

## DALI Switch Cross

### Datasheet

#### Multifunctional Switch Module



DALI control unit with four programmable pushbuttons

Art. Nr. 86459793-W

Art. Nr. 86459793-W16

Art. Nr. 86459793-B



#### Accessory:

##### cross plates with symbols

custom Symbols

Art. Nr. 86459793-Z00

dimming

Art. Nr. 86459793-Z01

dimming and blinds

Art. Nr. 86459793-Z02

# DAI Switch Cross Multifunctional Switch Module

## Overview

- multimaster capable, multiple modules can be installed on the DALI-line
- the module is supplied directly by the DALI-line, no additional supply required
- mounting on cavity walls or conduit boxes
- various cross plates available as accessory
- application controller: freely assignable function for each button for direct control of luminaires
- factory settings provide common functions (switch and dim) without need of configuration
- Easy configuration via DALI USB and DALI Cockpit Software tool
- Individual addresses (0-63), group addresses (0-15) or broadcast can be used as effective range
- Different switching modes can be assigned to each pushbutton (short, long press; toggle; etc.)
- DALI DT8 support for adjustable white luminaires
- Configurable "power-up"-function



## Specification, Characteristics

type	DAI Switch Cross		
article number	86459793-W	86459793-W16	86459793-B
<b>DALI-interface, supply: DA, DA</b>			
input type	DAI, supply		
marking	DA, DA		
input voltage range	9.5Vdc ... 22.5Vdc (according IEC62368-101)		
typ. current consumption DAI (at 16,5V)	1.5mA		
max. current consumption DAI (inrush current at 22,5V)	5mA		
number of addresses for DAI control gear	0		
number of addresses for DAI control devices	1		
<b>environmental conditions:</b>			
storing and transportation temperature	-20°C ... +75°C		
operational ambient temperature	-10°C ... +50°C		
rel. humidity, none condensing	15% ... 90%		

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**insulation data:**

impulse voltage category	II
pollution degree	2
rated insulation voltage	250V
rated impuls withstanding voltage	4kV
insulation DALI/housing	reinforced isolation
insulation test voltage	3000Vac

**general data:**

dimensions (l x w x h)	82mm x 82mm x 8,5mm		
mounting	wall mounting or on conduit box		
max. rated temperature Tc	75°C		
expected lifetime @Tc	50.000h		
protection class	II in intended use		
protection degree housing	IP40		
protection degree terminals	IP20		
manual control	4 integrated pushbuttons		
function	configurable		
start-up time	<150ms		
colour	pure white (RAL9010)	traffic white (RAL9016)	black

**terminals:**

connector type	Push-In
wire size solid core	0,2 ... 1,5 mm <sup>2</sup> (AWG24 ... AWG16)
wire size fine core	0,2 ... 1,5 mm <sup>2</sup> (AWG24 ...AWG16)
wire size using wire end ferrule	0,25 ... 1 mm <sup>2</sup>
stripping length	9 ... 10 mm / 0,35 ... 0,39 inch
release connector	push button

**standards:**

EMC	EN 61547 EN 50015 / IEC CISPR15
safety	EN 61347-2-11 EN 61347-1
Markings	ENEC-11, CE

