



DALI-2 Display 4"

Datasheet

DALI-2 Control System

Multifunctional DALI-2 control
and operating unit



DALI-2 Display 4"

Art.Nr.: 86456841-W (white)

Art.Nr.: 86456841-B (black)

DALI-2 Display 4" plus

Art.Nr.: 86456841-P-W (white)

Art.Nr.: 86456841-P-B (black)

DALI-2 Display 4" Multifunctional Control Device

Overview

- Multifunctional control device for DALI and DALI-2 systems
- 4" capacitive touchscreen with 24-bit colour depth
- Dimensions: 88 x 88 x 8.5mm
- comfortable operation via numerous widgets
- customisable user interface
- dimming and switching of groups and individual addresses
- Tuneable White and RGB colour management
- recall and saving of scenes.
- 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
- Version with LAN and Power over Ethernet on request

Additional functionality of the Display 4" plus:

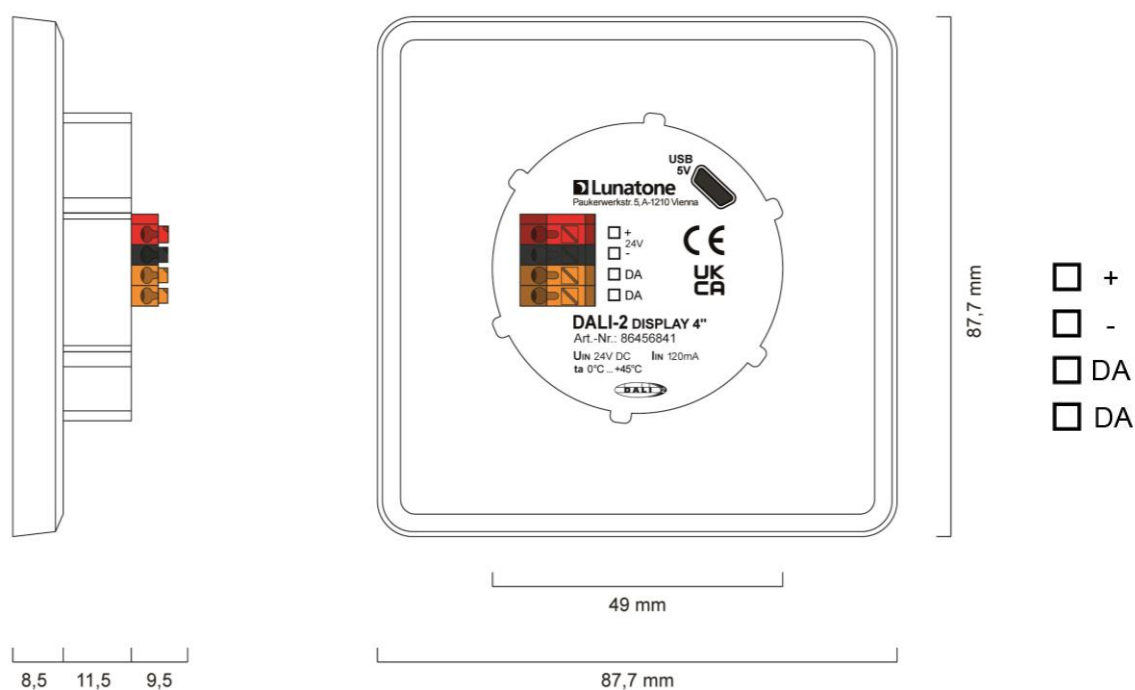
- addressing and set-up of DALI systems
- creating groups
- visualisation of sensor values such as temperature, air quality, air pressure, humidity, etc.
- control of blinds

Specification, Characteristics

Type	DALI Display 4" (plus)	
article number	86456841-W 86456841-P-W	86456841-B 86456841-P-B
GTIN	9010342013560	
Electrical data:		
rated supply voltage display	24-56V DC	
power / p_peak	1.2W / 3W	
number of DALI lines	1	
Current consumption DALI-line	<2mA	
Interface	DALI	
Mechanical data:		
ambient temperature	0...+45°C	
type of protection	IP20	
dimensions L x W x H	88 x 88 x 8.5mm	
touchscreen size	4"	
touchscreen pixel	480x480px	
colours	24Bit	
colour display frame	white	black
colour housing	white	black

Terminals

connection type	spring terminal connectors
wire size solid core	0,5 ... 1,5 mm ² (AWG20 ... AWG16)
wire size stranded wired	0,5 ... 1,5 mm ² (AWG20 ... AWG16)
wire size using wire end ferrule	0,25 ... 1 mm ²
stripping length	8,5 ... 9,5mm / 0,33 ... 0,37inch
release of wire	push button



Dimensions Art.Nr.: 86456841-...

