Lunatone

DALI-2 ROT
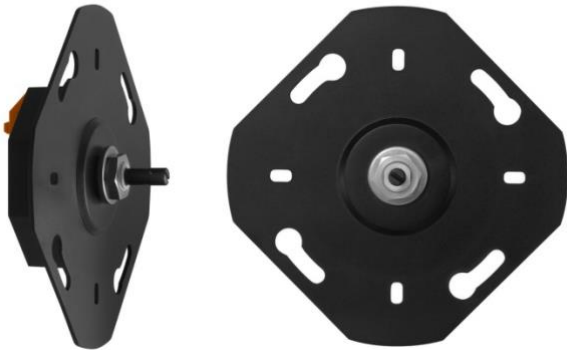**rotary switch**

Datasheet
Control Device

Rotary switch for integration in DALI-2 compliant systems

Art. Nr. 86459822-D2
Art. Nr. 86459822-D2-CH

all versions available with
bus power supply (70mA): -PS

cover and rotary knob:
see purchase order information at
end of document

DALI ROT Control Module

Overview

- DALI control device. sending DALI-2 event messages (D2I) –for integration in central control systems (Version for direct control of DALI luminaries see [DALI-2 ROT NFC]( ))

- sending DALI-2 event messages (D2I)

- suitable for integration and in combination with central control units

- Multi-master capable, multiple modules can be installed on one DALI-line.

- factory settings allow easy application

- easy configuration via DALI USB interface and DALI-Cockpit software tool

- the module is supplied directly by the DALI-line, no additional supply required

- double DALI terminals for easy looping of the bus connection

- simple installation, (even with bus power supply), in a standard back box (Version for Swiss back box -CH)

- Versions with integrated bus power supply 70mA, article number addition -PS

- suitable to be used with cover and knob of most common manufacturers, but also available as accessory

- beeper for localisation

- DALI-2 control device according to standard IEC 62386-103.

DALI② **C E**

Specification, Characteristics

type	DALI-2 ROT integrated
article number	86459822-**D2**
	86459822-**D2**-CH
GTIN	9010342012761
Functionality & operating modes	**D2I: DALI-2 Instancemode**

DALI-interface, supply:

input type	DALI, supply
Marking	DA, DA
input voltage range	9,5V … 22,5Vdc according to IEC62386
typ. current consumption DALI (at 16,5V)	4 mA
max. current consumption DALI (at 22,5V)	5 mA
addresses for control gear	0
addresses for control devices	1

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	70mm x 70mm x 45mm
shaft diameter	4mm, adapter with 6mm
mounting / intended use	back box
protection class	II in intended use
protection degree housing	IP40
protection degree terminals	IP20
manual control	rotary knob with integrated pushbutton function
Max start up time	150ms

terminals:

connection type	spring terminal connector
wire size solid core	0,5 … 1,5 mm² (AWG20 … AWG16)
wire size fine core	0,5 … 1,5 mm² (AWG20 …AWG16)
wire size using wire end ferrule	0,25 … 1 mm²
stripping length	8,5 … 9,5 mm / 0,33 … 0,37 inch

standards:

DALI	IEC62386-101:2014 IEC62386-103:2014
EMC	EN 61547 EN 50015 / IEC CISPR15
safety	EN 61347-2-11 EN 61347-1
markings	DALI-2, CE

Installation Variants:

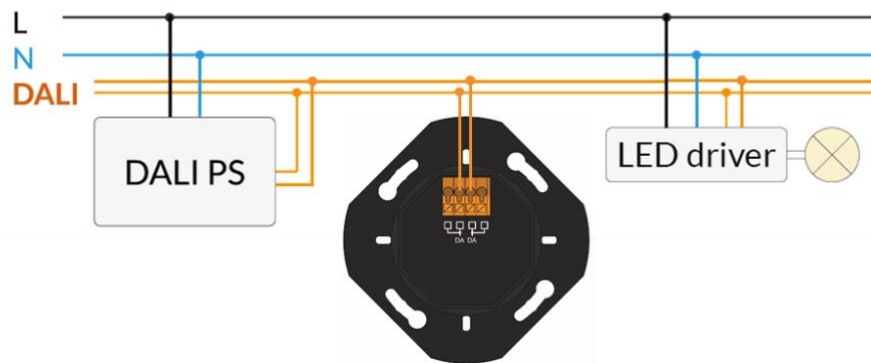| type	DALI-2 ROT integrated	DALI-2 ROT CH integrated
installation	for European back box (screw spacing 60mm)	for Swiss back box (screw spacing 52mm)
article number	86459822-D2	86459822-D2-CH
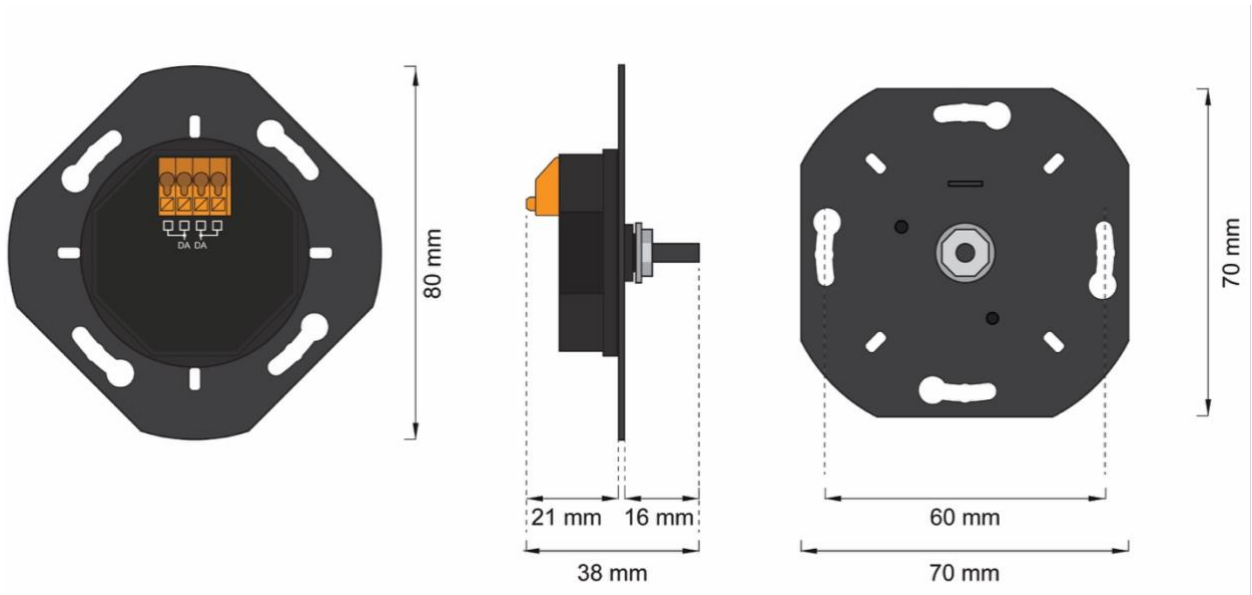
