

# **DALI-2 Display 7"**

Datasheet
DALI-2 Control System

Multifunctional DALI-2 control and operating unit



DALI-2 Display 7"

Art.Nr.: 86456840-W (white)

**DALI-2** Display 7"plus

Art.Nr.: 86456840-P-W (white)

black or colour version on request

## **DALI-2 Display 7"** Multifunctional Control Device

#### Overview

- Multifunctional control device for DALI systems
- 7" capacitive touchscreen with 24-bit color depth
- Dimensions: 178 x 111 x 8 mm
- comfortable operation via numerous widgets
- customisable user interface
- integration via LAN or WLAN in building management systems – coming soon
- dimming and switching of groups and individual addresses
- Tunable White and RGB colour management
- configuration of scenes
- integrated sensors for measurement and visualisation of sensor values such as temperature, air quality, air pressure and humidity

- Multi-master capable: several modules can be installed within a DALI circuit.
- Easy installation: the device can be installed on a flush-mounted installation box.
- 24V or Power Over Ethernet POE

Additional functionality of the Display 7" plus:

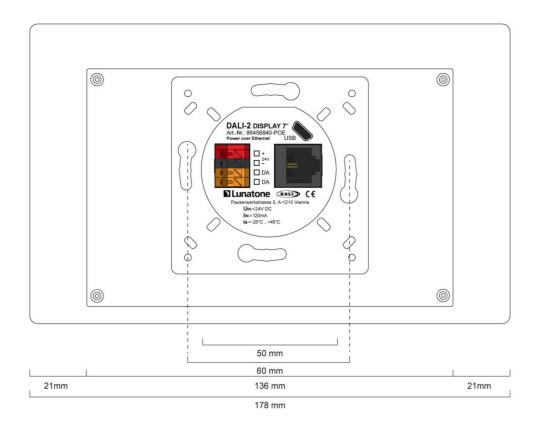
- addressing and set-up of DALI systems
- configuration of groups
- circadian daylight curves (human centric lighting)
- week schedules
- sequences
- control of blinds coming soon
- version for emergency light monitoring – coming soon

## Specification, Characteristics

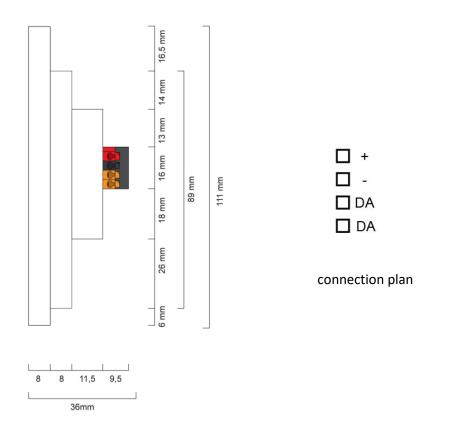
pe DALI Display 7" (plus)		
article number	86456840-W	
article number	86456840-P-W	
Electrical data:		
rated supply voltage display	24-56V DC	
power consumption	3,5W	
number of DALI lines	1	
Current consumption DALI-line	<2mA	
Interface	DALI	
Mechanical data:		
ambient temperature	-1050°C	
type of protection	IP20	
dimensions L x W x H	178x111x8mm	
touchscreen size	7"	
touchscreen pixel	1024 x 600px	
colours	24Bit	
colour display frame	white	



(black on request)	
colour housing	metallic grey



dimensions Art.Nr.: 86456840-...





## Typical application

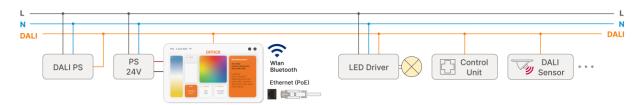


Figure 1 Typical Application

#### Usage

The DALI display is used for set-up (Version Display 7"plus), configuration and control of a DALI system. The DALI protocol standard IEC62386, is used to control the lighting equipment.

Via the display interface all luminaries, groups, individual addresses can be controlled, and scenes can be recalled.

The user interface can be customized, including background images and colour, function, position, size of control widgets and more.

#### Installation

- The DALI-2 Display can be directly connected to the DALI bus. A DALI bus power supply (e.g. DALI PS) is required.
- The device can be powered over ethernet (POE) or requires an additional 24V supply, which is connected to the corresponding terminals. (suitable power supply unit: PS 24V, 300mA Art.Nr.: 24166012-24HS)
- 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 realised 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.
- Attention: The DALI-signal is not classified as SELV circuit (Safety Extra Low Voltage).

