmdY for repeat button push and dim button 11 CmdX - - CmdY Sends CmdX; repeats CmdY without long push and dim button 12 CmdX CmdY - CmdX CmdX with repeat; if button is released within short press time, CmdY is finally		toggle	toggle (any			status	
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 push and dim button 12 CmdX CmdY - CmdX CmdX with repeat; if button is released within short press time, CmdY is finally			release)				
Image: second	9	CmdX	-	-	-	Staircase control. CmdY is sent after a	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						programmable delay.	
Image: second	10	-	CmdX	CmdY	CmdY	CmdX after short press, CmdY for repeat	push and dim
11 CmdX - - CmdY Sends CmdX; repeats CmdY without long push and dim button 12 CmdX CmdY - CmdX CmdX with repeat; if button is released within short press time, CmdY is finally dim button							button
Image: line with the sector of the sector	11	CmdX	-	-	CmdY	Sends CmdX; repeats CmdY without long	push and dim
12 CmdX CmdY - CmdX CmdX with repeat; if button is released within short press time, CmdY is finally						press delay	button
within short press time, CmdY is finally	12	CmdX	CmdY	-	CmdX	CmdX with repeat; if button is released	dim button
						within short press time, CmdY is finally	
sent						sent	

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
	STEP DOWN AND	
7	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	DALI-2-Cmd for switching on to the last active level (Memory-Function)

	LEVEL (DALI-2)	
16-31	GO TO SCENE	go to scene 0-15

Macros:

	macro	
Nr	(required memory)	function
M1	Go Home	Light dims down to DAP 0 with predefined fade time, then fade time is set
	(2 Byte)	back to a programmable value
M2	Sequential Scenes	
	(3Byte)	Selectable scenes (or OFF) will be sent sequentially with each button press.
M3	Dynamic Scenes	Dynamic sequence of up to 16 selectable scenes, fadetimes and delays,
	(33 Byte)	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,	A user defined macro file can be loaded to the switch (only commands to
	19 Befehle max.)	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	MEMORY FUNCTION
	(4 Byte)	Switches to last recent level, works only in combination with Switch Off
	macro	
Nr	(required memory)	function
M9	Memory Switch Off	MEMORY FUNCTION
	(3 Byte)	Stores last recent level and switches off
M10	Memory Dim Up	MEMORY FUNCTION
	(after Switch Off)	Allows to Dim Up from Off-State to MAXLEVEL, when having used Switch
	(3 Byte)	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.

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.

Purchase Information

Art.Nr. 86458507-1L: DALI MC1L, DALI Control device with 1 switching input for mains voltage, back box installation and class II device integration

Additional Information

Datasheets and manuals https://jumitech/produkter

DALI-Cockpit – free configuration tool from Lunatone for DALI systems <u>http://lunatone.at/en/downloads/Lunatone</u> DALI-Cockpit.zip

Contact

Technical Support: support@jumitech.dk

Requests: salg@jumitech.dk

www.jumitech.dk





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.

JUMITECH

DALI MC1L

Datasheet

Multi Control Module

Programmable DALI control module with switching input for mains voltage

Art. Nr. 86458507-1L



DALI MC1L Multi Control Module

Overview

- DALI control module with switching input for mains voltage
- galvanic isolation between switching input and DALI-line
- the module can act as application controller or as digital input instance sending event messages only
- the function of the switching input can be configured with the help of the DALI Cockpit and a DALI USB interface
- when used as application controller destination address, switching mode and DALI-command can be assigned to the input
- individual addresses (0-63), group addresses (0-15) or broadcast can be set as destination address

Specification, Characteristics

- various switching modes (short, long press; toggle; etc.) are supported
- the following commands are available: up, down, off, recall min/max, goto scene 0-15, direct arc power in % as well as macros.
- DALI DT8 support for adjustable white luminaires with the help of special macros
- memory function
- adjustable "power-up"-function
- 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

type	DALI MC1L
article number	86458507-1L

electrical data:

supply	via DALI-line
typ. current consumption DALI	2,6 mA
output	DALI
input	1 switching input (mains voltage), Vthreshold=180V
Input	Rin=150kΩ (withstands 6kV surge pulses)
	double isolation
	max. rated withstanding isolation voltage (1min): Viso=5000Vrms
isolation switching input / DALI	max. rated transient isolation voltage: Viotm=8000V
	max. repetitive peak isolation voltage: Viorm=1050V
	isolation resistance @Vio=500VDC and Ta=25°C: $10^{12}\Omega$

technical data:

function	programmable
ambient temperature	-20°C to +75°C
protection class	IP20
connecting wire cross section	0.5 to 1.5 mm ²
mounting / intended use	installation in back box or protection class II devices
dimensions	58mm x 32mm x 15mm

