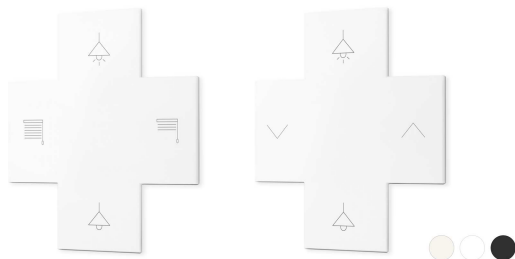# Lunatone

DALI Switch Cross

Datasheet
Multifunctional Switch Module

DALI-2 control unit with four
programmable pushbuttons

Art. Nr. 86459793-W
Art. Nr. 86459793-W16
Art. Nr. 86459793-B

Accessory:
cross plates with symbols
Art. Nr. 86459793-Z00
Art. Nr. 86459793-Z01
Art. Nr. 86459793-Z02

DALI Switch Cross Multifunctional Switch Module

Overview

- DALI-2 control device with 4 pushbuttons according to IEC62386-101, IEC62386-103 and IEC62386-301 (FW 3.0+)

- suitable for integration and in combination with central control units

- 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

- Beeper for localisation

Specification, Characteristics

type	DALI Switch Cross		
article number	86459793-W	86459793-W16	86459793-B
GTIN	9010342010224	9010342010231	9010342010217

DALI-interface, supply: DA, DA

input type	DALI, supply
marking	DA, DA
input voltage range	9.5Vdc … 22.5Vdc (according IEC62368-101)
typ. current consumption DALI (at 16,5V)	1.5mA
max. current consumption DALI (inrush current at 22,5V)	5mA
number of addresses for DALI control gear	DALI
number of addresses for DALI control devices	4 programmable push buttons

environmental conditions:

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

type	DALI Switch Cross		
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GTIN	9010342010224	9010342010231	9010342010217

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 life time @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^2 (AWG24 … AWG16)
wire size fine core	0,2 … 1,5 mm^2 (AWG24 …AWG16)
wire size using wire end ferrule	0,25 … 1 mm^2
stripping length	9 … 10 mm / 0,35 … 0,39 inch
release connector	push button

standards:

DALI	IEC62386-101:2014 IEC62386-103:2014 IEC62386-301:
EMC	EN 61547 EN 50015 / IEC CISPR15
safety	EN 61347-2-11 EN 61347-1
Markings	ENEC-11, DALI-2, CE
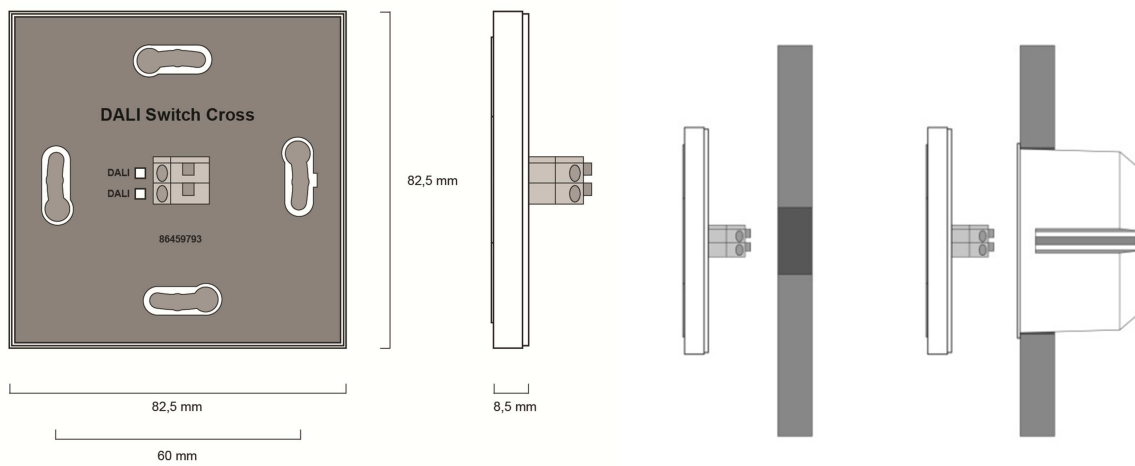
dimensions DALI Switch Cross