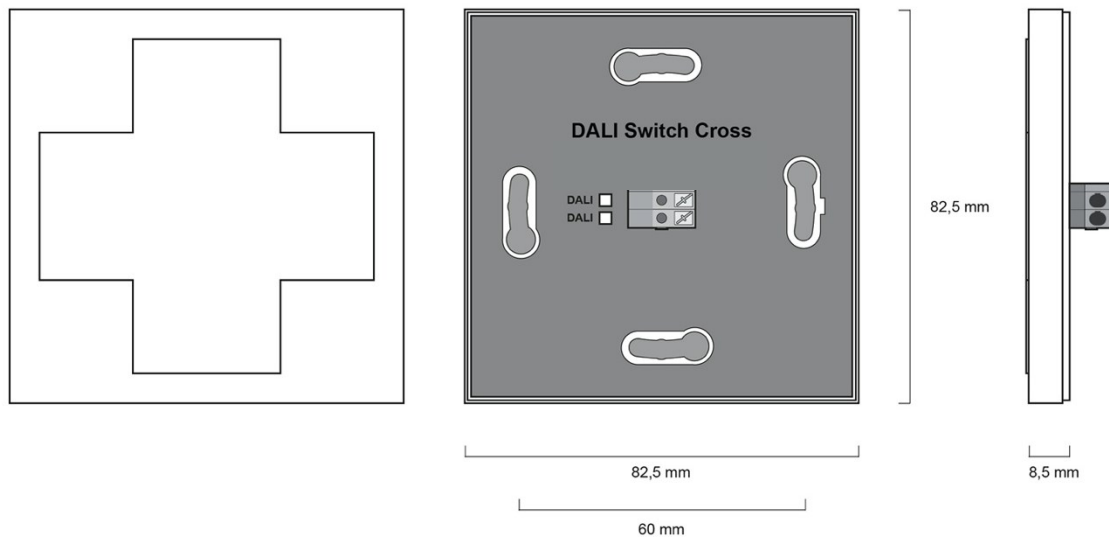


figure.1: dimensions DALI Switch Cross

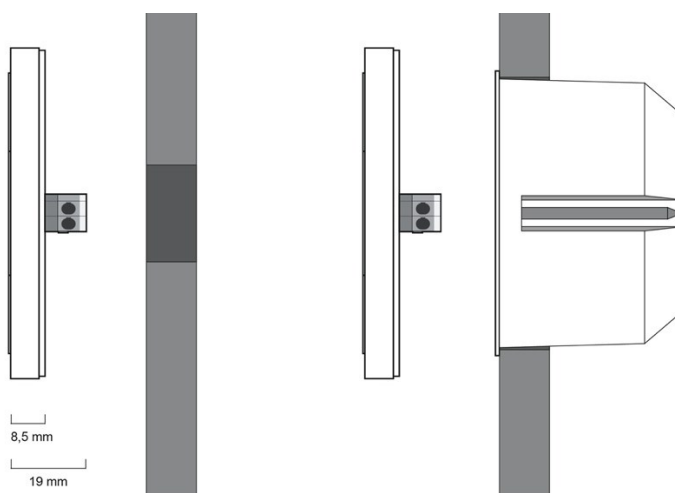


figure.2: mounting cavity wall and conduit box



figure.3: terminals

## Installation

- The DALI Switch is intended for mounting on a conduit box or on a cavity wall, hence protection against contacting the terminals and electric shock is provided
- 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 Switch 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
- Connect only one wire on each terminal, if twin ferrules are used take care to the maximum wire size

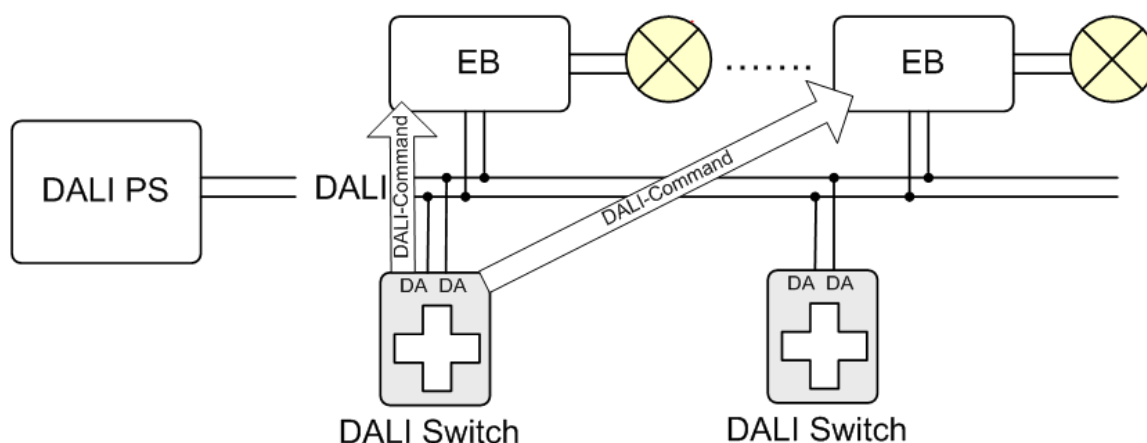


**HINT:** The DALI-signal is not classified as SELV circuit. Therefore, the standards for installation in low voltage system apply.