connection plan

Typical application

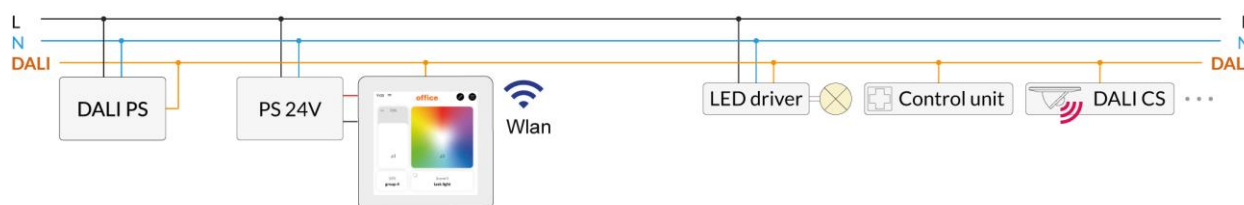


Figure 1 Typical Application

Usage

The DALI display is used for set-up (Version Display 4" 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

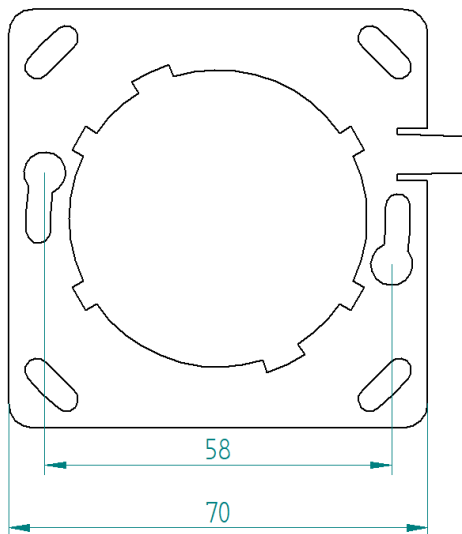


Figure 2 mounting plate

- 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 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 4" can be attached to a standard flush-mounted installation box/ electrical socket using the mounting plate (included), see Figure 2, page 4.

For assembly, the mounting plate has to be attached to the electrical socket, the marking: top ↑ **TOP** has to face upwards. Rotate the Display approx. 5 ° clockwise and slide it into the cut-out (centre circle). Rotate the Display 5 ° counter clockwise to clamp it in a horizontal position.

The display is correctly installed when the clip on the right side falls into the recess provided -> click sound.

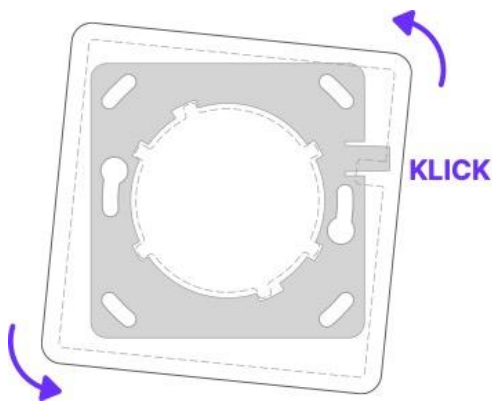


Figure 3 Mounting

To demount the Display, the clip on the right side can be pushed back with a tool and the display can be released again by turning it clockwise.

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 4" 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.

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.



Button: edit user interface

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. See section: Set-up and system configuration on page 7.




Menu button



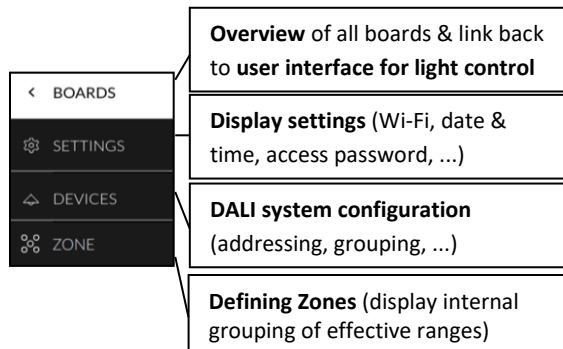
Figure 4 User Interface for Light Control DALI Display 4"

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 10.

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 5

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

- Setting the system language, English or German
- change the percentage displayed for sliders: between *linear percentage* and DALI norm percentage (logarithmic)
- Setting the *screensaver* percentage and timeout
- Settings *night time brightness* percentage and time range
- Settings *night time screensaver* percentage and timeout
- **Date & Time:** setting the time zone, date and time
- **Wi-Fi:** 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 on after the selected time. Accessing 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)