mounting cavity wall and conduit box

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
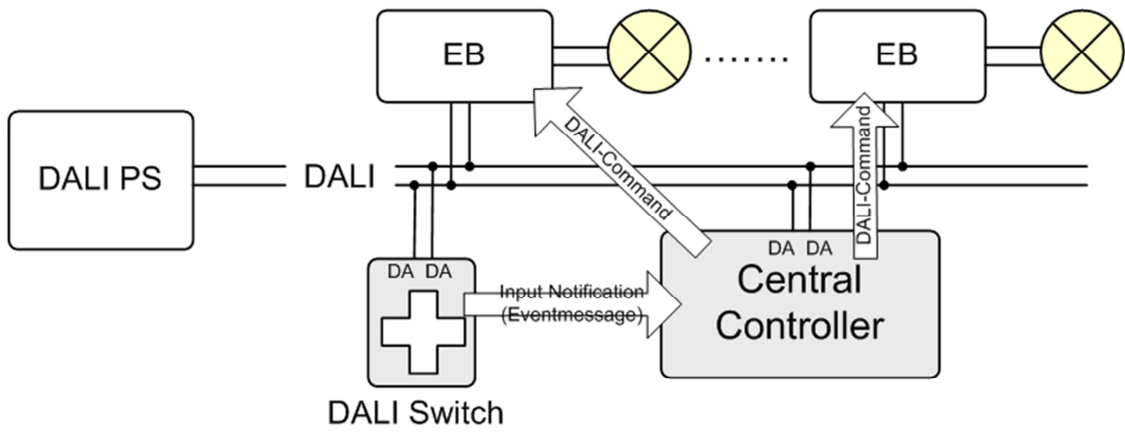
HINT: The DALI-signal is not classified as SELV circuit. Therefore the standards for installation in low voltage system apply.
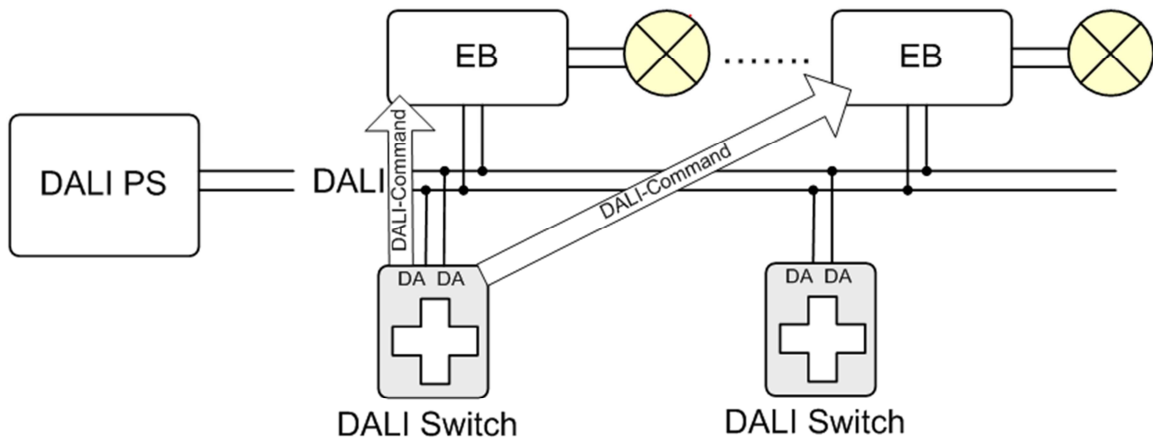
The DALI-Circuit in its full length shall not exceed a voltage drop of more than 2V.

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Application 1: integration in a system with central control unit, pushing buttons results in input notifications (event messages)