dimensions DALI-2 ROT: 86459822-D2
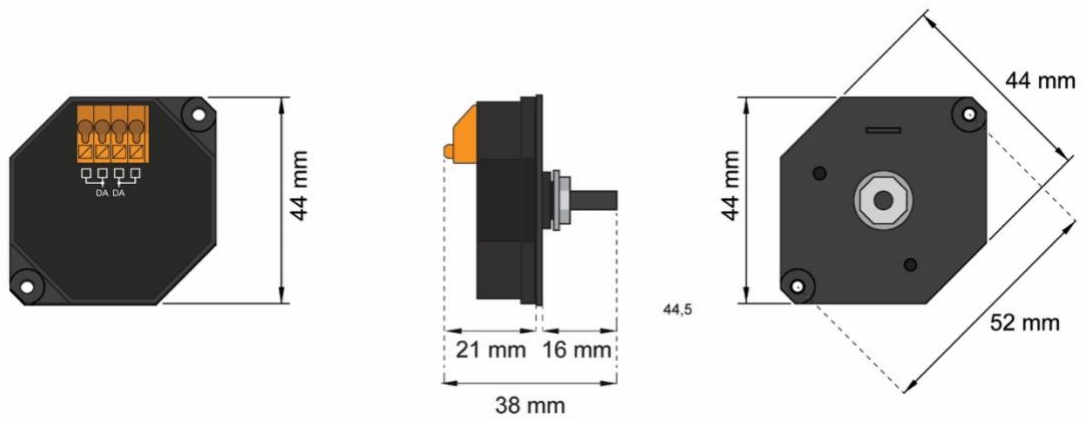
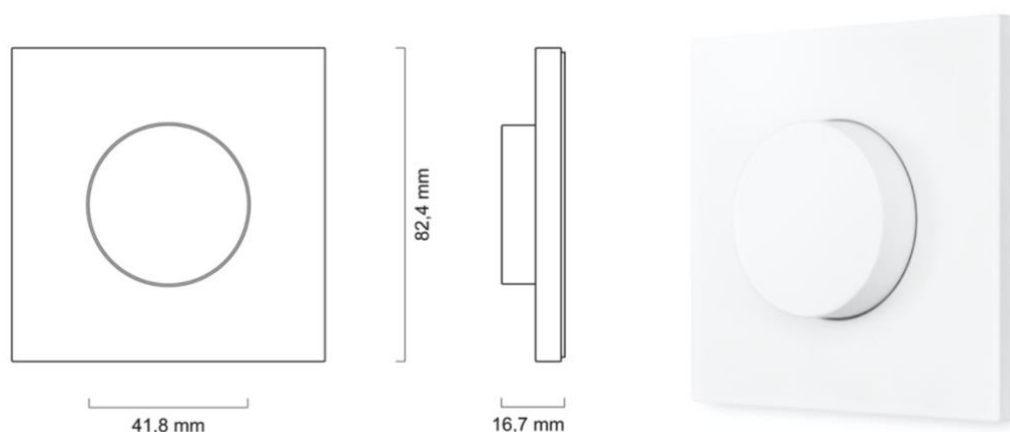dimensions DALI-2 ROT CH: 86459822-D2-CH
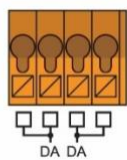
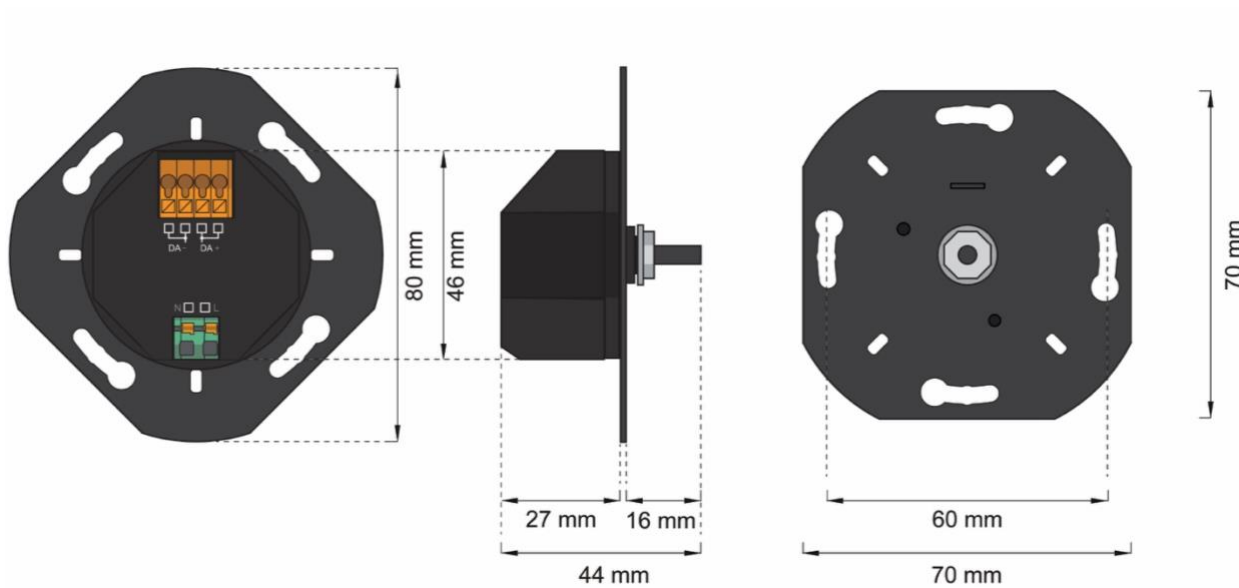connection plan DALI-2 ROT   example installation DALI-2 ROT