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

## Standard Application



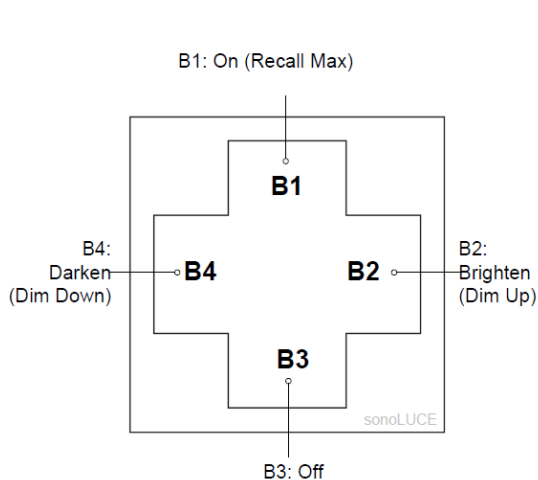
Application 2: direct control of luminaires

## Set-Up

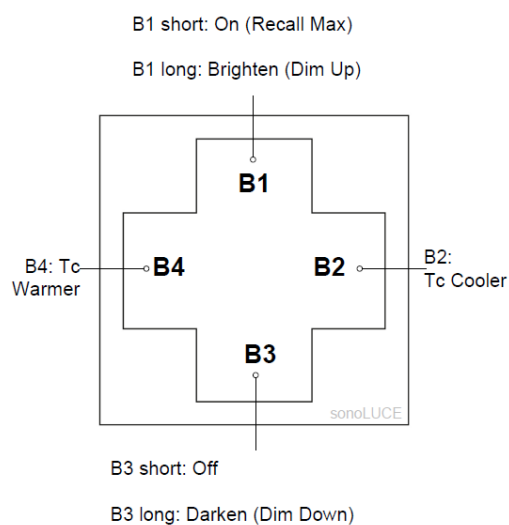
- After installation, the device can already be operated with the factory settings (Preset1); broadcasts switching and dimming.
- It is possible to address the device and make changes to the factory settings (effective range and the desired functions) via the Software tool DALI Cockpit (PC) and an interface module (DALI USB,

DALI4Net, DALI SCI RS232)

- Preset 2: in the DALI Cockpit Software the second preset for switching, dimming and adjusting the color temperature of Tunable White-capable lights can be selected.



*Preset1: Schalten & Dimmen  
(Werkseinstellung)*



*Preset2: Schalten & Dimmen, Verstellen der  
Farbtemperatur*

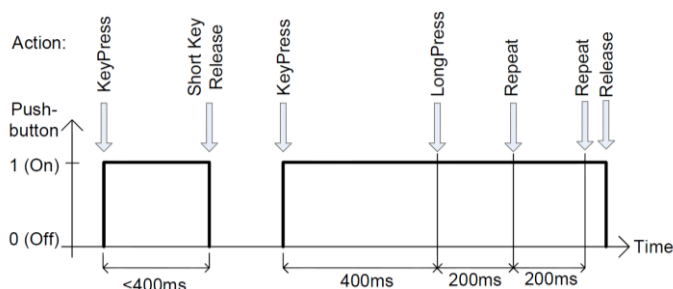
## Function

- Simple addressing and physical assignment with the DALI Cockpit software
- The factory setting (preset 1) can be restored at any time using the DALI cockpit
- Preset 2 for color temperature control can be configured quickly via the DALI Cockpit
- Individual configuration via the DALI Cockpit software tool
- Command selection from the DALI command set, predefined and user-defined macros
- Predefined macros for dynamic and sequential scene recall, color temperature control and memory function
- Adjustable behavior and delay on return of voltage (no change, OFF, scene 0-15)