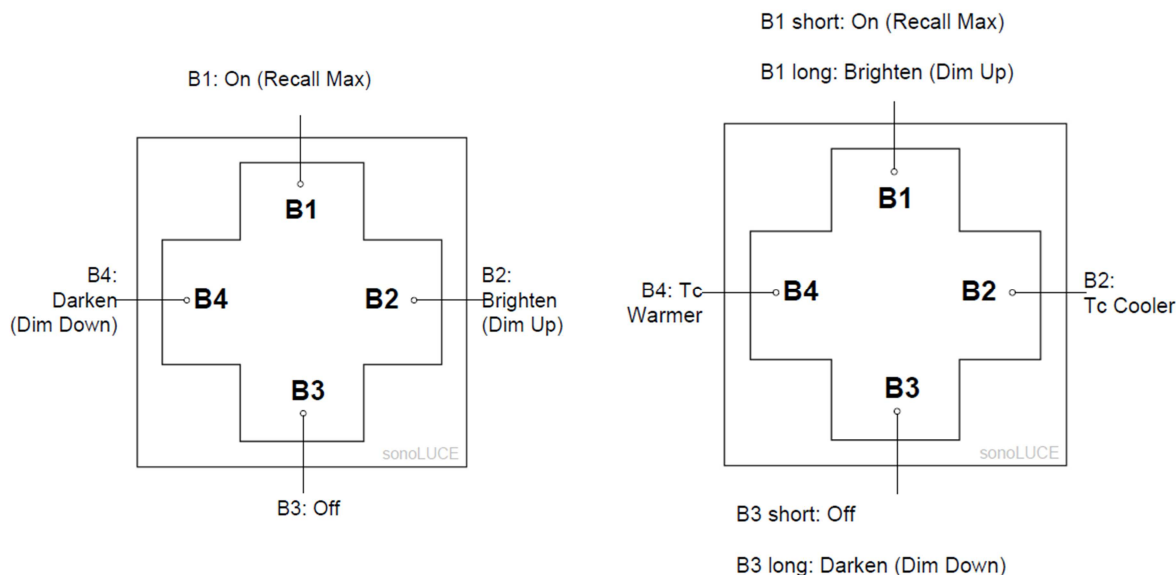Application 2: direct control of luminaires

Commissioning

- After installation the device can already be used for simple applications. The factory settings (preset1) provide broadcast switching and dimming.

- After the device has got a DALI control device address the configuration can be changed. Therefore the DALI-Cockpit tool and a suitable interface module (DALI USB, DALI4Net, DALI SCI RS232) are required. Several settings like changing the effective range and the function for each button are provided.

- Furthermore in the DALI-Cockpit a second preset for Switching/Dimming and controlling the colour temperature of tuneable white capable luminaires can be selected.

Preset1: switch & dim (factory settings)   *Preset2: switch & dim, colour temperature control*

Application and Function

The DALI Switch is suitable for the direct control of luminaires. Therefore the Application Controller has to be activated (factory default). Several control devices can be used on the same DALI-line.

Furthermore the DALI Switch can be used as input device for the integration in DALI-2 compliant central lighting control systems (FW3.0+, older versions use a proprietary protocol extension). In this mode each input ("instance") informs about changes by using so called "input notifications". These event-messages can be evaluated by other controllers on the DALI-line e.g. as trigger for commands sent to luminaires. The DALI-Switch provides 4 instances of type 1 (input device – push button).

Instance 1-4: Push Button, Instance Type 1 (according IEC62386-301, Input Devices – Push Button)

According to the standard the following INPUT NOTIFICATIONs are supported:

| Event name	Event Information	Description
Button released	00 0000 0000b	The button is released
Button pressed	00 0000 0001b	The button is pressed
Short press	00 0000 0010b	The button is pressed and released, without being pressed quickly again (in case of double press enabled), or the button is pressed and quickly released (in case of double press is disabled)
Double press	00 0000 0101b	The button is pressed and released, quickly followed by another button press
Long press start	00 0000 1001b	The button is pressed without releasing it
Long press repeat	00 0000 1011b	Following a long press start condition the button is still pressed, the event occurs at regular intervals as long as the condition holds
Long press stop	00 0000 1100b	Following a long press start condition, the button is released
Button free	00 0000 1110b	The button has been stuck and is now released
Button stuck	00 0000 1111b	The button has been pressed for a very long time and is assumed stuck.

Additional instance parameters like event filter, event timings (short timer, double timer, repeat timer, stuck timer) can be configured according to IEC62386-301.

Application Controller: Direct control of luminaires

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

Buttonfunctions for each push button:
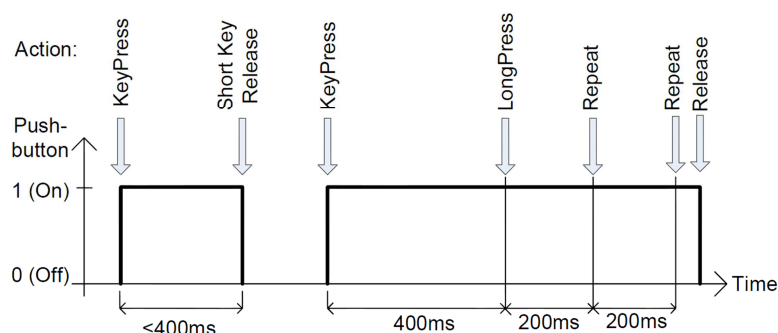
Definition:

Taste	Dauer	
Definiton	**min**	**max**
kurz	40 ms	400 ms
lang	>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 **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 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

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

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)

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 DALI-2 control devices, this means no luminaire address required for the control device)
- device configuration

The DALI-Cockpit view is separated in various parts:

- entry in the component-tree for device selection
- Device-Info Block: provides general information like device name, manufaturer, articlen number, serial number, firmwareversion, DALI-address etc.
- a tab for general settings
- a tab for configuration of the application
- a tab for configuration of the instances

Tab „General":
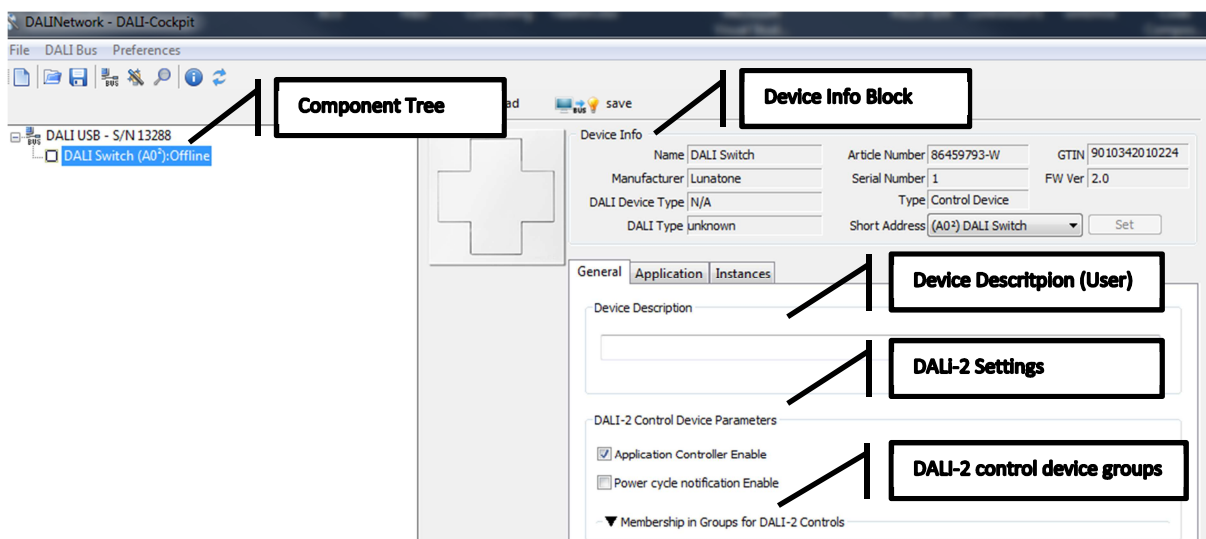
Settings (Tab „General"):