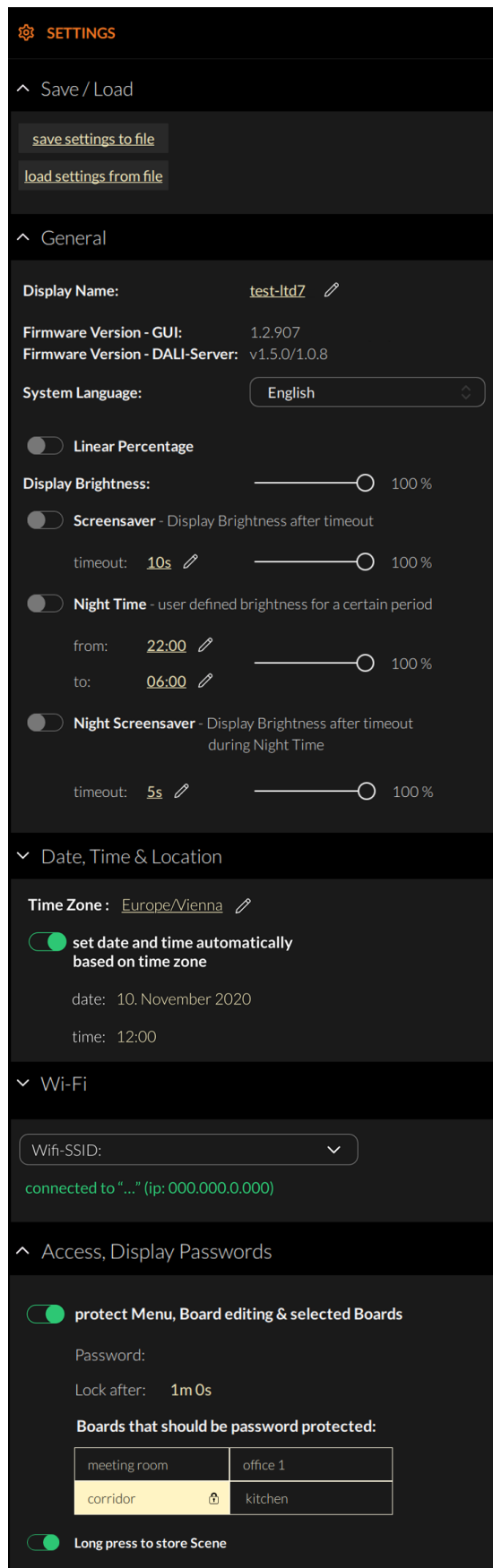


Figure 5 Overview Menu item: Display Settings

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 4" plus additionally supports addressing/readdressing as well as DALI system extensions.

With the Display 4" plus the devices found can 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").

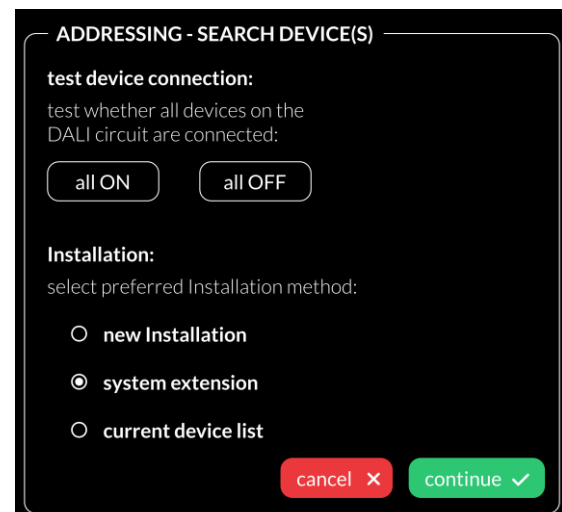


Figure 6 Pop-up addressing, search for devices

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 check the DALI bus power supply and the device wiring).

Available options:

- current device list: loads already addressed DALI bus

additional options for the Display 4"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.

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

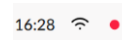
Assign device name: Click on the respective device name in the device list

Assign groups: - Version Display 4" 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).

Further configuration of DALI devices is possible with the DALI Cockpit – see section "DALI Cockpit" page 16.

DALI supply: from software 1.10 onwards, if the bus supply fails on a DALI line, after addressing, "no bus supply" is shown in red in the device list and a red dot is shown in the header on the boards.



Menu item: Zones



Firmware Version 1.1.0 and higher

Zones are a grouping of DALI devices like DALI groups but without a limitation to 16 and without a limitation of one DALI line in case of a display with multi-line 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 will not be available).