  Therefore, the installation regulations for low voltage apply.
- The voltage drop on the DALI line must not exceed 2V at maximum length (300m) and maximum bus load (250mA).



#### Mounting

The DALI Display 7" can be directly attached to a standard flush-mounted installation box/electrical socket.

For assembly, the backplate has to be attached to the electrical socket, considering the orientation (connector facing upwards, see Figure 2). Then the display can be put in from above and fixed with the two screws from below

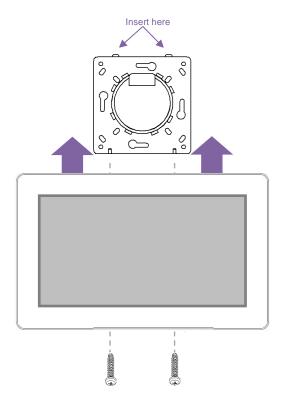


Figure 2 Mounting

## Safety instructions

- The device is only suitable for indoor installation.
- Keep the product away from liquids and moisture.
- Cleaning is possible with a dry duster.
   Please do not use abrasives or solvents.
   Avoid contact with liquids.
- The housing is made of glass and metal, contact with sharp-edged objects can damage the display.
- If the device is defective, send it to Lunatone Industrielle Elektronik GmbH.
   Under no circumstances should the display be opened. Dismantling / disassembling the display can lead to damage and / or injuries.

#### Recycling

This product has been designed and manufactured using high quality materials and components that can be recycled and reused.

The device must be disposed of separately from household waste. Please follow the local regulations for the separate disposal of electronic products. The correct disposal of old devices protects our environment.

#### **Functionality and Features**

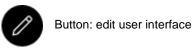
The DALI-2 Display serves as a universal module for **control** of a DALI system, as well as set-up and configuration for version Display 7"plus.

By default, the display shows the user interface for light control. The user interface of the DALI display is made up of individual pages (boards) and the operating elements (widgets) on them. (delivery default: exemplary user interface)

Boards: Any number of boards (pages) can be created, these can be reached by swiping your finger to the right / left or using a link widget. The length of the board is flexible: with an up / down swipe of your finger, you can navigate up and down.

Widgets: Any number of widgets can be created for each board. These can be flexibly arranged on the board.

The user interface can be edited using the pencil symbol at the top right. See section: Editing the user interface on page 10.





Tip: the button "edit user interface" is not available if password protection was turned on.

The set-up and configuration menu can be opened with the menu button at the top right. General settings and DALI device settings can be found there, as well as the board overview and automations (version: 7"plus) Set-up and system configuration see page 7. Board overview and settings see page 9. For automations see page 12 and following.



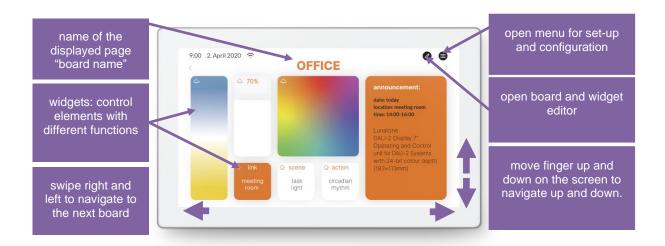


Figure 3 User Interface for Light Control DALI Display 7"

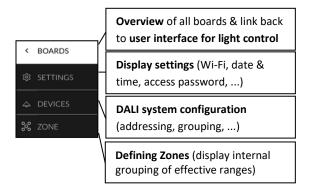


## Set-up and configuration Menu

The configuration menu can be reached via the menu button at the top right.

The configuration menu contains settings for boards, general settings, and settings for the DALI system.

#### Navigation and menu items



#### Menu item: Boards

This tab provides an overview of the existing boards and their management.

The pen button at the top right enables the configuration options: renaming, reordering, removing and adding of boards. See section: Boards on page 9.

Clicking on the board tab again will open the interface for light control. Alternatively, clicking on one of the boards, will open the corresponding user interface.

#### **Menu item: Display Settings**



General settings for the display can be made here, see also Figure 4.

- Save/Load: saving and loading display settings and boards.
- General:
  - Setting the *name* of the display in the network
  - o Information on firmware version
  - Setting the system language

- change the percentage displayed for sliders: between *linear percentage* and DALI norm percentage (logarithmic)
- Setting the screensaver brightness (in percent) and the timeout it takes effect
- Settings night time brightness (in percent) and the time range
- Settings night time screensaver percentage and timeout
- Date & Time: setting the time zone, date and time
- Wi-Fi/Ethernet: establishing an internet connection and displaying the IP address. To avoid unwanted access by third parties, the device should only be connected to a secure network.