Select effective range (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

Button functions for each push button:



button definition	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 / CmdY toggle	-	-	-	CmdX/Y <b>depending on bus status</b>	changeover push 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

*Settings for CmdX/CmdY*

CmdX and CmdY refer to commands and command sequences which are triggered by the switching actions. Following options:

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

*Tabelle 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)	command for DALI2 ballasts: turns on to the last active value (firmware 2.0 and up)
16-31	GO TO SCENE	go to scene 0-15

*Tabelle Macros:*

macro number	macro (required memory)	function
M1	Go Home (2 Byte)	light dims down to 0 with a predefined fade-time, after completion next fade-time can be transferred
M2	Sequential Scenes (3Byte)	with each key push the scene will be switched, the list of scenes can be customized
M3	Dynamic Scenes (33 Byte)	dynamic sequence up to 16 scenes, fade-time and delay (0-254s) can be defined, stops with next button press
M4	DALI-Reset (1 Byte)	send command DALI reset (optional: delete addressing)
M5	User Defined Cmd-List (5 Byte je Befehl, 19 Befehle max.)	Loading of user defined macro-file
M6	3x Cooler (DT8) (0 Byte)	activates DT8 and recalls 3x the command STEP COOLER (Firmware 1.4 and up)
M7	3x Warmer (DT8) (0 Byte)	activates DT8 and recalls 3x the command STEP WARMER (Firmware 1.4 and up)



**Note:** Any command (DALI or proprietary Extension) can be used in master mode as a user-defined Command list (macro M5).



### DALI Cockpit

The settings can be adapted with the help of the DALI Cockpit Software tool and a suitable interface to the DALI line (e.g.: DALI USB, DALI SCI RS232 or DALI4Net).

Supported by DALI Cockpit:

- Addressing (Random Addressing for eDALI control devices, this means no luminaire address required for the control device)
- device configuration

The DALI-Cockpit view is separated in various parts:

- component-tree for device selection
- Device-Info Block: provides general information like device name, manufacturer, articlen number, serial number, firmwareversion, DALI-address etc.
- a tab for general settings
- a tab to configure each button