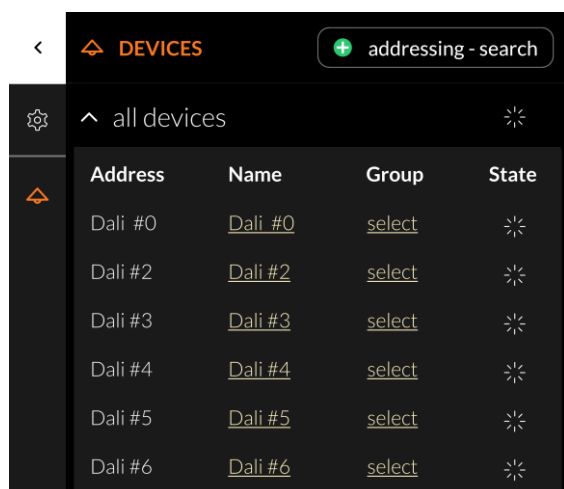



Figure 7 Menu item "Devices"



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: 

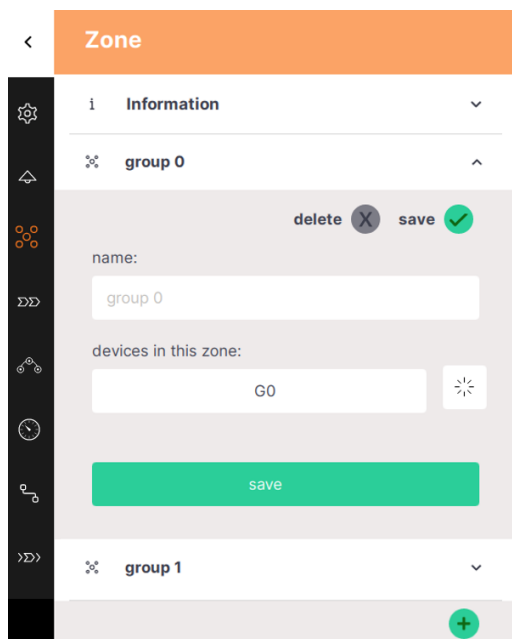






Figure 8 Menu item "Zone"

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.

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

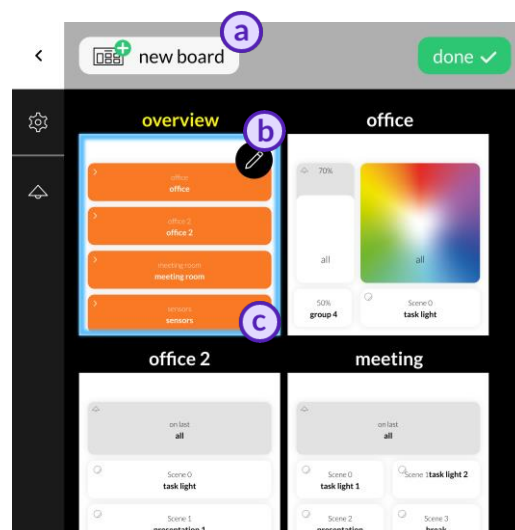




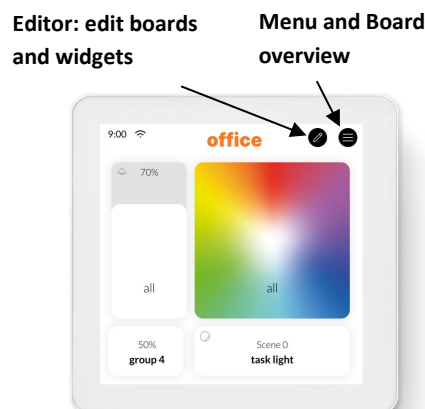
Figure 9 Menu item "Boards"

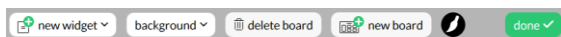
Close the board setting via the done button: . Return to one of the user interfaces by selecting the respective board.

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:

, details see page 11.

or a background image can be loaded:

, details see page 11 .

boards can be added or deleted:

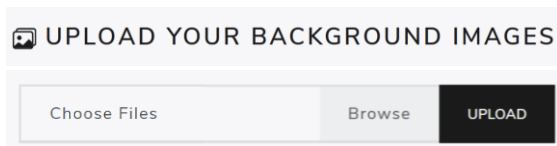


The paintbrush button enables editing of the board style. Different colours can be assigned to the background and toolbar.

Load background images

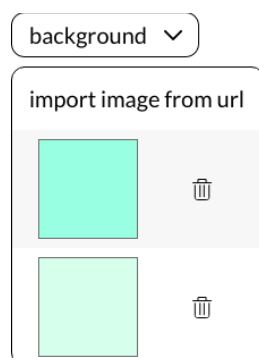
Loading images is possible via the web interface of the display, see section “Web Interface” on page 15.

On the web interface (see section “Web Interface” page 15) select the tab “Uploads” (see also Figure 14) – browse for the image to upload and select the button “upload”.



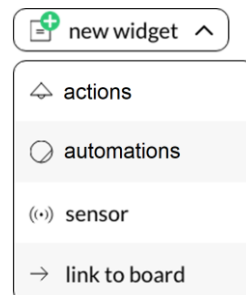
The background image should have the dimensions 1361x1361 and a resolution of 72dpi, RGB.

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: select "new widget" and the requested category:




The following widget types are available, see Figure 10, Figure 11 and Figure 12.