#### Access, Display Passwords:

- with enabling "protect Menu & Board editing" and entering a password, the access to the configuration menu and editing mode is restricted. The restriction takes effect after the last interaction plus the set time to lock. Access to boards can also be password protected (from firmware version 1.2.0 on) by selecting the respective board in the list
- with enabling "long press to Store Scene" long press on a scene button saves the current lighting status as the selected scene (see also section: "Create scenes" page 13) (Disabling is available from firmware 1.2.0 on)



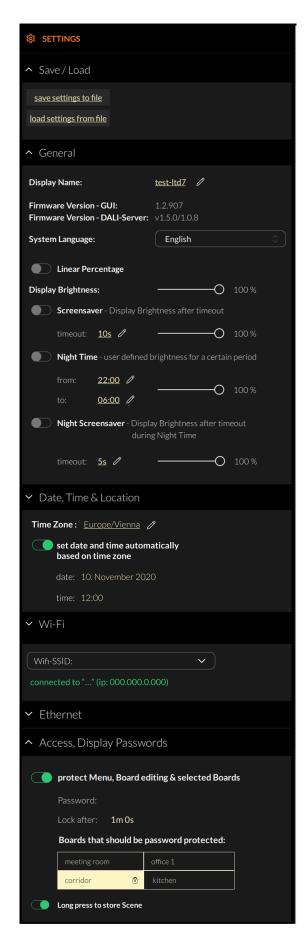


Figure 4 Overview Menu item: Display Settings

#### Menu item: Devices



The tab includes set-up and configuration options for the DALI system. Addressed and configured DALI devices of the connected DALI bus are read and listed here.

The DALI Display 7" plus additionally supports addressing/readdressing as well as DALI system extensions.

With the Display 7" plus The devices found can then be grouped.

After the configuration has been completed, the user interface for light control can be created, containing boards and widgets for individual addresses, groups, and scenes.

#### Addressing devices:

Select "addressing - search" at the top right (within the menu item "devices").



Function test: The on and off button can be used to test whether all DALI devices are connected. If all devices respond properly, addressing can be continued. If the devices do not respond please check the DALI bus power supply (not included in the display) and the device wiring.

#### Available options:

 current device list: loads already addressed DALI bus

additional options for the Display 7" plus:

- New Installation: for new installations or re-addressing; new addressing of all devices on the DALI bus. (devices that already had an address will also get a new address).
- system extension: if devices were added to an existing system; the



existing system keeps its addresses and new addresses will be added.

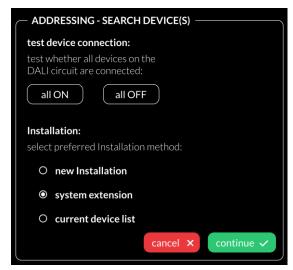


Figure 5 Pop-up addressing, search for devices

After read out/addressing, all devices are displayed in the device list.

**Assign device name:** Click on the respective device name in the device list

Assign groups: - Version 7"plus - Click on the respective group entry ("select") in the device list to add the device to the corresponding groups.

**State:** click on the state symbol to switch the respective devices on and off (for easy localization).

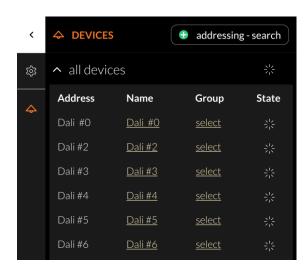


Figure 6 Menu item "Devices"

Further configuration of DALI devices is possible with the DALI Cockpit – see section "DALI Cockpit" page 19.

Menu item: Zones



Firmware Version 1.1.0 and higher

Zones are a grouping of display internal DALI devices similar to DALI groups but without a limitation to 16 and without a limitation of one DALI line in case of a display with multiline module. The devices in a Zone can consist of any number of devices (single addresses) and already formed DALI groups.

**Attention**: Zones in one display do not necessarily match zones of another display!

Within the display from here on only zones or devices can be selected as destination address (DALI groups are not available).

崇

With this button it is possible to turn the selected devices on/off for review the assigned devices.

