Lunatone

DALI MC1L

Datasheet

Multi Control Module

Programmable DALI control module with switching input for mains voltage

Art. Nr. 86458507-1L

Art. Nr. 228800008831

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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 DALI-commands 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

input: L', N	
input type	switching input
number of inputs	1
marking input terminals	L', N
input voltage range	230Vac +10% / -15%
frequency of a.c. voltage	50Hz … 60Hz
control impulse length min.	40ms
control impulse length for long press	>500ms
trip point, threshold	180V
input resistance	150kΩ (withstands 6kV surge pulses)
cable capacitance max.	10nF
wire length max.	100m @100pF/m

DALI interface, power supply: DA, DA	
output type	DALI interface / power supply
marking terminals	DA, DA

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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: $10^{12}\Omega$
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 mm^2 (AWG 20 … AWG 16)
wire size fine wired	0,5 … 1,5 mm^2 (AWG 20 …AWG 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:

DALI	EN 62386-101 EN 62386-103 EN 62386-301
EMC	EN 61547 EN50015 / IEC CISPR15
safety	EN 61347-2-11 EN 61347-1
markings	CE, ENEC-11, UR
UL file number	E495950

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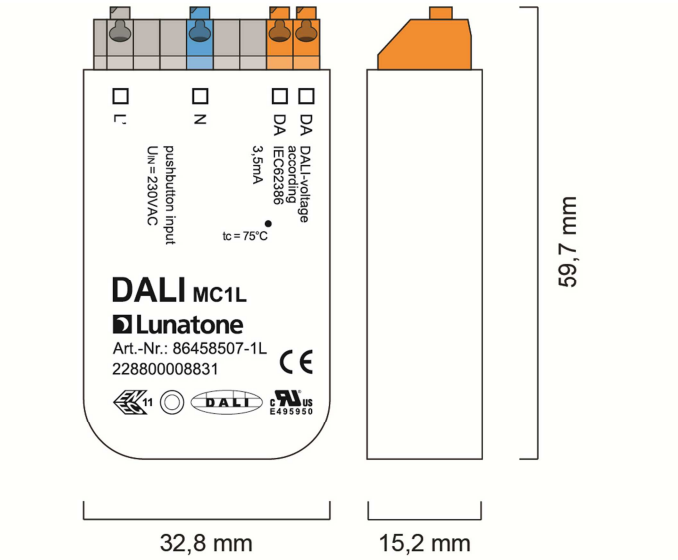
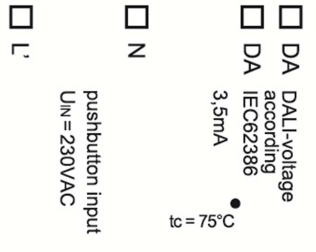


dimensions MC1L



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
- Wiring topology of the DALI-line: Line, Tree, Star
- 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

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.

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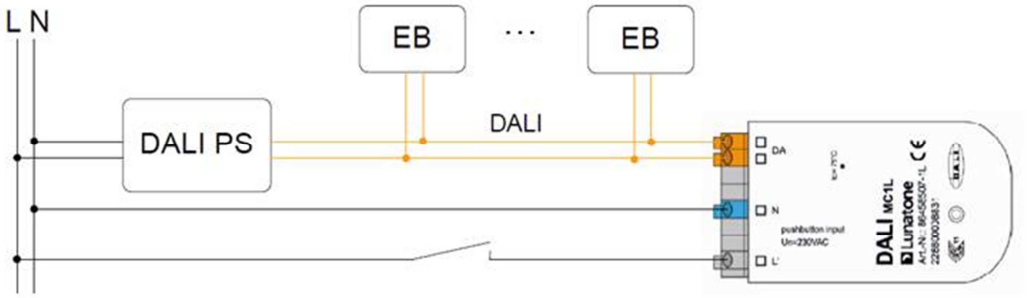


wiring diagram

Commissioning

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

Mode of Operation	Applicationcontroller
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)

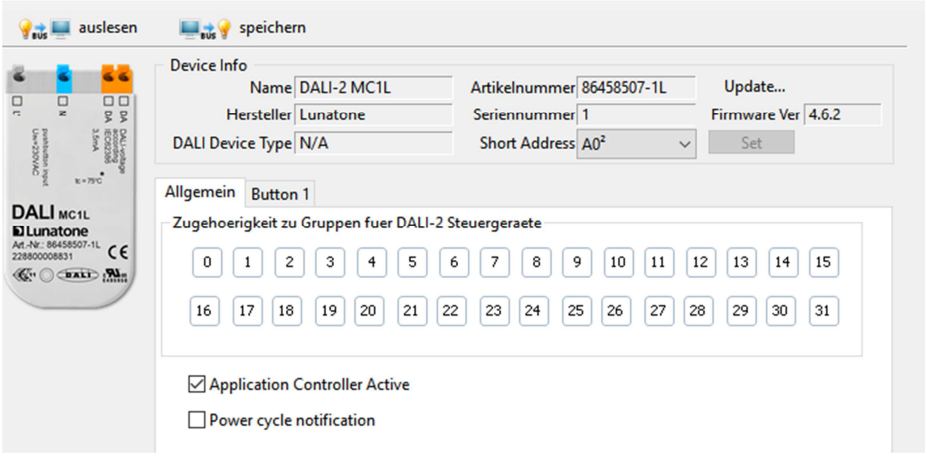
- The DALI MC1L is automatically detected during the addressing procedure and is then shown in the component tree

