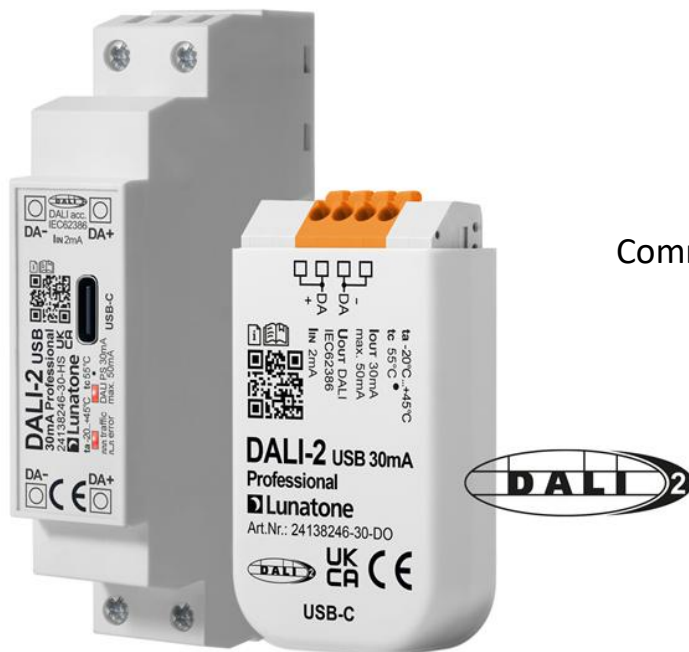


DALI-2 USB Professional

Datasheet

DALI USB Interface



Communication interface between PC
and modules on a DALI Bus
with Measurement capabilities
for checking the DALI system

USB 30mA DO Art. Nr. 24138246-30-DO

USB 30mA DIN rail Art. Nr. 24138246-30-HS

Datenblatt Deutsch: www.lunatone.com/wp-content/uploads/2026/07/24138246_DALI-2_USB_Professional_GER_D0147.pdf

DALI-2 USB Professional Interface

Overview

- Communication interface between DALI systems and the configuration software tool: [DALI Cockpit](#).
- bidirectional data communication for DALI bus monitoring, configuration and control.
- support of the Standard DALI protocol, DALI-2 protocol, and various extended DALI protocols
- USB and DALI-line are galvanically isolated.
- supply via DALI-line (2mA if DALI PS disabled) and USB interface
- switchable integrated 30mA bus power supply
- Measurement of
 - Bus utilisation
 - DALI bus voltage
 - Maximum current and approximate current reserve
 - Measurement of frame timings
- DALI Monitor features
- 2 sets of DALI terminals for easy connection - signal line can be looped through
- [LUBA protocol](#)



Specification, Characteristics

type	DALI-2 USB Pro 30mA DO	DALI-2 USB Pro 30mA HS
article number	24138246-30-DO	24138246-30-HS
GTIN	9010342014741	9010342014758

USB Connection

input type	USB C
USB cable included	USB C – USB C
typ. current consumption USB	50-200 mA

output: DA+, DA-

output type	DALI supply
marking terminals	DA+, DA-
supply switchable	yes
voltage range	12Vdc ... 20,5Vdc
DALI supply current (guaranteed /max)	30 mA / 50mA
open circuit proof	yes
short circuit proof	yes

insulation data:

impulse voltage category	II
pollution degree	2
rated insulation voltage	250V
insulation DALI (DA+, DA-) / supply (L, N)	reinforced isolation
insulation test voltage DALI-output/mains	3000Vac

environmental conditions:

storing and transportation temperature	-20°C ... +75°C
operational ambient temperature	-20°C ... +45°C
rel. humidity, none condensing	15% ... 90%

general data:

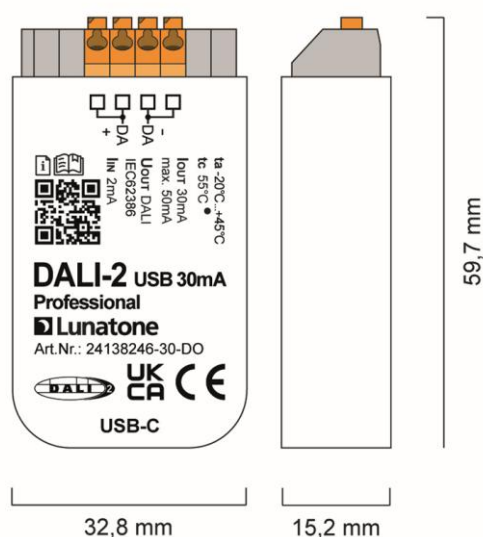
dimensions (l x w x h)	60x33x15 mm	98x18x56 mm
mounting	Installation box, integration in class II devices	
rated max. temperature t_c	55°C	
expected life time @ t_c	50.000 h	
protection class	II in intended use	
protection degree	IP20	

terminals:

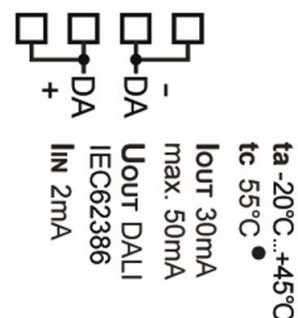
connection type	spring terminal connector	screw terminal
wire size solid core	0.5 ... 1.5 mm ² (AWG20 ... AWG16)	0.5 ... 2.5 mm ² (AWG20 ... AWG14)
wire size fine wired	0.5 ... 1.5 mm ² (AWG20 ... AWG16)	0.5 ... 2.5 mm ² (AWG20 ... AWG14)
wire size using wire end ferrule	0.25 ... 1 mm ²	0.25 ... 1.5 mm ²
stripping length	8.5 ... 9.5mm 0.33 ... 0.37inch	7 mm 0.27 inch
release of wire	push button	Schraube
tightening torque	-	0.5Nm

standards:

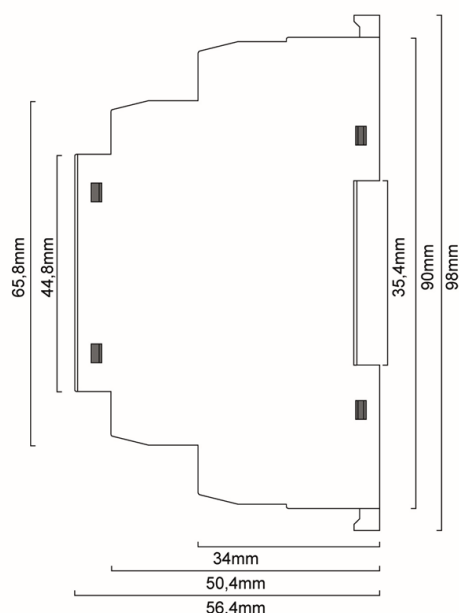
DALI	EN 62386-101
EMV	EN 61547, EN 50015 / IEC CISPR15
Safety	EN 61347-2-11, EN 61347-1
markings	CE, UKCA



dimensions DALI-2 USB Pro 30mA DO



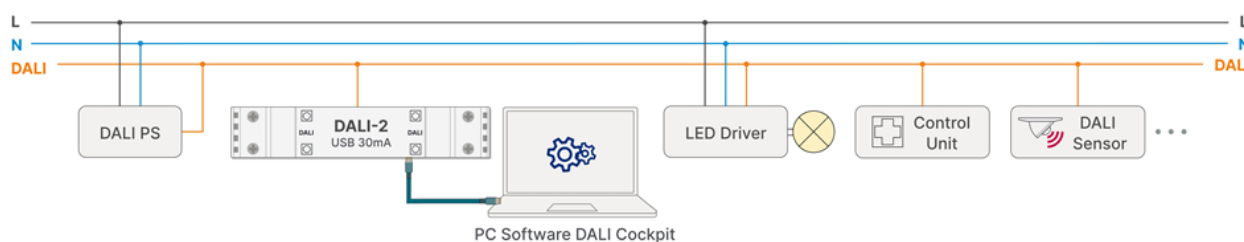
connection plan DALI-2 USB Pro 30mA DO



dimensions DALI-2 USB Pro 30mA HS



connection plan DALI-2 USB Pro 30mA HS



Connection and Electrical Specification

The DALI-2 USB Pro module is supplied by the DALI-line (current consumption approx. 2mA if internal DALI PS 30mA switched off) as well as by USB (current consumption 70mA-200mA). The DALI-line and the USB are galvanically isolated. The connection to the DALI-line is protected against overvoltage of up to 270Vac.