Additional zones can be added using the Add-Button: +

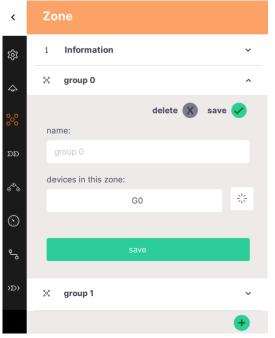


Figure 7 Menu item "Zone"

## Edit user interface for light control

The user interface of the DALI Display is made up of individual pages (boards) and the operating elements (widgets) on them.

#### **Boards**

An Overview to all boards can be found in the configuration menu at section BOARDS To create, delete, duplicate, or move a board: select the edit symbol next to the title BOARDS.

- **a.** Create new boards -> button at the top left "new board".
- b. Edit board: click the pencil symbol in the board window: rename, duplicate (including or excluding the widgets) or delete.
- c. Change the order of the pages: select board (blue highlight) move with drag and drop.

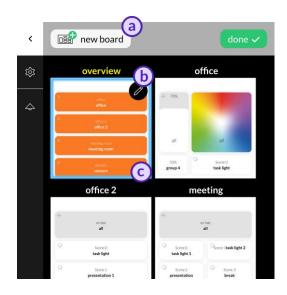


Figure 8 Menu item "Boards"

Close the board setting via the done button:

done 
Return to one of the user interfaces by selecting the respective board.



#### **Editor: Widgets and Background Images**

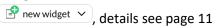
On the user interface: Click on the editor icon:



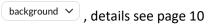
If the icon is not visible, check the settings in the menu: -> Settings -> Access, Display Passwords -> protect Menu & Board editing.



#### Widgets can be added:



or a background image can be loaded:



boards can be added or deleted:

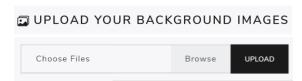


The paintbrush button enables editing of the board style. Different colours can be assigned to the background and toolbar.

#### Load background images

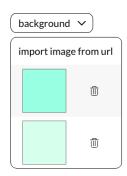
Loading images is possible via the web interface of the display, see section "Web Interface" on page 18.

On the web interface select the tab "Uploads" (see also Figure 17) – browse for the image to upload and select the button "upload".



The background image should have the dimensions 1361x1361 and a resolution of 72dpi, RGB.

As soon as the image has been uploaded, it can be accessed on the display by clicking on "background". An individual background image can be assigned to each board.



#### Create a widget

In the user interface for light control: Click on the editor icon: and select "new widget".



The following widget types are available, see Figure 9 and Figure 10



The appearance of the widgets is configurable, widgets on your display may look different.

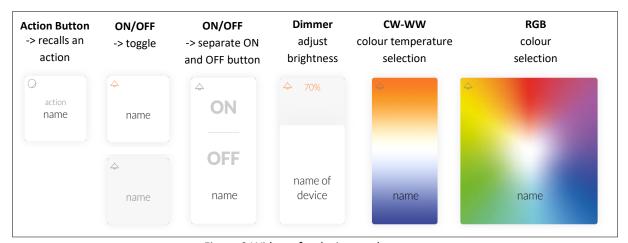


Figure 9 Widgets for devices and groups

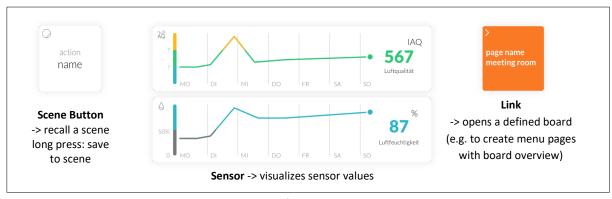


Figure 10 Widgets for scenes, sensors and links

#### Dialog box "New Widget"

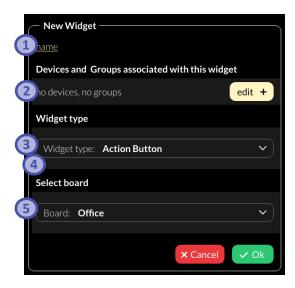


Figure 11 Pop-up "New Widget"

- 1. Define the name of the widget,
- **2.** Select the devices and groups to be controlled (define groups: see page 8)
- 3. Select / change the widget type,
- Depending on the widget type, further settings can be made e.g. defining an action.
- **5.** Select the board on which the widget should be displayed.

#### **Edit Widget**

On the user interface for light control: click on the editor icon . select the widget to edit:

name of

device

## Pencil icon:



- edit (opens dialog box: "create widget")
- duplicate
- delete

## Brush icon:

- edit style
- copy style
- assign style
- more (more style related options)

With the style: colour and shape of the widgets can be customized.