dimensions cover and rotary knob Lunatone (-Z04 & -Z05)

Specification, Characteristics – DALI-2 ROT PS

Version with integrated bus power supply (70mA). If not stated otherwise in the table below all information for standard version applies – all ROT versions are available with integrated power supply 70mA.

type	DALI-2 ROT integrated PS
article number	86459822-D2-PS 86459822-D2-CH-PS

input L, N	
input type	supply, mains-voltage
markings	N, L
input voltage range	230V AC
max. input supply current	17 mA
Input supply frequency	50Hz / 60Hz
power consumption max.	2W
start-up time	<250ms

output DA+, DA-	
output type	DALI
markings	DA-, DA+
output voltage range	12Vdc…. 20,5 Vdc
guaranteed DALI supply current	70mA
max. DALI supply current	80mA
Open circuit proof	yes
Short circuit proof	yes

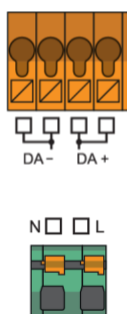| insulation data	
Impulse voltage category	II
Pollution degree	2
Rated insulation voltage	250V
Rated impulse withstanding voltage	4 kV
Insulation DALI / mains	reinforced isolation

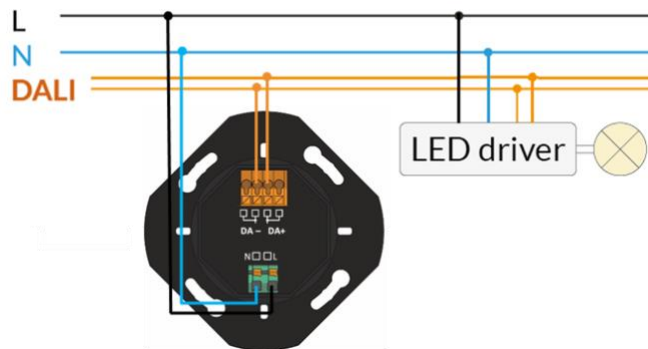| Insulation test voltage DALI /mains	3000 V a.c.
general data:	
dimensions	70mm x 70mm x 60mm

dimensions DALI-2 ROT PS: 86459822-D2-PS
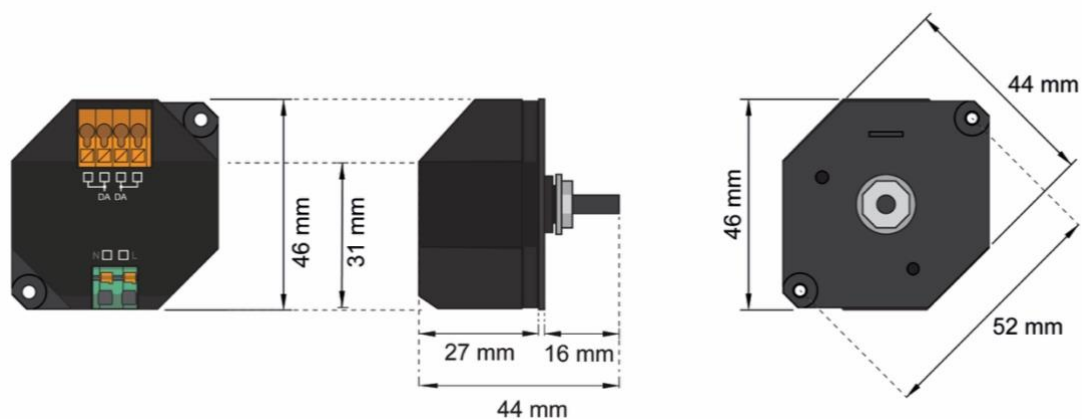
dimensions DALI-2 ROT PS CH: 86459822-D2-CH-PS

connection plan DALI-2 ROT PS

example installation DALI-2 ROT PS

Installation

- The DALI-2 ROT is intended for mounting on a flush mounted box or on a cavity wall

- Subsequent assembly of the cover.
  The device is available with or without a cover and can be combined with covers of common manufacturers. The shaft diameter is 4 mm (or 6mm with adapter)

- The DALI ROT module is connected and supplied directly by the DALI-line (typ. current consumption: 1.6 mA). If no DALI ROT PS is used a general DALI bus power supply (e.g., DALI PS) is required.