The action widgets allow DALI control via light level, go to last active level and scene commands. From Software 1.12 it is also possible to send a fade time alongside the commands.

The brightness slider sends DALI light level commands (unless required fade time should not be added to preserve smooth control). Tuneable white, RGB and White Channel control allow control of DALI DT8 dimmers.

The sensor widget (version: Display 4" plus) provides visualization of temperature, air pressure, humidity. DALI-2 Display 4" plus internal sensors or external Lunatone DALI-2 CS / DALI-2 CS THP AQ sensors on the DALI line can be selected for visualization. From software 1.12 on, an offset can be configured, to correct the environmental influences on the sensor value.

The Macro widgets are discussed in the section Macros

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

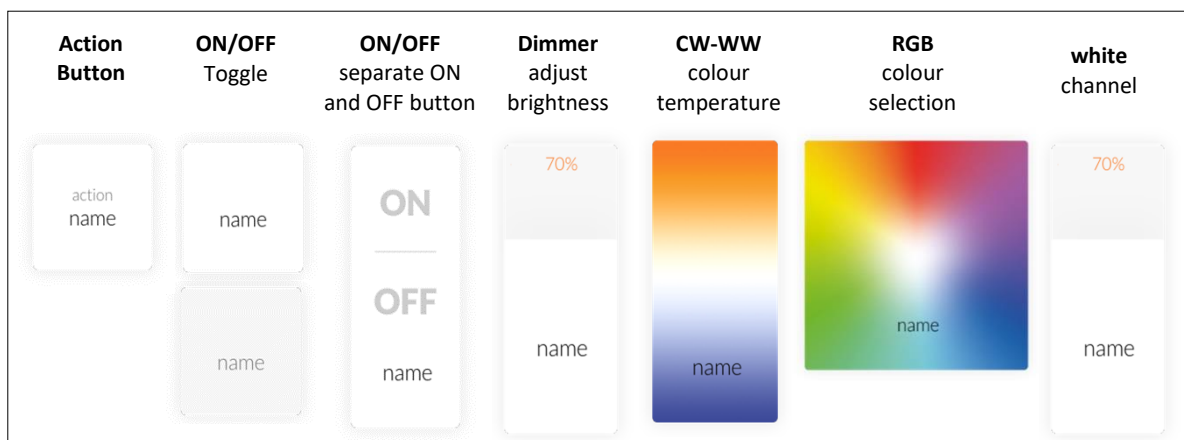


Figure 10 Widgets in category “actions” (including scene widget below)

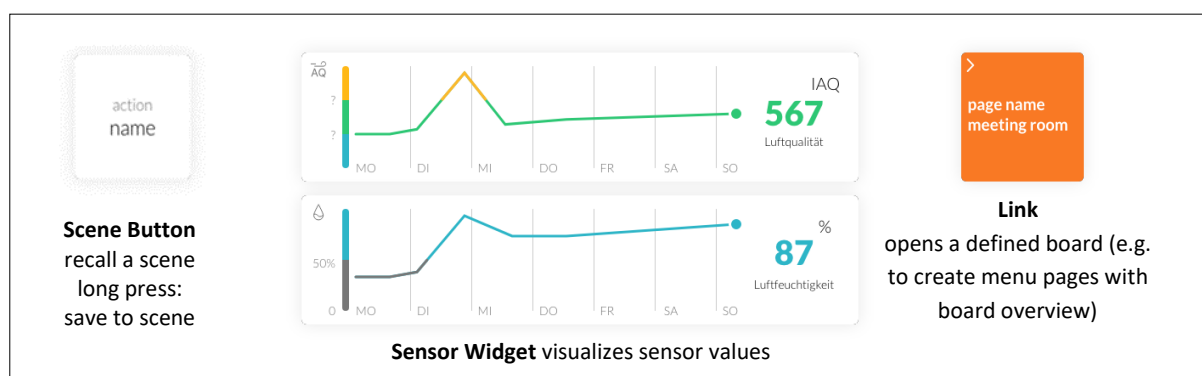


Figure 11 Widgets for scenes, sensors and links

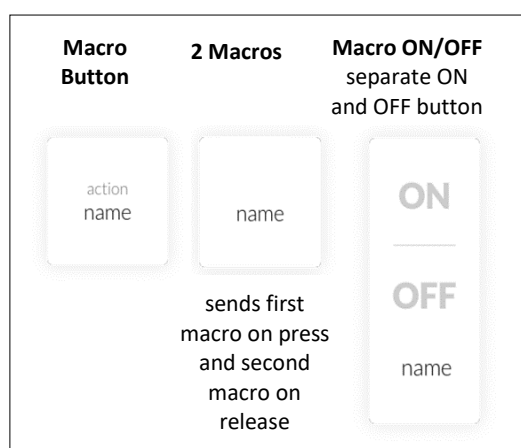


Figure 12 Widgets for macros

Dialog box “New Widget”


The screenshot shows a 'New Widget' dialog box with the following fields and steps:

1. **name**: A text input field.
2. **Devices and Groups associated with this widget**: A section with 'no devices, no groups' and an 'edit +' button.
3. **Widget type**: A dropdown menu showing 'Widget type: Action Button'.
4. **Select board**: A section with a dropdown menu showing 'Board: Office'.
5. **Buttons**: 'Cancel' and 'Ok' buttons at the bottom.