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geometry MC1L



typical application

Factory Default

BF7: Switch

Destination: Broadcast 3x GOTO SCENE 1 (if L1 is switched on) 3x GOTO SCENE 0 (if L1 is switched off) PowerUp Behaviour: GOTO SCENE 0 (no delay)

Button Press	Duration	
definiton	min	max
short	40 ms	500 ms
long	>500 ms	

Installation

The DALI-MC1L is connected to and supplied directly by the DALI signal line (typical current consumption: 2,6 mA). The connection to the DALI-line is polarity free and protected against overvoltage of up to 270Vac.

The switching input L1 is designed for operating with mains voltage. The input L1 is electrically isolated to the DALI-line.

We recommend a fuse or circuit breaker of 10A max. to be placed in the electrical circuit (mains voltage).

Suitable for installation in protection class 2 devices.

2017/07/05

Addressing and Configuration, Factory Settings

With the help of a DALI-USB interface and the DALI-Cockpit software the DALI MC1L can be addressed and the desired functionality can be configured.

During the addressing process the DALI MC1L is automatically detected and listed in the DALI Cockpit.

The DALI-Cockpit software tool can be downloaded from the Lunatone website. DALI-Cockpit and DALI-USB Interface are required for configuration only and can be removed for standard operation. With the DALI Cockpit software the input of the DALI MC1L can be configured, i.e. the reaction to an input action can be defined.

The available parameters allow very flexible and individual solutions.

Target destinations can be defined (max. 4 destination addresses). Therefore single addresses, groups, or broadcast can be used.

The "buttonfunction" handles the switching modalities (e.g. button press, short press + long press, switch etc.).

A complete list of all buttonfunctions is listed in the table below:

nr	function	action	description	
0	-	No action		
1	Push Button	short/long: 1 * command X	Briefly pressing or holding down the push button will send command X once	
2	Push Button	short: 1 * command X long: 1 * command X then 1 * command Y	Briefly pressing or holding down the push-button will send command X one time Holding down the push button will send command X once and then command Y once	
3	Push Button	short: 1 * command X long: 1 * command X then repeatedly command Y	Briefly pressing or holding down the push-button will send command X one time Holding down the push button will send command X once and then command Y repeatedly	
4	Push Button Toggle	short: toggle between command X and Y	Briefly pressing the push button will alternate between sending commands X and Y	
5	Push Button Toggle	short: toggle between command X and Y lighting status based	Briefly pressing the push button will alternate between sending commands X and Y lighting based: If the light was previously switched off -> command X If the light was previously switched on -> command Y	
6	Push Button Dimming Key	short: toggle between command X and Y, lighting status based long: dimming, lighting status based	Briefly pressing the push button will alternate between sending commands X and Y lighting based: If the light was previously switched off -> command X If the light was previously switched on -> command Y Holding down the dimmer switch dims or brightens the lighting.	
7	Switch	CmdX if On, Cmd Y if Off	If switch position is changed CmdX if switched to On, CmdY if switched to Off	
8	Crossover Switch	Cmd X or Cmd Y, lighting status based	If switch position is changed CmdX or CmdY is sent dependent on light status	
9	Staircase Function	short/long: command X, after run-on time command Y	If the pushbutton is pressed, command X is sent and the run-on time starts. Once the run-on time elapsed, command Y is sent.	

Adjustable Functionality

10	Push Button	Short: 1xCmdX (after release)	After a short press (press+release) the CmdX is sent, in	
		Long: repeats CmdY	case of long button press Cmdy is sent with repetition	
11	Push Button	1 * command X, then command	Pressing the pushbutton will send command X and	
		Y repeated without long button	then command Y repeated without long button press	
		delay	delay.	
12	Push Button	Sends CmdX, Short Press	Sends CmdX on button pressed, if button is released	
		Release: CmdY	within short press duration send CmdY, else repeat	
		Long: repeats CmdX	CmdX	

Furthermore the DALI commands that should be sent to these addresses or groups have to be defined. The available set of commands is listed below:

cmd		
number	cmd 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
		decreases light level by
4	STEP DOWN	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	DALI2-Cmd for switching on to the last active level (Memory-Function)
16-31	GO TO SCENE	go to scene 0-15