- DALI ROT PS: If 2 or more bus power supplies are on the same DALI bus, they need to be connected with the same polarity! (connectors marked with DA**+**, DA**-**), see Figure 1, page 8.

☞ It is possible to connect multiple PS to one DALI line, but the sum of all maximum supply currents must not exceed 250 mA!

- DALI-2 ROT (and ROT PS with no additional DALI PS): the connection to the DALI terminals can be made regardless of polarity. The bus input is protected against overvoltage (mains voltage).

- The wiring should be carried out as a permanent installation in a dry and clean environment.

- Installation may only be carried out in a voltage-free state of the system and by qualified specialists.

- National regulations for setting up electrical systems must be followed.

- The DALI wiring can be realized with standard low-voltage installation material. No special cables are required.

- Only 1 wire may be connected to each terminal. When using double wire end ferrules, the connection capacity of the terminal must be considered.

☞ Multiple DALI ROT modules and DALI luminaires can be connected to a DALI-line. **Attention:** The DALI-signal is not classified as SELV circuit (Safety Extra Low Voltage). Therefore, the installation regulations for low voltage apply.

☞ **Note:** The cross section: the voltage drop on the DALI line must not exceed 2V at maximum length (300m) and maximum bus load (250mA)
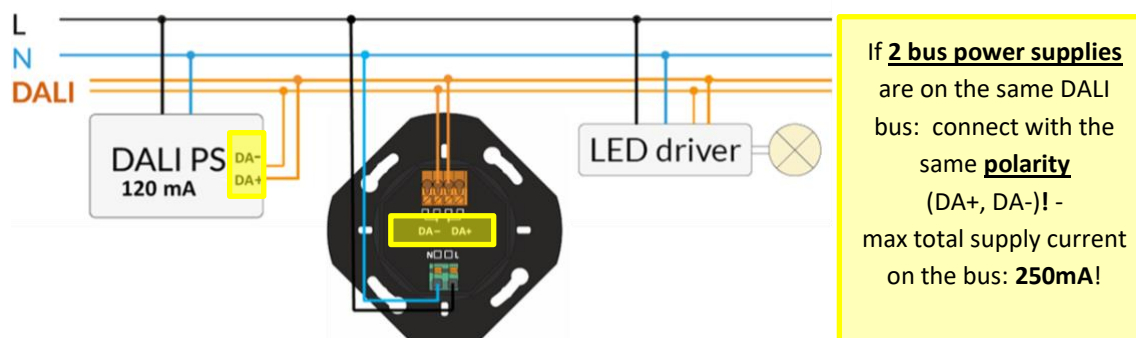
If **2 bus power supplies** are on the same DALI bus: connect with the same **polarity** (DA+, DA-)**!** - max total supply current on the bus: **250mA**!

Figure 1. Installation Example DALI-2 ROT PS with additional DALI PS on the DALI Bus

Set Up

After installation, the device can be operated with the factory default settings., Factory default settings see page 10.

Addressing and changes to the settings, are possible with the Software tool DALI Cockpit (Windows PC).

When using the DALI-Cockpit Software, the PC must be connected to the DALI bus via a suitable interface module (DALI USB, DALI 4Net, DALI SCI RS232). The DALI-2 ROT is automatically recognized by the DALI Cockpit during the addressing process and listed in the device overview.

The addressing is done according to the DALI-2 specification and the device receives a corresponding address.

The device has a buzzer for localization. Alternatively, the device can also be identified by the serial number on the housing. (The serial number is displayed in the DALI Cockpit in the section "device info" at the top, see also Figure 2, page 9)

Application and Function

This version of the DALI ROT rotary switch series from Lunatone is used for integration in systems with a central control unit (e.g., WAGO, Beckhoff, etc.).