Installation

- For the DALI-2 USB Pro used without included bus power supply an external DALI bus power supply is required.
- 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 polarity of the output voltage is marked on the housing (DA+, DA-).

- The DALI line may be routed together with the mains voltage (in one cable or as single wires in a tube).
- The DALI-line must not be connected to the mains or extra low voltage (SELV) systems.
- Only 1 wire may be connected to each terminal. When using double wire end ferrules, the connection capacity of the terminal must be considered.
- The DALI wiring can be realised with standard low-voltage installation material. No special cables are required.

- Wiring topology of the DALI-line: line, tree, star.



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).

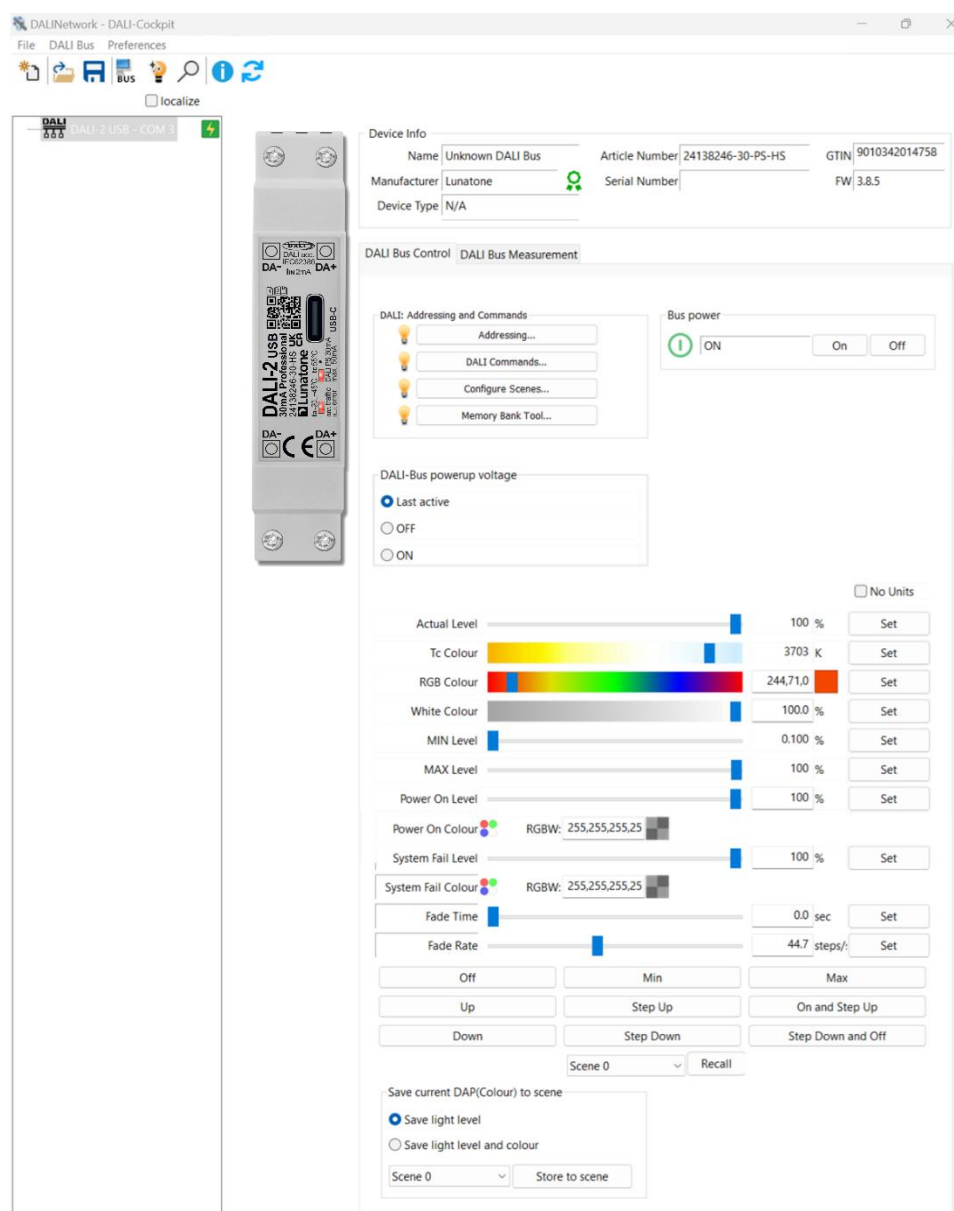


Figure 1 DALI Cockpit device page DALI-2 USB Professional – tab DALI Bus Control

Functionality

The DALI-2 USB provides an interface to the DALI bus. This can be used with the Lunatone configuration software [DALI Cockpit](#) (see section Application Software – DALI Cockpit) or as a serial interface for other applications. The interface protocol is described in the section "Interface Configuration and LUBA Protocol".