- User defined device descrption (max. 31 Zeichen), stored in device
- Settings according to the DALI-2 standard for control devices (IEC62386-103):
  - o Enable/Disable Application Controller
  - o Enable/Disable Power Cycle Notification
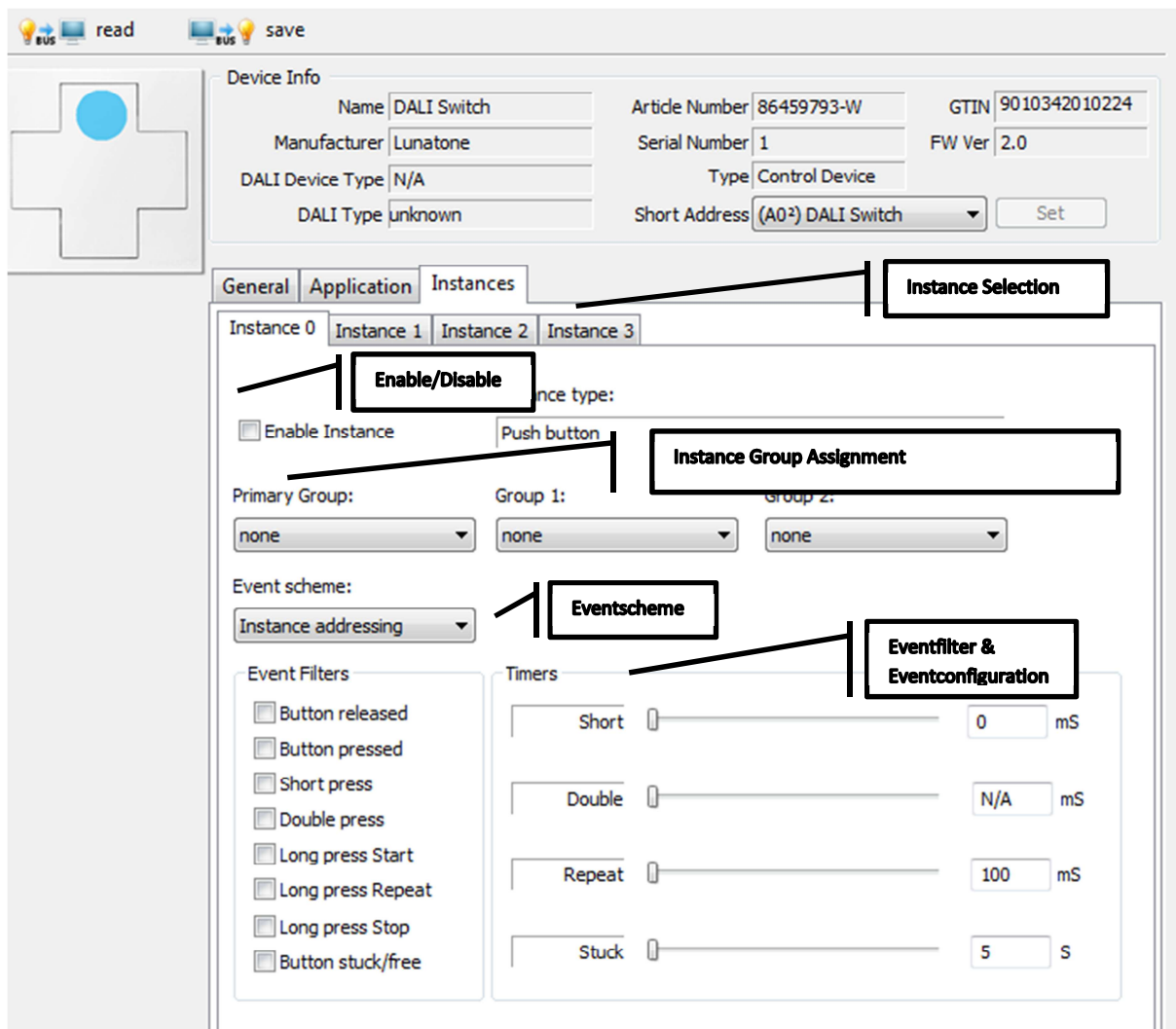 - o Assigning device to 32 control device groups (Note: these groups are not the same as control gear groups!)

Tab „Application":

Application settings:

- Push button selection
- Effective Range
- Function (Switch, Dim, Switch&Dim, Staircase Control …)
- DALI commands

Tab „Instances":

Instance Settings:

- Instance selection
- Enable/Disable Instance
- Instance group assignement
- defintion of event scheme (=format of event messages)
- configuration of all instancetype 1 parameters (according IEC62386-103)

DALI Command Set

The DALI Switch acts as DALI-2 control device and sends predefined DALI-commands if an action occurs on the push buttons.

The device is based on the standard for DALI-2 control devices (IEC 62386-103). It is multimaster capable and is delivered with application controller enabled. The function of the application controller is described in this data sheet. Alternatively the device can be used as input device according to IEC62386-301.

Purchase Order Information

ArtNr. 86459793-W: DALI Switch, DALI Control Device with 4 configurable pushbuttons, RAL9010

ArtNr. 86459793-W16: DALI Switch, DALI Control Device with 4 configurable pushbuttons, RAL9016

ArtNr. 86459793-B: DALI Switch Black, DALI Control Device with 4 configurable pushbuttons, black

ArtNr. 86459793-Z00: cross plate with customized symbols

ArtNr. 86459793-Z01: cross plate with symbols for dimming

ArtNr. 86459793-Z02: cross plate with symbols for dimming and blinds

Additional Information and Equipment

DALI-Cockpit – free configuration tool from Lunatone for DALI systems
http://lunatone.at/en/dali-systems/software/

DALI-Products from Lunatone
http://www.lunatone.at/en/

Lunatone Datasheets and Manuals
http://lunatone.at/en/downloads/

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