It is necessary to distinguish between application controller and DALI-2 instances.

The application controller gives direct DALI control commands that are immediately executed by the DALI drivers. The **DALI-2 ROT integrated does not have an application controller.** For a rotary control device with application controller see DALI-2 ROT NFC

The DALI-2 instances generate event messages that are interpreted and processed by higher-level control units (WAGO, Beckhoff, LUNATONE DALI-2 KNX gateway).

The DALI ROT integrated device serves as such an input device and sends event messages when the rotary is used. These event messages can be evaluated by a DALI-2 compatible central control system.

DALI-Cockpit:

Addressing and device configurations can be made with the DALI Cockpit Software tool and a suitable interface module (DALI USB, DALI 4Net, DALI SCI RS232).

With the selection of the device in the component tree, the DALI-2 ROT settings page is shown. The settings page is split in two tabs: one for general settings (see Figure 2 below) and one for instance settings (see Figure 3 on page 12).

The device-Info block contains general information such as the device name, article number, serial number, firmware version, DALI address, etc.

1. tab for general settings
2. tab for configuration of instances

Freely definable device description (max. 31 characters), saved in the device

Activation of the notification after a PowerUp

Assignment of the device to the 32 control device groups (attention: these are not the luminaire/ grear groups)
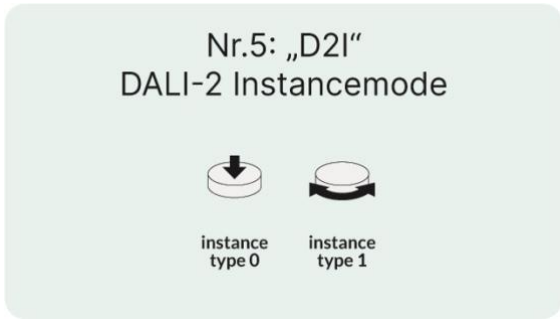

Figure 2. DALI Cockpit: general Configuration options – Tab: "General"

Operating Mode

D2I – DALI-2 Instancemode
press: instance 0, push button
rotate: instance 1, generic, event messages for
    start rotate clockwise,
    start rotate counterclockwise,
    stop rotate

Details to Device Versions

Operating Mode "D2I" - DALI-2 Instancemode

In this operating mode the luminaires are not controlled directly by the DALI ROT, it is suitable for integration in DALI-2 capable central control systems. The DALI ROT uses event messages to inform about operator actions on the input device. These messages have to be evaluated by other control devices.

The DALI ROT provides 3 instances.

	press: Instance 0, push button	The first instance (instance 0) is assigned to the push button function and uses instance type 1 (according IEC62386-301: particular requirements – input devices – push buttons).
	rotate: Instance 1, generic Instance 2, absolute **event messages for start rotation (clockwise / counterclockwise) stop rotation**	The second instance (instance 1) is assigned to the rotation of the knob and uses instance type 0 (according IEC62386-103, general purpose). The third instance (instance 2) is second instance is as well assigned to the rotation of the knob and uses instance type 3 (according IEC62386-302: Particular requirements – input devices – absolute input devices) with 8Bit resolution – hence it represents an alternative option for evaluating the rotation of the knob. Information on event message settings see page 11.

Factory Default Settings

The DALI-2 ROT integrated is delivered with these settings:

"D2I" – DALI-2 Instancemode
Instance 0: Push Button - active
Instance 1: General purpose - active
Instance 2: Absolute Input - inactive

DALI-2 Instances

In this operating mode no DALI control commands are sent on the bus, but DALI-2 event messages for DALI-2 compatible central control systems.

The DALI-2 ROT supports 3 instances:

- **Instance 0** push button function instance type 1
  (IEC62386-301, Input Devices - Push Button), event information see table 1
- **Instance 1** rotary movement Instance type 0 (IEC62386-103, General Purpose), event information see table 2
- **Instance 2** rotary movement Instance type 2 (IEC62386-302, Input Devices - Absolute Input Devices) 8 bit resolution, as an alternative evaluation of the rotary movement.