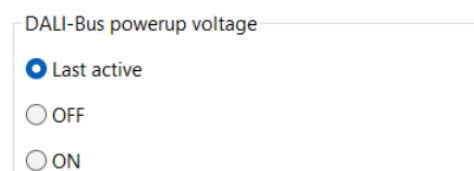
The DALI-2 USB 30mA offers an integrated DALI bus power supply of 30mA, the power is supplied via USB. The DALI bus power supply can be activated and deactivated via the DALI Cockpit configuration software.



The behavior of the integrated DALI bus supply when starting up the DALI-2 USB can be set:

- ON: the DALI bus supply automatically switches on when the DALI-2 USB is connected
- OFF: the DALI bus supply remains deactivated when the DALI-2 USB is connected
- Last active: The last set status (supply inactive/active) is saved and applied.

The delivery default is OFF



Please note that the **maximum bus supply must not exceed 250mA**. If the external bus supply already delivers 250mA, the 30mA of the DALI USB should not be activated.

Application Software – DALI Cockpit

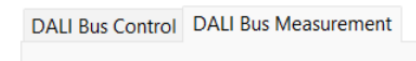
The Lunatone DALI Cockpit Software package is a configuration and monitoring tool for DALI systems. DALI devices can be addressed, and configured. The DALI bus communication can be monitored with the included DALI Monitor.

The manual of the DALI Cockpit can be found here: https://www.lunatone.com/wp-content/uploads/2018/03/DALI-Cockpit_StartUp_Guide_Manual_EN_M0010.pdf

Measurement Options



The second tab "DALI Bus Measurements"



provides various measurement values for testing the DALI system:

DALI Bus Status

The DALI bus status displays a summary of all measurements. The status indicator (circle) is red if one or more errors are pending, yellow if one or more warnings are pending, and green otherwise. The errors or warnings are highlighted in red or yellow in the other sections. Errors that are no longer pending can be removed by selecting "Reset."

DALI Bus Utilization

The DALI bus utilization display shows the pending bus communication as a current value ("Now"), the average value for the past minute ("Last Minute"), and the average value for the entire connection time ("Maximum"). At maximum bus utilization (100%), no more DALI frames can be sent due to too high bus traffic (the values correspond to DALI priority 5). High loads in "Now" and "Last Minute" can occur due to addressing or reading a device but are notable if they occur without such processes. These high readings could then, for example, be caused by units that regularly send queries or commands. It is recommended to maintain a bus utilization over extended periods in the running multi-master system below 75% to ensure communication of all units on the bus system.

DALI Bus Voltage

The DALI Bus Voltage display shows the current bus voltage. The Min and Max values below show the minimum and maximum bus voltage reached since the measurement recordings or since a manual reset, triggered with the button "Reset".

Sudden Min values can indicate the supply failing on high bus communication loads.

DALI Bus Signal Integrity

Signal integrity describes the quality of the transmitted DALI frames. Errors due to incorrect timing and DALI frame edges are displayed here.

Errors in this section will indicate a DALI device not following the DALI-2 timing rules.

DALI devices will not have as strict timing as DALI-2 devices!

DALI Bus Current

The maximum current and the approximate available current reserve can be measured using the test buttons.

Too small a power reserve means that the system could be overloaded if there is a lot of bus communication.

DALI Monitor

With the DALI-2 USB Pro, additional measured values can be displayed in the DALI Monitor.

For each DALI command, the DALI Monitor displays the frame priority, frame high level, low level, maximum timing deviation, and the bus idle time before the command.

High Level:	19.0V	Maximum Timing Deviation:	5µs
Low Level:	2.3V	Bus Idle Time before Frame:	17.5ms

DALI commands that fall outside of the specifications in the DALI-2 standard are marked in red in the DALI Monitor.