Figure 13 Pop-up “New Widget”

1. Define the name of the widget,
2. Select the devices and groups to be controlled.
3. Select / change the widget type,
4. 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

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

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 colours and form 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 the widget editor with the button done: 

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).
3. long press the previously created scene widget
4. a pop-up appears to confirm saving of the scene settings.

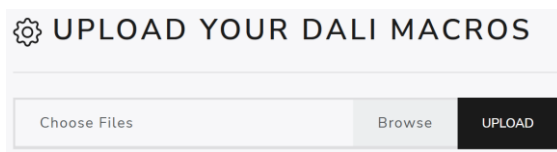
Info: The functionality to save scenes can be blocked in the settings from firmware version 1.2.0. on – see also “Settings” > “Access, Display Passwords”, page 7

Load Macros

Firmware version 1.2.0 and higher

Existing macros from the DALI Cockpit Macro Editor can be uploaded via the web interface of the display, see section “Web Interface” on page 15.

On the web interface select the Tab “Uploads” (see also Figure 14) – browse for the macro to upload and select the button “upload”.




Macros 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 https://www.lunatone.com/wp-content/uploads/2018/03/DALI-Cockpit_StartUp_Guide_Manual_EN_M0010.pdf)

The uploaded macros can be used with the macro 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 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.

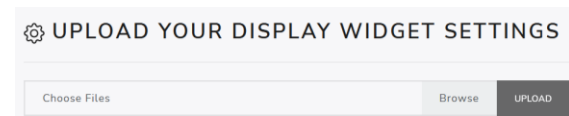
Save and Load Configuration Files

The display widget configuration can be saved in the display menu  under “Settings” - in the “Save / Load” tab. The widget settings file includes general settings, boards and widgets but not the device list, zones and macros.

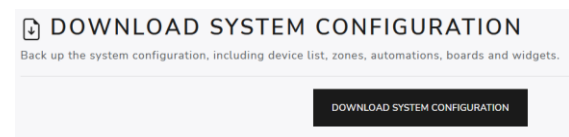
The saved widget settings can be downloaded on the web interface (see section “Web Interface” on page 15) on the tab “Download” e.g., to transfer created display user interfaces to other displays.



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

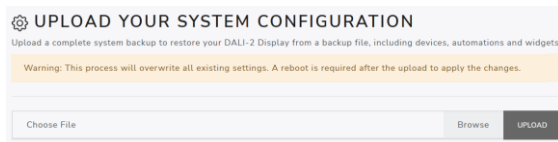


As of software 1.12, the entire display system configuration can be downloaded from the web interface tab “Downloads” in addition to the widget settings. This includes all configurations: layout files, zones, devices and macros.



By uploading, the system configuration, on the tab “Uploads”, the configuration of one display can be “copied” to another one.

Attention: the current settings of the display to which the files are uploaded, will be overwritten.



Attention: Depending on the system configuration, the download and upload may take several minutes. Please do not press the download or upload button repeatedly, and do not leave the respective page until the download file is available or until a prompt to reboot the device appears during the 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" -> "Wi-Fi".

The web interface can be opened 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 14 below.

Firmware Update

Firmware updates are possible via the web interface of the display, see section "Web Interface" on page 15.

On the web interface on the tab "Firmware update" the firmware update file can be uploaded, and the update can be started using the "Upload" button, see also Figure 14.

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

Attention: The device should only be updated not downgraded, a downgrade will lead to data-loss

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

The latest software update file can be found [here](#).