As defined in the standard, the following events are supported and placed on the DALI bus as INPUT NOTIFICATIONs

Further parameters of the instances 0-2 are: event filter, event timer settings (short timer, double timer, repeat timer, stuck timer), which can be configured via the DALI cockpit software, see Figure 3 page 12.

Instance Type 1 – Pushbutton:

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 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.

Table.1 Instance type 1 – Pushbutton - Events, Information and description

Instance Type 0 - General Purpose:

Event name	Event Information	Description
Rotation Clockwise Started	00 0000 0000b	The rotary knob has started to rotate clockwise
Rotation Counterclockwise Started	00 0000 0001b	The rotary knob has started to rotate counterclockwise
Rotation Stopped	00 0000 0010b	The rotation of the rotary knob has stopped

Table.2 Instance type 0 – general purpose - Events, Information and description

Figure 3 Cockpit Configuration of Instances

Purchase Order Information

Art.Nr. 86459822- D2: DALI-2 ROT integrated, „D2I"-DALI-2 Instancemode, rotary switch insert for integration in systems with central control.

   **Art.Nr. 86459822- D2-PS:** DALI-2 ROT PS, with integrated bus power supply

    Art.Nr. 86459822- D2-CH: DALI-2 ROT CH, version for Swiss back box installation (Feller)

    Art.Nr. 86459822- D2-CH-PS: DALI-2 ROT CH PS, with integrated bus power supply 70mA, for Swiss back box installation (Feller)

DALI-2 ROT: Version with Application Controller: Art. Nr. 86459822-NFC

https://www.lunatone.com/wp-content/uploads/2018/03/86459822-NFC_DALI_ROT_NFC_EN_D0086.pdf

Accessory:
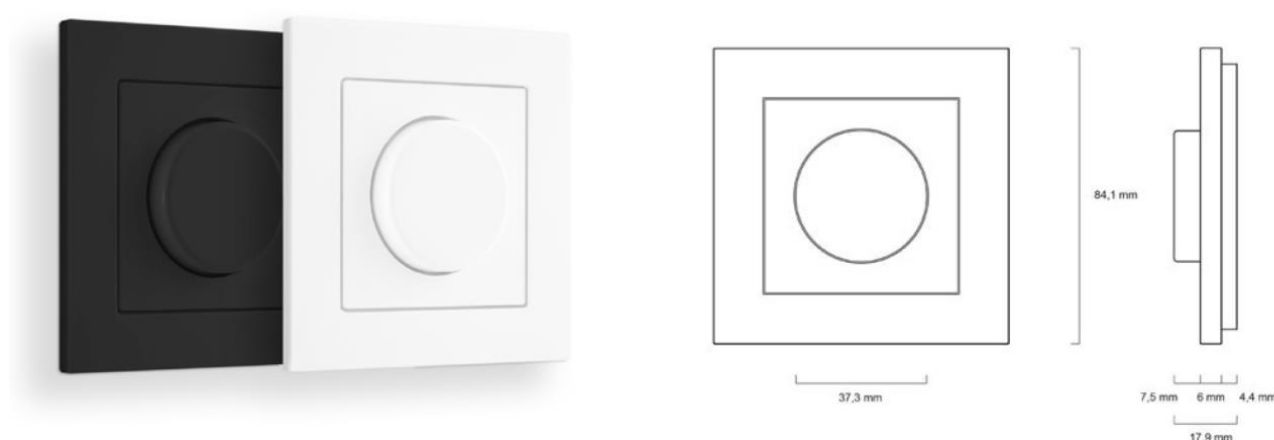
Art.Nr. 86459822-Z01: cover and rotary knob, alpine white, Jung Series A

Art.Nr. 86459822-Z02: cover and rotary knob, black, Jung Series A

Art.Nr. 86459822-Z03: Adapter 6mm

Art.Nr. 86459822-Z04: cover and rotary knob, white (RAL9016)

Art.Nr. 86459822-Z05: cover and rotary knob, black

Additional Information and Equipment

DALI-Cockpit – free configuration tool from Lunatone for DALI systems
https://www.lunatone.com/en/product/dali-cockpit/

Lunatone DALI products
https://www.lunatone.com/en/

Lunatone datasheets and manuals
https://www.lunatone.com/en/downloads-a- z/

Contact

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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.