(Specifications resulting in errors: high level <= 9.5V; low level >= 6.5V, timing deviation > 55µs, idle time <=2.4ms)

DALI Monitor Example: early device answer timing

High Level: 16.0V
Low Level: 2.6V

Maximum Timing Deviation: 77µs
Bus Idle Time before Frame: 4.6ms

find Hex:
find Addr:
find Cmd:

N	Type	Frame	Address	Command	Date	Time	Delta	Priority	Low	Idle	Timing Dev
5...	DALI16 Query	2d 90	A22	QUERY STATUS	06/24/25	19:40:07.264	420ms		0.2V	>25ms	10µs
5...	DALI8 Answer	00		= 0 (0x00)	06/24/25	19:40:07.276	12ms	Early answer	2.6V	4.6ms	77µs

Interface Configuration and LUBA Protocol

For the DALI-2 USB interface the following settings should be configured for transmission (38400,8,n,1).

transfer rate	38400 Baud
number of data bits	8
parity bit	no
stop bit	1

The DALI-2 USB supports the transmission of Standard DALI commands as well as several proprietary protocol extensions:

- standard DALI (16Bit)
- standard DALI (8Bit), backchannel
- standard DALI (24Bit, DALI-2) for control devices and event messages
- eDALI, special 25bit protocol (24bit data) - Tridonic
- different bit numbers: e.g. 17Bit (special DALI frame by Helvar)

The DALI-2 USB offers sending and receiving of commands as well as the ability to monitor and observe the DALI-line communication. In monitoring mode each message will be transmitted to a PC if it corresponds to one of the supported protocols.

An easy transmission protocol is implemented for communication with the DALI-2 USB interface, called LUBA Protocol (Lunatone universal Building and Automation Protocol).

Supported Commands:

General DALI commands

- **Read/Write DALI Settings** – read and write of DALI settings
- **Read DALI Status** – read the DALI interface status
- **add DALI Frame to TX Buffer** – add DALI commands to the send buffer
- **add 16bit DALI Frame to TX Buffer** – add 16-bit DALI commands to the send buffer
- **add 24bit DALI Frame to TX Buffer** – add 24-bit DALI commands to the send buffer
- **add eDALI Frame to TX Buffer** – add eDALI commands to the send buffer

Commands for DALI addressing

- **Read Device List** – read the device list stored in the device
- **Device Search**) – search for addressed devices
- **Addressing**– start DALI addressing (new installation or system extension)
- **Find Duplicates**– find devices with the same address
- **Delete Device**– delete the DALI address of a specific device

Special Commands

- **Read Device Types**— read DALI device types
- **Read/Write Memory Bank**— read or write memory bank entries
- **Fade to Level / Color**— Fade to a certain light level and / or colour value
- **Read / Store Scene**— read or write scene values

System commands

- **Query Device Info** – read out device information
- **Read/Write Device Name** – read or write name of the interface
- **Query Device Descriptor** – read device descriptor
- **Read / Write User Definable Memory** – read or write user definable memory
- **Makro Status** – Status Display of the commands created as macros and, if necessary, stop running macros. Read status of commands

A detailed description of the commands, their command numbers and structure can be found in the LUBA protocol description:

https://www.lunatone.com/wp-content/uploads/2021/04/LUBA_Protocol_EN.pdf

The data transfer can be processed by any program that supports the respective protocol.

Python Example code for a simple project can be downloaded here:

www.lunatone.at/projects/LUBA/lubadevkit.zip

USB, Firmware Update and Windows-Installation

The DALI-2 USB is recognized as hardware interface / serial port interface. Windows 10 and higher includes automatic drivers for recognizing the device. Drivers for windows 7 and lower are available on request.

After installation the device can be found in the Windows Device Manager section "Ports (COM)".

Any DALI USB firmware update will be carried out automatically via USB by the program "DALIBusServer.exe". This program is part of the DALI Cockpit Software package and will be installed automatically with the DALI Cockpit.

Purchase Information

Art.Nr. 24138246-30-DO: DALI-2 USB Professional 30mA, back box module, integrated switchable bus power supply (30mA)

Art.Nr. 24138246-30-HS: DALI-2 USB Professional 30mA, DIN rail module, integrated switchable bus power supply (30mA)

Additional Information and Equipment

DALI-Cockpit – free configuration tool for DALI systems

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

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 compatibility with other devices must be tested in advance to the installation.