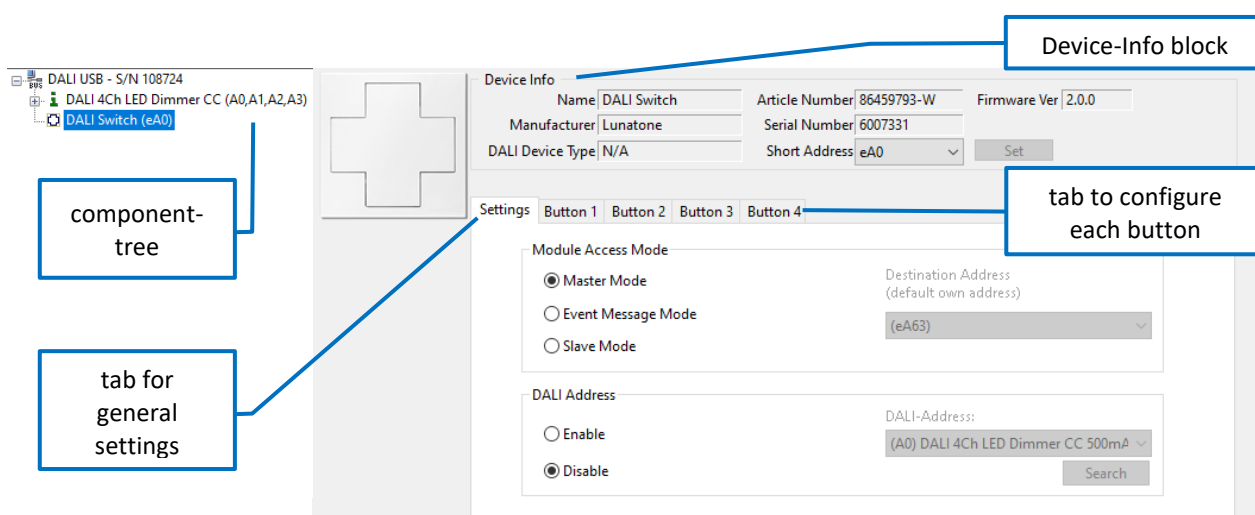


Figure 4: Settings, Betriebsarten

### Operating modes

In addition to the normal operating mode as a control device, which actively controls ballasts in the DALI circuit (master mode), there are two other operating modes (slave mode and event message mode) available, e.g. for the integration in a central control system.

#### Master mode (default)

In this operating mode the DALI switch works as a DALI control device and sends Event-related DALI commands to the DALI loads according to the configuration.

#### Event message mode

In this mode, when a button is pressed, predefined event commands are sent as part of a proprietary protocol extension. These can be assessed by a central control system. The light is not controlled directly.

#### Slave mode

In this operating mode, the DALI switch does not become active on the bus by itself but only responds to queries

Tabs „Button 1-4“:

The screenshot shows the configuration page for a DALI Switch. At the top, there is a 'Device Info' section with fields for Name (DALI Switch), Article Number (86459793-W), Firmware Ver (2.0.0), Manufacturer (Lunatone), Serial Number (6007331), DALI Device Type (N/A), and Short Address (eA0). Below this is a 'Settings' section with tabs for Button 1, Button 2, Button 3, and Button 4. The 'Button 4' tab is selected. The 'Destination Address' section contains a table with four rows (1-4) for Group and Action after power up. The 'Function' dropdown is set to 'BF1 - Pushbutton: sends CmdX'. There is a checkbox for 'Sending ON AND STEP UP as Start-Cmd' and a 'Cmd X (ON Cmd)' dropdown set to 'RECALL MAX'. A 'Power up' section includes 'Action after power up' (no change) and a 'Delay' field (0 [0...7sec]).

Group	Action after power up
1: Group	Group 0 (G0)
2: none	
3: none	
4: none	

Callouts in the image point to the following elements:

- button selection**: Points to the 'Button 4' tab.
- effective Range**: Points to the 'Group' dropdown in the first row of the Destination Address table.
- function of button (switching, dimming, switching & dimming, staircase timer ...)**: Points to the 'Action after power up' dropdown in the first row of the Destination Address table.
- command**: Points to the 'Cmd X (ON Cmd)' dropdown.
- behavior at power up**: Points to the 'Action after power up' dropdown in the Power up section.

Figure 5: Setting and configuration options

## Purchase Order Information

**Art.Nr. 86459793-W:** DALI Switch Cross, DALI Control Device with 4 configurable pushbuttons, white RAL9010

**Art.Nr. 86459793-W16:** DALI Switch Cross, DALI Control Device with 4 configurable pushbuttons, white RAL9016

**Art.Nr. 86459793-B:** DALI Switch Cross, DALI Control Device with 4 configurable pushbuttons, black

**Art.Nr. 86459793-Z00:** Accessory, cross plate with custom symbols

**Art.Nr. 86459793-Z01:** Accessory, cross plate with symbols for dimming

**Art.Nr. 86459793-Z02:** Accessory, cross plate with symbols for dimming and blind control

## Additional Information and Equipment

DALI Cockpit - free configuration software for DALI systems

<https://www.lunatone.com/en/product/dali-cockpit/>

Lunatone DALI products

<https://www.lunatone.com/en>

Lunatone Datenblätter und Manuals

<https://www.lunatone.com/en/downloads-a-z/>

## Contact

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[www.lunatone.com](http://www.lunatone.com)



## Disclaimer

Subject to change. Information provided without guarantee. The datasheet refers to the current delivery.

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