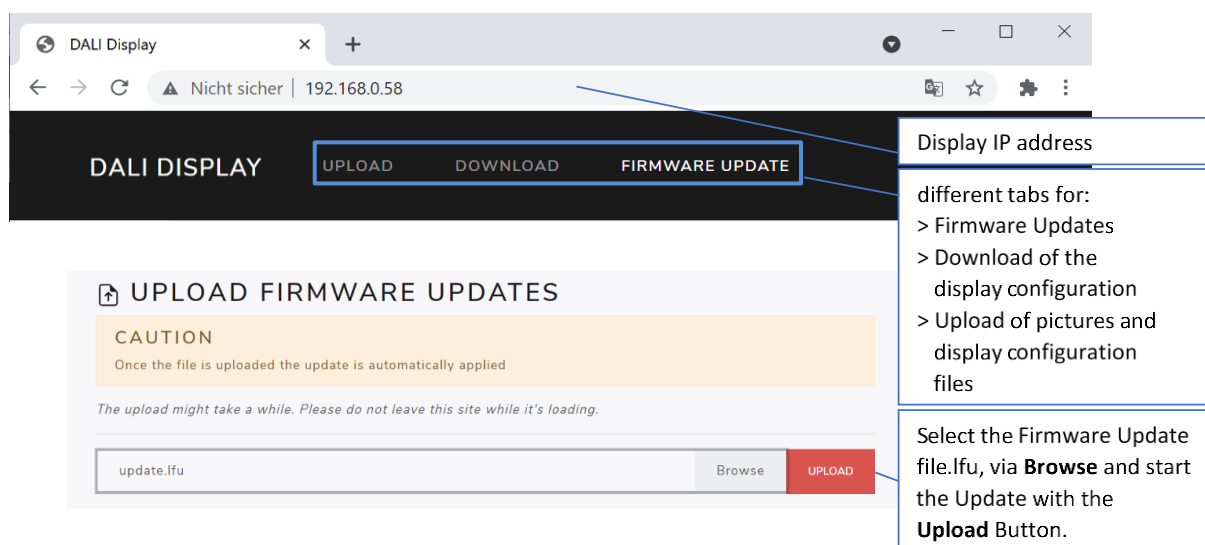


Figure 14 display web interface - tab Firmware Update

DALI Cockpit

Firmware Version 1.2.0 and higher

The DALI-2 Display can be used as a DALI Cockpit Interface (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 15. 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 16

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!

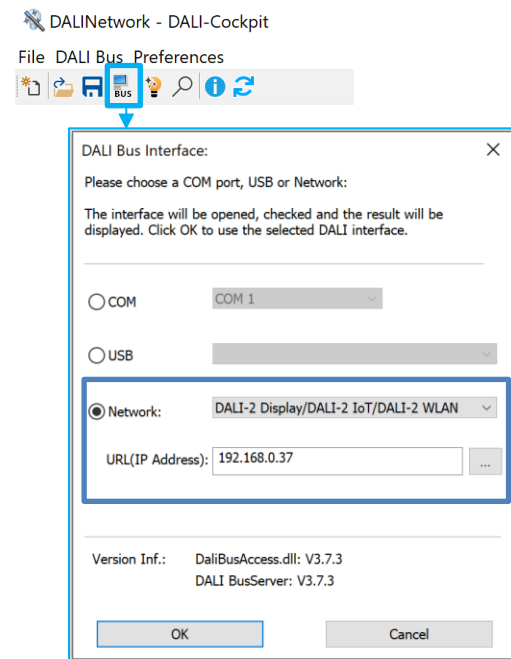
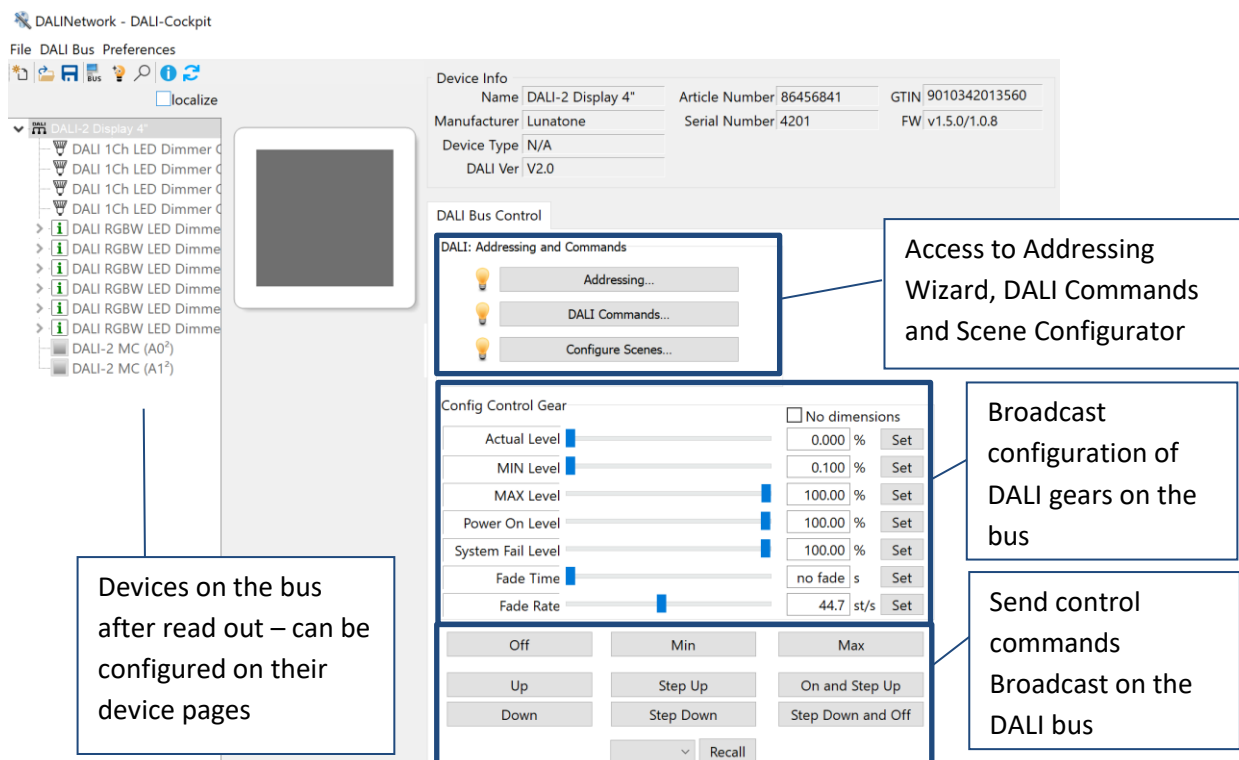