#### Arrow icon:



drag the arrow key to change the widget size

#### **Drag and Drop:**

hold and move to change the order of the widgets

Edit the next widget or quit he widget editor with the button done: done \to \text{

#### Create scenes

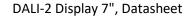
The scene widget on the display enables recalling and saving of scenes

A short press of the scene widget recalls the scene.

A long press of the scene widget saves the current light status (brightness, colour temperature, colour) of the effective range as the scene. The following procedure should be followed:

- 1. Create a scene widget (with the intended scene number and effective range), see also "Create a widget" page 11.
- 2. Set up the room lighting as desired for the scene (using for example the other widgets on the display).
- long press the previously created scene widget
- 4. a pop-up appears to confirm saving of the scene settings.

Info: The functionality to save scenes can be blocked in the settings from firmware version 1.2.0. on – see also "Settings" > "Access, Display Passwords", page 7





#### **Create Schedules**

Version Display 7"plus - Firmware 0.4.0 and higher

The 7 "plus display enables the creation of time and weekday-controlled commands: schedules. A schedule consists of a function to be executed, the active days of the week and a time stamp (absolute or related to sunrise or sunset).

Schedules can be configured, in the configuration menu

section TIME SWITCH

Additional schedules can be added using the Add-Button: +

For information on the configuration see Figure 12

#### **Time Switch Widget**

Version Display 7"plus - Firmware 1.2.0 and higher

Created schedules can be activated and deactivated on the configuration page or with a respective widget: when creating a widget (section "Create a widget", page 11) select widget type: "Toggle Button for Time Switch"—and from the drop down menu select the created schedule.

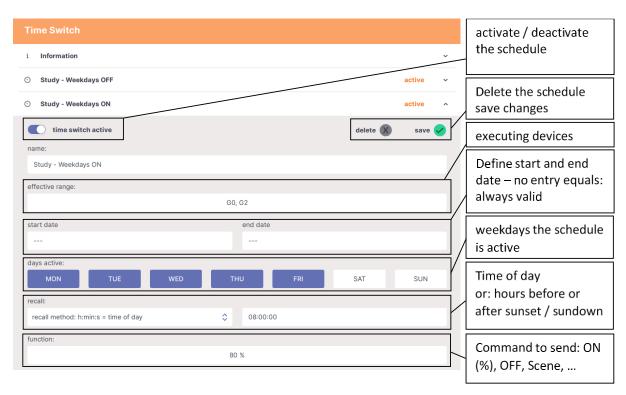


Figure 12 Configuration of schedules

## Create Circadian Daylight Schedules

Version Display 7"plus - Firmware 0.4.0 and higher

The display 7 "plus enables the creation of circadian daylight schedules.

The circadian daylight control simulates the natural course of daylight by continuously adjusting the colour temperature and

brightness. The colour temperature and brightness can be set for each hour. The values are interpolated every minute between these timepoints.

Two courses (one for the longest and one for the shortest day of the year) can be defined. The control system interpolates the values between the two courses over the year, to match the current season.



Circadian daylight schedules can be configured, in the

configuration menu



section CIRCADIAN

Additional circadian daylight schedules can be added using the add-button:

For information on the configuration see Figure 13.

#### **Circadian Widget**

Version Display 7"plus - Firmware 1.2.0 and higher

Created circadian daylight schedules can be activated and deactivated on the configuration page or with a respective widget: when creating a widget (section "Create a widget", page 11) select widget type: "Toggle Button for Circadian"— and from the drop down menu select the created circadian schedule.

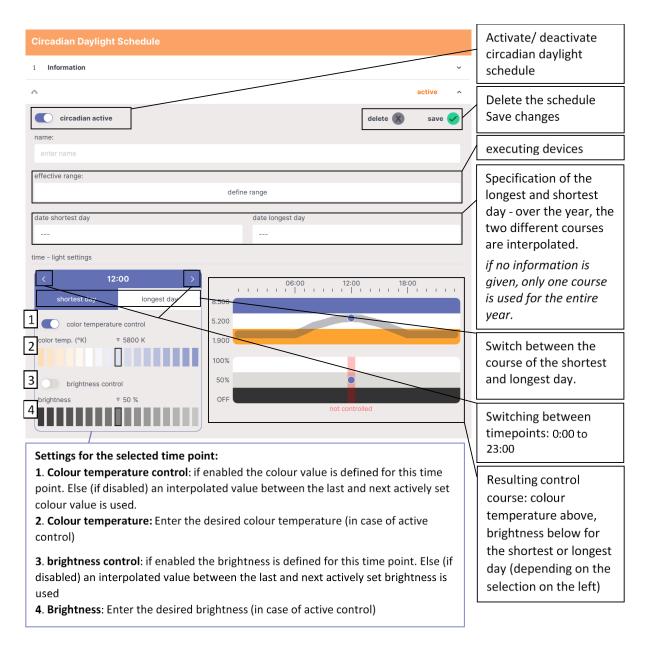


Figure 13 Configuration of Circadian daylight schedules

#### **Create Sequences**

Version Display 7"plus - Firmware 0.4.0 and higher

The display 7"plus enables the creation of sequences - an automatic playback of commands.