Besides the recall of commands, pressing a push button can also recall a DALI macro. These macros can be used for predefined processes (for example a sequential recall of scenes, cyclic "Scene-switch") or any other sequence of user-defined DALI commands. The available set of macros is listed below:

macro	for a start	
(required memory)		
	Light dims down to DAP U	
C 11	with predefined fade time,	
Go Home	then fade time is set back to	
(2 Byte)	a programmable value	
	Selectable scenes (or OFF)	
Sequential Scenes	will be sent sequentially	
(3Byte)	with each button press.	
	Dynamic sequence of up to	
	16 selectable scenes,	
Dynamic Scenes	fadetimes and delays, stops	
(33 Byte)	with next button press	
DALI-Reset	Sends DALI-Reset (address	
(1 Byte)	can be deleted optionally)	
user defined cmds		
(5 bytes per		
command,	A user defined macro file	
19 commands max.)	can be loaded to the switch	
DT8 Cooler 3x	Activates DT8 and sends	
(0 Byte)	STEP COOLER command 3x	
DT8 Warmer 3x	Activates DT8 and sends	
(0 Byte)	STEP WARMER command 3x	
	MEMORY FUNCTION	
	Switches to last recent level,	
Switch On	works only in combination	
(4 Byte)	with Switch Off	
	MEMORY FUNCTION	
Switch Off	Stores last recent level and	
(3 Byte)	rte) switches off	
	MEMORY FUNCTION	
	Allows to Dim Up from Off-	
Dim Up (after Switch	State to MAXLEVEL, when	
Off)	having used Switch Off	
(3 Byte)	before	

Another configurable feature is the "powerup"-function. This is a user-defined reaction on a power up. The following options are available for the DALI MC1L:

- no action
- OFF
- go to scene 0-15

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 (0...7 seconds).

DALI Instruction Set

The DALI MC1L operates as control device on the DALI-line and transmits the predefined DALI-commands whenever the push-button at the input is pressed.

It is based on the standard for DALI Control Devices (IEC 62386-103) and Device Type 301 (IEC62386-301). This means that the module can be operated as application controller with the functionality described in this datasheet or as digital input instance sending event messages only.

Purchase Information

Art.Nr. 86458507-1L: DALI MC1L, 1 switching input for mains voltage, back box installation

Additional Information

Datasheets and manuals <u>https://jumitech/produkter</u>

DALI-Cockpit – free configuration tool from Lunatone for DALI systems <u>http://lunatone.at/en/downloads/Lunatone</u> DALI-Cockpit.zip

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JUMITECH

DALI MC4L

Datasheet

Multi Control Module with galvanic isolated switching inputs

DALI control module with four programmable switching inputs for mains voltage

> Art. Nr. 86458507-4L Art. Nr. 86458507-4LHS



DALI MC4L Multi Control Module

Overview

- DALI control module with 4 switching inputs for mains voltage
- galvanic isolation between switching input and DALI-line
- configurable function for each input
- 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
- 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



Specification, Characteristics

type	DALI MC4L	DALI MC4L-HS
article number	86458507-4L	86458507-4LHS

input: L1, L2, L3, L4, N

switching input	
4	
L1, L2, L3, L4, N	
230Vac	
+10%/-15%	
50Hz 60Hz	
40ms	
>500ms	
660kΩ	
10m	
230Vac	

DALI interface, power supply: DA, DA

output type	DALI interface / power supply	
marking terminals	DA, DA	
voltage range	9,5Vdc 22,5Vdc (according to DALI)	
input current	3,5mA	

insulation data:

impulse voltage category	II

pollution degree	2	
rated insulation voltage	250V	
rated impulse withstanding voltage	4kV	
insulation DALI / mains	reinforced isolation	
insulation test voltage DALI / mains	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)	59mm x 33mm x 15mm	98mm x 17,5mm x 56mm
	back box installation	
mounting	installation in protection class II	dinrail, built-in
	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	screw terminal
wire size solid core	0,5 1,5 mm²	0,5 2,5 mm²
	(AWG20 AWG16)	(AWG20 AWG14)
wire size fine wired	0,5 1,5 mm²	0,5 2,5 mm²
	(AWG20AWG16)	(AWG20AWG14)
wire size using wire end ferrule	0,25 1 mm²	0,25 1,5 mm ²
stripping length	8,5 9,5 mm / 0,33 0,37 inch	7 mm / 0,27 inch
tightening torque	-	0,5Nm

standards::