Figure 15 DALI Cockpit –DALI bus interface



Troubleshooting

Red Dot in the header: The DALI bus is no longer powered. Check the DALI bus power supply.

Notification: “Could not read firmware version” This message can be caused by defect hardware or insufficient power supply of the DALI-2 Display.

Notification: “Firmware Update failed! Invalid or corrupt file”: Failing firmware updates are usually caused by incorrect lfu files and need to be resolved by uploading another software file. Please download the latest software [here](#) and retry the update:

Notification: “Cannot run addressing on DALI Bus (lines: 1, 2, ...)”: The DALI line probably has an insufficient DALI power supply, a shorted bus, or no power at all. To resolve this error, check the wiring, bus status and power supplies of the respective line.

Notification: “Scan cancelled (addressing failed)”: An error occurred during addressing of the DALI bus, check for any interference on the DALI bus (e.g. central controls ignoring quiescent mode) and retry the addressing.

Notification: “Scan cancelled (could not communicate with DALI bus)”: This message occurs when a DALI scan cannot be started due to a communication error on the DALI line. The most likely cause is that no DALI bus is connected. Other possible causes are listed in section below: “Send error on line X”

Notification: “Send error on line X”:

- **Bus voltage error:** The DALI bus is not powered. Check if the DALI bus power supply is connected and working
- **DALI initialize mode:** Another participant on the DALI bus activated the initialize mode. The Initialize mode will be exited once the other participant ends it, or after a 15minute timeout
- **DALI quiescent mode:** Another participant on the DALI bus activated the quiescent mode. Quiescent mode will be ended once other participants send the command or automatically after 15minutes.
- **Send buffer full:** The display interface received too many commands at once. Possibly too many automations, queries and macros are running at the same time. Please wait for some time and try again, if the error persists contact support.
- **Syntax error in parameters:** Please contact support with details on how this error occurred.

Version Overview

	Display 4" 86456841	Display 4" Plus 86456841-P
customisable user interface	✓	✓
Integration via WLAN	✓	✓
dimming and switching	✓	✓
Tuneable White and RGB colour management	✓	✓
configuration of scenes	✓	✓
configuration of groups		✓
create zones	✓	✓
integrated sensors for measurement and visualisation of sensor values such as temperature, air quality, air pressure and humidity		✓
addressing and set-up of DALI systems		✓
load Cockpit Macros	✓	✓
DALI Cockpit interface	✓	✓

Purchase Information

Art.Nr.: 86456841-W

DALI-2 Display 4", white
capacitive touchscreen with 24-bit colour depth, control unit for 64 DALI addresses, customisable user interface
white, 88x88x8.5mm
GTIN 9010342013768

Art.Nr.: 86456841-P-W

DALI-2 Display 4" plus, white
capacitive touchscreen with 24-bit colour depth, control unit for 64 DALI addresses, customisable user interface, advanced features: addressing, configure groups and scenes, control blinds, measure and visualize temperature, air-quality, air-pressure, and humidity
white, 88x88x8.5mm
GTIN 9010342013768

Art.Nr.: 86456841-B

DALI-2 Display 4", black
capacitive touchscreen with 24-bit colour depth, control unit for 64 DALI addresses, customisable user interface
black, 88x88x8.5mm
GTIN 9010342013775

Art.Nr.: 86456841-P-B

DALI-2 Display 4" plus, black
capacitive touchscreen with 24-bit colour depth, control unit for 64 DALI addresses, customisable user interface, advanced features: addressing, configure groups and scenes, control blinds, measure and visualize temperature, air-quality, air-pressure, and humidity
black, 88x88x8.5mm
GTIN 9010342013775

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

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

DALI-Cockpit – DALI system configuration tool,
free when using a Lunatone interface device

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

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.