A sequence consists of a series of DALI commands (a maximum of 16), to implement e.g. a sequence of brightness and colour changes (via scenes). Time delays can be set between commands. A sequence can be called once or with repetitions (loop).

Sequences can be configured in the

configuration menu



section SEQUENCE

Additional sequences can be added using the add-button:

For information on the configuration see Figure 14

#### **Sequence Widget**

Version Display 7"plus - Firmware 1.2.0 and higher

Created sequences can be started and stopped on the configuration page or with a respective widget: when creating a widget (section "Create a widget", page 11) select widget type: "Toggle Button for Sequences"— and from the drop down menu select the created sequence.

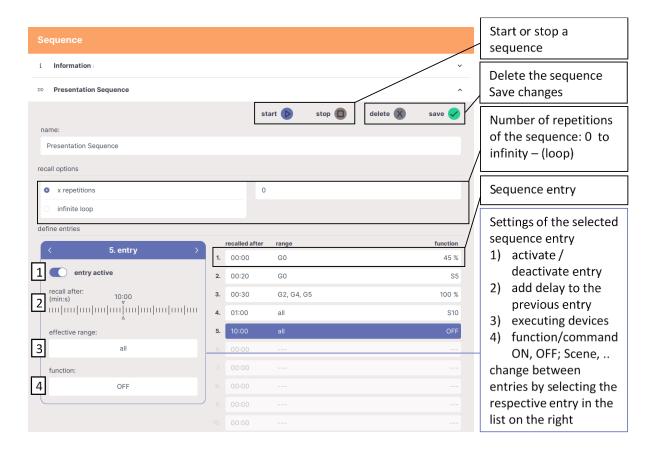


Figure 14 Configuration of Sequences



#### Macros

#### **Load Macros**

Firmware version 1.2.0 and higher

For the DALI display 7" and the DALI Display 7" plus existing macros from the DALI Cockpit Macro Editor can be uploaded via the web interface of the display, see section "Web Interface" on page 18.

On the web interface select the tab "Uploads" (see also Figure 17) – browse for the macro to upload and select the button "Upload".



Marcos to upload can be created in the DALI Cockpit – "DALI Commands.." in the tab: "Commands Over Time" (for more information see the DALI Cockpit Manual – Section Macros <a href="https://www.lunatone.com/wp-content/uploads/2018/03/DALI-Cockpit StartUp Guide Manual EN M0010.pdf">https://www.lunatone.com/wp-content/uploads/2018/03/DALI-Cockpit StartUp Guide Manual EN M0010.pdf</a>)

Uploaded macros can be started and stopped via respective widgets, see section Macro Widget page 18

#### **Macro Editor**

Version Display 7"plus - Firmware 1.2.0 and higher

On the display 7"plus macros can be created and edited directly. Also uploaded macros can be edited.

The macros can be configured in the configuration menu
section MACROS

New macros can be added using the addbutton: + A macro consists of a series of DALI commands, DALI-2 commands or DALI-2 Event messages. Time delays can be set between commands. A macro can be called once or with repetitions. Depending on the selected DALI function an effective range – devices that are addressed – can be selected. For some DALI configuration commands no effective range can be set, since they do not address any devices directly. For DALI-2 event messages and DALI-2 commands the DALI-2 address can be set in the function pop up window.