- 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:

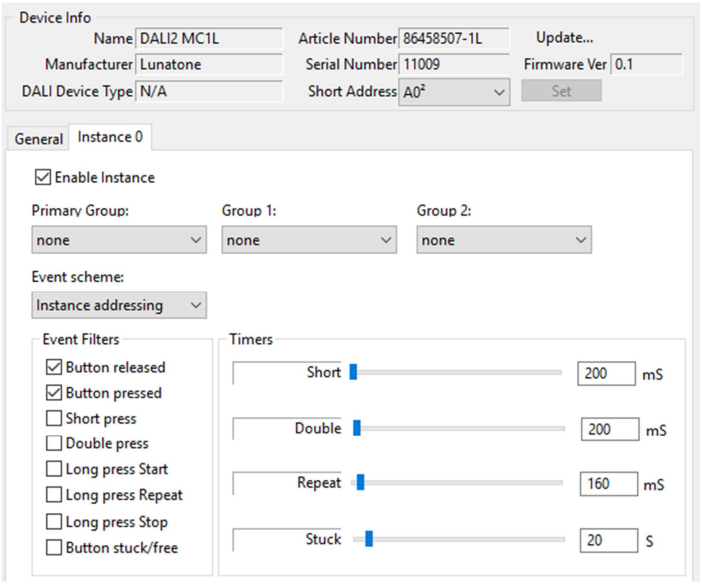


In the “General”-tab the device can be assigned to groups (control device groups) and the type of use can be defined:

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“:



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.

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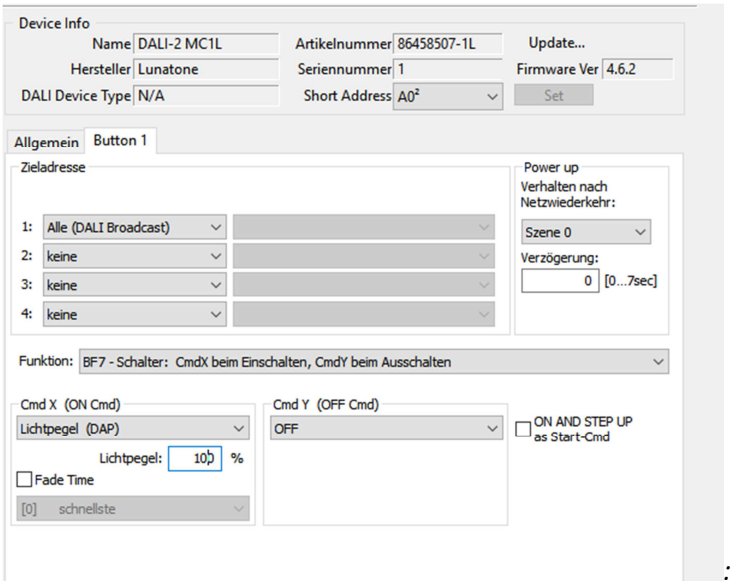
If the application controller is set active, further configuration is done in tab “Button 1”.

Tab „Button1“:



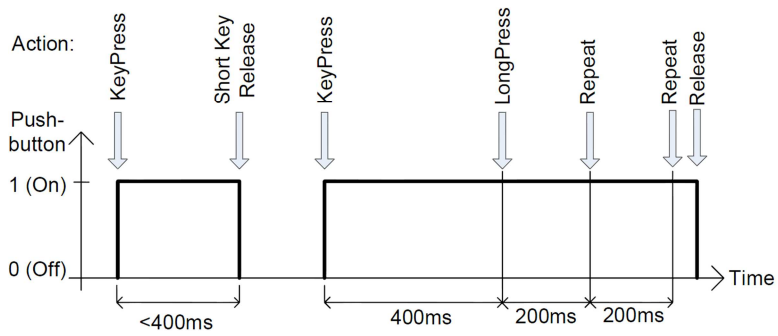
:

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

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 sends CmdY after long press delay	switch to 2 different levels
3	CmdX	-	CmdY	CmdY	sends CmdX on key press	switch on and

					sends CmdY with 200ms repetition after long press delay	dim
4	CmdX / CmdY toggle	-	-	-	sends CmdX and CmdY alternating on key press	toggle push button (impulse switch)
5	CmdX / CmdY toggle	-	-	-	CmdX/Y **depending on bus status**	changeover push button
6	-	CmdX / CmdY toggle	ON and STEPUP	UP / DOWN	CmdX/Y **depending on bus status**, 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) **depending on bus status**	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

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

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	LEVEL (DALI-2)	
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
Nr	**macro (required memory)**	**function**
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.

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.

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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 and Equipment

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

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

Contact

Technical Support: support@lunatone.com

Requests: sales@lunatone.com

www.lunatone.com

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.