EMC	EN 61547		
EIMC	EN 50015 / IEC CISPR15		
safatu	EN 61347-2-11		
Salety	EN 61347-1		
markings	ENEC-11, cURus, CE	cURus, CE	
UL file number	E495950		



dimensions MC4L-HS

2018-10-12

Installation

- The DALI MC4L is intended for back box installation or for integration in protection class 2 devices
- Ensure proper working cable relief for installation in protection class II equipment
- The DALI MC4L-HS is suitable for dinrail mounting, protection against electric shock has to be ensured by an appropriate enclosure
- Wiring as fixed installation in a dry and clean environment
- Installation only by qualified person when no voltage is applied
- Attend regulations regarding electrical installations of national authorities
- the DALI MC4L/MC4L-HS is powered by the DALI-line – no separate power supply needed
- the connection to the DALI-line is polarity free
- DALI-line wiring with standard low voltage installation material

- The DALI-interface can handle mains voltage, protecting the device in case of wrong wiring
- Wiring topology of the DALI-line: Line, Tree, Star
- Switching inputs are intended for use with line voltage, they are galvanic separated from the DALI-line
- Line voltage shall be fused appropriate to the cross section of the wiring, we recommend a fuse or circuit breaker to be placed in the electrical circuit (mains voltage)
- Connect only one wire on each terminal, if twin ferrules are used take care to the maximum wire size



HINT: The DALI-signal is not classified as SELV circuit. Therefore the standards for installation in low voltage system apply.



The DALI-Circuit in its full length shall not exceed a voltage drop of more than 2V.



wiring diagram

Commissioning

- After installation the DALI MC4L can already be used with the factory default settings:
 - Input L1: Recall Max (Broadcast)
 - Input L2: Up (Broadcast)
 - Input L3: Off (Broadcast)
 - Input L4: Down (Broadcast)
- The configuration can be adapted with the help of the DALI-Cockpit software

Input Tab:

(interface module to DALI-line required, e.g. DALI USB, DALI SCI RS232, DALI4Net)

- The DALI MC4L is automatically detected during the addressing procedure and is then shown in the component tree
- The DALI MC4L can be selected and the desired function can be configured, the settings are separated in 3 parts: target address, function and command selection

1	Device Info	
22222 22	Name DALI MC4L Article Number 86458507-4L Update	
	Manufacturer Lunatone Serial Number N/A Firmware Ver 0.1	
	DALI Device Type N/A Short Address eA8 Set	
	Settings Input 1 Input 2 Input 3 Input 4	
	Destination Address Power up	
ArtNr.: 86458507-4L CE	1: All (DALL Broadcast)	
BALD	2. In the prover of the second s	
	2. None	
	3: none Uelay:	
	4: none • 0 [0/sec]	
	Function: BF1 - Pushbutton: sends CmdX 🔹	
	Cmd X (ON Cmd) sending ON AND STEP UP as Start-Cmd	

Selection target address (target destination)

Option	Event: key press
All (DALI Broadcast)	Send command to all devices on the bus
Group G0 G15	Send command to the selected group
Single Address A0 A63	Send command to the selected address

Definition: Short Key Release LongPress KeyPress KeyPress Repeat
 Release Action: Repeat button duration definiton min max Push-Π button [,] short 40 ms 400 ms 1 (On) long >400 ms 0 (Off)_ → Time ķ 200ms 400ms 200ms <400ms

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	switch to 2
					sends CmdY after long press delay	different levels
3	CmdX	-	CmdY	CmdY	sends CmdX on key press	switch on and
					sends CmdY with 200ms repetition after	dim
					long press delay	
4	CmdX /	-	-	-	sends CmdX and CmdY alternating on key	toggle push
	CmdY				press	button (impulse
	toggle					switch)
5	CmdX /	-	-	-	CmdX/Y depending on bus status	changeover push
	CmdY					button
	toggle					
6	-	CmdX /	ON and	UP /	CmdX/Y depending on bus status,	push and dim
		CmdY	STEPUP	DOWN	UP/DOWN alternating, ON AND STEPUP, if	button
		toggle			bus state is OFF before UP	
7	CmdX	CmdY (any	-	-	sends CmdX on press ("switch on"-	switch
		release)			transition), sends CmdY on release	
					("switch off"-transition)	
8	CmdX /	CmdX /	-	-	sends CmdX/Y on press or release ("switch	changeover
	CmdY	CmdY			on/off" -transition) depending on bus	switch
	toggle	toggle (any			status	
		release)				
9	CmdX	-	-	-	Staircase control. CmdY is sent after a	staircase control
					programmable delay.	
10	-	CmdX	CmdY	CmdY	CmdX after short press, CmdY for repeat	push and dim
						button
11	CmdX	-	-	CmdY	Sends CmdX; repeats CmdY without long	push and dim
	0 bi	0 h/			press delay	button
12	CmdX	CmdY	-	CmdX	CmdX with repeat; if button is released	dim button
					within short press time, CmdY is finally	
					sent	