For more information on the configuration see Figure 14 and the example below for a DALI-2 pushbutton instance – event message

Example: entry function settings for a DALI-2 Event - pushbutton press:



Figure 15 macro entry function: pushbutton event

Created Macros can be started and stopped on the configuration page or via respective widgets, see section Macro Widget page 18

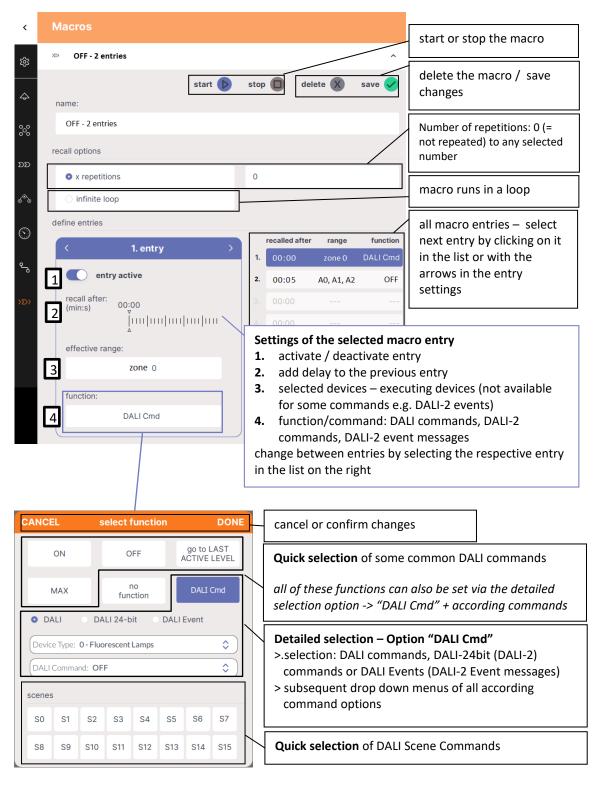


Figure 16 Configuration of Markos



#### **Macro Widget**

Firmware 1.2.0 and higher

The uploaded or created macros can be started and stopped on the configuration page or with a respective widget. When creating a widget (section "Create a widget", page 11) select widget type: "Toggle Button for Macros" or "Action Button for Macros" (from firmware version 1.2.3 on available) — and from the drop down menu select the created or uploaded macro.

With "Toggle Button for Macros" macros can be started and stopped – this option should be used for macros with infinite loops or very long sequences of commands.

With "Action Buttons for Macros" (Firmware 1.2.3 and higher) macros can only be started.

## Save and Load Configuration Files

The display configuration can be saved in the display menu under "Settings" - in the "Save / Load" tab. The configuration file includes all settings, boards and widgets.

The saved configurations can be downloaded on the web interface (see section "Web Interface" on page 18) on the tab "Download" e.g., to transfer created display user interfaces to other displays.

The files can also be uploaded to a display on the web interface –under the respective display web interface - tab "Upload".



#### Web Interface

The display web interface allows uploading images, loading firmware updates, and downloading/uploading display configuration files.

The web interface can be accessed via a web browser. The PC, phone or tablet and the display must be in the same network and address range.

The network settings and the IP address of the display can be found under "Settings" -> "Ethernet" or "Settings" -> "Wi-Fi".

The web interface can be accessed by entering the IP address of the display in the browser. The web interface has several tabs - for downloads, uploads and firmware updates see also Figure 17 below.

## Firmware Update

Firmware updates are possible via the web interface of the display, see section "Web Interface" on page 18.

On the web interface on the tab "Firmware update" the firmware update file (.lfu) can be uploaded and the update can be started using the "Upload" button, see also Figure 17.

The update can take up to 15 minutes. After an automatic restart of the display, the update is complete.

**Attention**: With the browser "Microsoft Edge" problems can occur during updates. It is recommended to use a different browser for firmware updates.

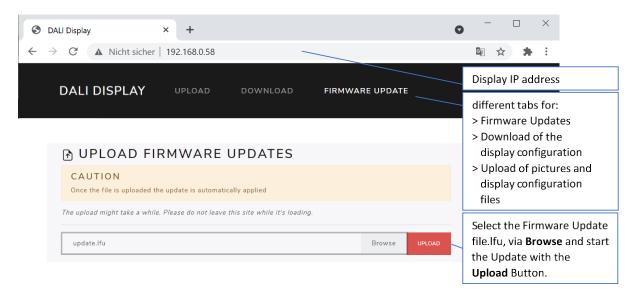


Figure 17 display web interface - tab Firmware Update

#### **DALI Cockpit**

Firmware Version 1.2.0 and higher

The DALI-2 Display can be used as a DALI Cockpit Interface (DALI Cockpit Version 1.38 or higher), for configuration of the DALI devices on the connected DALI bus.

The Windows PC from which the DALI Cockpit is used and the DALI-2 Display need to be in the same local network.

When selecting the DALI bus interface in the DALI Cockpit: choose the option "Network" and "DALI-2 Display, DALI-2 IoT, DALI-2 WLAN" and specify the device's IP address, see Figure 18. If the IP address is not known, the network can be searched for devices using the button next to the IP address input field:

The DALI-2 Display interface can then be selected in the DALI Cockpit device tree and allows addressing and configuration of all connected DALI devices, like other interface modules e.g. DALI USB. See also Figure 19

Warning: Addressing in the DALI Cockpit should only be either "System Extension" or "Read current device List"! If "new installation" is selected the device addresses are reassigned and the set effective ranges of widgets, zones, automations etc. in the display are no longer correct!

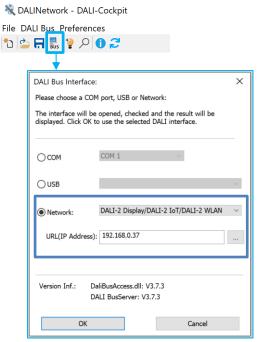


Figure 18 DALI Cockpit – selection of DALI bus interface

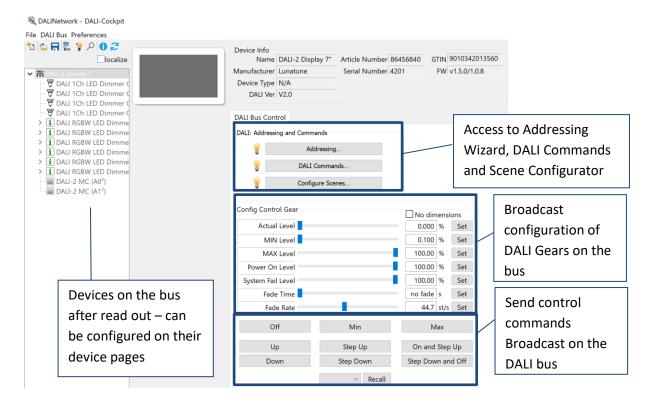


Figure 19 DALI Cockpit - display interface

#### **Version Overview**

	<b>Display 7</b> " 86456840	<b>Display 7" Plus</b> 86456840-P
customisable user interface	<b>✓</b>	<b>✓</b>
LAN and WLAN	<b>✓</b>	<b>✓</b>
dimming and switching	<b>✓</b>	<b>✓</b>
Tunable White and RGB colour management	<b>✓</b>	<b>✓</b>
configuration of scenes	<b>✓</b>	<b>✓</b>
configuration of DALI groups		<b>✓</b>
create zones	<b>✓</b>	<b>✓</b>
integrated sensors for measurement and visualisation of sensor values such as temperature, air quality, air pressure and humidity	<b>✓</b>	~
addressing and set-up of DALI systems		<b>✓</b>
automation: circadian daylight curves		<b>✓</b>
automation: sequences		<b>✓</b>
automation: week schedules		<b>✓</b>
load cockpit macros	<b>✓</b>	<b>✓</b>
create and edit macros		<b>✓</b>
DALI Cockpit interface	<b>✓</b>	<b>✓</b>

#### **Purchase Information**

Art.Nr.: 86456840-W
DALI-2 Display 7", white
capacitive touchscreen with 24-bit colour
depth, control unit for 64 DALI addresses,
customisable user interface

Art.Nr.: 86456840-P-W

white, 178 x 111 x 8mm

DALI-2 Display 7" plus, white capacitive touchscreen with 24-bit colour depth, control unit for 64 DALI addresses, customisable user interface, advanced configuration/control features: addressing, circadian control, schedules, sequences, white, 178 x 111 x 8mm

#### On request:

Art.Nr.: 86456840-B

DALI-2 Display 7", black
capacitive touchscreen with 24-bit colour
depth, control unit for 64 DALI addresses,
customisable user interface
black, 178 x 11 1 x 8mm

Art.Nr.: 86456840-P-B

DALI-2 Display 7" plus, black capacitive touchscreen with 24-bit colour depth, control unit for 64 DALI addresses, customisable user interface, advanced configuration/control features: addressing, circadian control, schedules, sequences, black, 178 x 111 x 8mm

# Additional Information and Equipment

Art.Nr.: 24166012-24HS

PS 24V, 300mA – fitting power supply

Lunatone DALI products

https://www.lunatone.com/en

Lunatone Datasheets and Manuals <a href="https://www.lunatone.com/en/downloads-a-z/">https://www.lunatone.com/en/downloads-a-z/</a>

DALI Cockpit - free configuration software for DALI systems

https://www.lunatone.com/en/product/dalicockpit/

#### Contact

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#### 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.