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
	STEP DOWN AND	
7	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
	GOTO LAST ACTIVE	
10	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:

	macro	
Nr	(required memory)	function
M1	Go Home	Light dims down to DAP 0 with predefined fade time, then fade time is set
	(2 Byte)	back to a programmable value
M2	Sequential Scenes	
	(3Byte)	Selectable scenes (or OFF) will be sent sequentially with each button press.
M3	Dynamic Scenes	Dynamic sequence of up to 16 selectable scenes, fadetimes and delays,
	(33 Byte)	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,	A user defined macro file can be loaded to the switch (only commands to
	19 Befehle max.)	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	MEMORY FUNCTION
	(4 Byte)	Switches to last recent level, works only in combination with Switch Off
M9	Memory Switch Off	MEMORY FUNCTION
	(3 Byte)	Stores last recent level and switches off
M10	Memory Dim Up	MEMORY FUNCTION
	(after Switch Off)	Allows to Dim Up from Off-State to MAXLEVEL, when having used Switch

(3 Byte) 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.

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.

Purchase Information

Art.Nr. 86458507-4L: DALI MC4L, DALI control device with 4 switching inputs for mains voltage, back box installation and class II device integration

Art.Nr. 86458507-4LHS: DALI MC4L, DALI control device with 4 switching inputs for mains voltage, din rail mounting, built in

Additional Information

Datasheets and manuals <u>https://jumitech/produkter</u>

DALI-Cockpit – free configuration tool from Lunatone for DALI systems <u>http://lunatone.at/en/downloads/Lunatone</u> DALI-Cockpit.zip

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DALI SI

Datasheet Sensor Interface

DALI module for the integration of sensors with relay output in DALI systems





Art. Nr. 89453850 Art. Nr. 89453850-1L

DALI SI Sensor Interface

Overview

- Module with switching input
- Easy integration of occupancy and movement sensors, contact switches, photoelectric barrier sensors etc.
- same behaviour as DALI CS
- types with input for potential free contact and input for mains voltage available
- multiple trigger sources due to simple external interconnection
- configurable schedule (light levels and hold times)

- configuration with DALI-Cockpit software
- multiple DALI SI and DALI CS modules can be installed on the same DALI-line and be used to control the same target range
- device is supplied directly by the DALIline
- the compact device is suitable for back box installation

Specification, Characteristics

type	DALI SI	DALI SI 1L
article number	89453850	89453850-1L
		·

electrical data:

supply	via DALI-line		
typ. current consumption	2.9mA		
output	DALI		
control input	1 switching input for potential free contact 1 switching input for ma		
galvanic isolation switching	No	Yes	

technical data:

behaviour on input action	schedule, level and hold times configurable		
storing and transportation temperature	-20°C+75°C		
operational ambient temperature	-20°C+75°C		
connecting wire cross section	< 1.5 mm ²		
max. length of connecting wire	50 cm up to 50m		
protection class	IP20		
dimensions	40mm x 28mm x 14mm 59mm x 33mm x 15mm		
mounting	back box		

Dimensions&Connection:



typical structure



* typical devices with switching contact: light barrier, motion sensor, relay, switch

Installation

- the DALI SI is suppled directly by the DALI-line (typ. current consumption: 2.9mA)
- the connection to the DALI-line is polarity-free
- the connection to the DALI-line is protected against overvoltage
- suitable for back box installation
- type dependent: input for potential free contact (DALI SI) or switching input for mains voltage (DALI SI1L)

Funktion

- configuration with DALI-Cockpit software
- configurable schedule (light level, hold time, fading)
- The schedule is (re-)triggered by actions on the sensor input
- the target range can be controlled by multiple DALI SI and DALI CS modules (devices are synchronized automatically)



schedule settings:



Hint: Identical commands will be sent to all destination addresses.

Purchase Order Information

Art.Nr. 89453850: DALI SI, sensor interface with potential free switching input, back box

Art.Nr. 89453850-1L: DALI SI 1L, sensor interface with switching input for mains voltage, galvanic isolation, back box

Additional Information

Datasheets and manuals https://jumitech/produkter

DALI-Cockpit – free configuration tool from Lunatone for DALI systems <u>http://lunatone.at/en/downloads/Lunatone</u> DALI-Cockpit.zip

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