DALI-2 USB

Datasheet

DALI USB Interface

Communication interface between PC

and modules on a DALI Bus

USB 30mA Art. Nr. 24138215-30

DALI-2 USB 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 and USB interface
- version with integrated bus power supply (30mA): art. nr. 24138215-30
- 2 sets of DALI terminals for easy connection - signal line can be looped through

Specification, Characteristics

type	**DALI-2 USB 30mA**
article number	24138215-30
GTIN	9010342014000

USB Connection	
input type	USB C
USB cable included	USB C – USB C
typ. current consumption USB	40mA

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 … +75°C
rel. humidity, none condensing	15% … 90%
general data:	

dimensions (l x w x h)	59x33x15mm
mounting	Installation box, integration in class II devices
rated max. temperature tc	70°C
expected life time @tc	50.000 h
protection class	II in intended use
protection degree housing	IP40
protection degree terminals	IP20

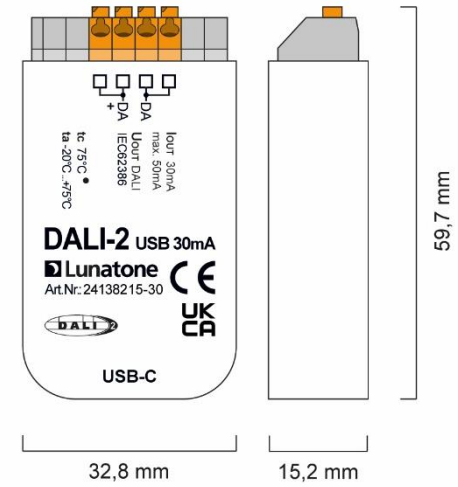
terminals:

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

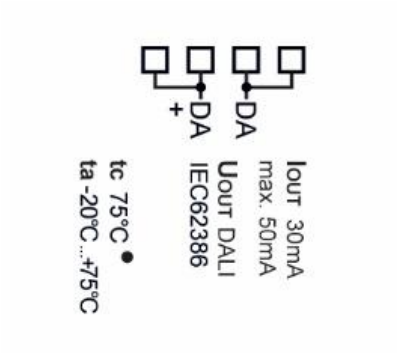
standards:

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

DALI-2 USB:



dimensions DALI-2 USB 30mA



connection plan DALI-2 USB 30mA

Connection and Electrical Specification

The DALI-2 USB module is supplied by the DALI-line (current consumption ~6mA) as well as by USB (current consumption 10mA/40mA max). 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 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.
- **DALI-2 USB 30mA**: 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.

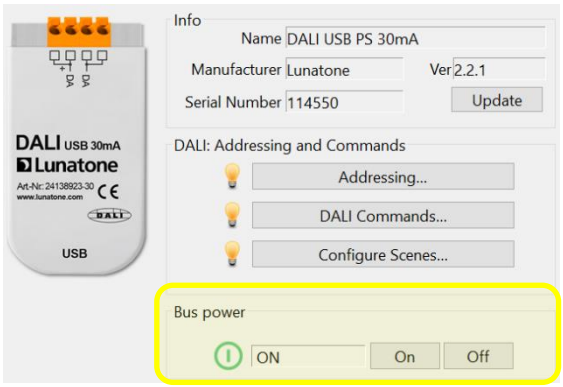
The voltage drop on the DALI line must not exceed 2V at maximum length (300m) and maximum bus load (250mA).

Available Device Types

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. This power supply is switched off by default and can be activated in the DALI Cockpit configuration software.

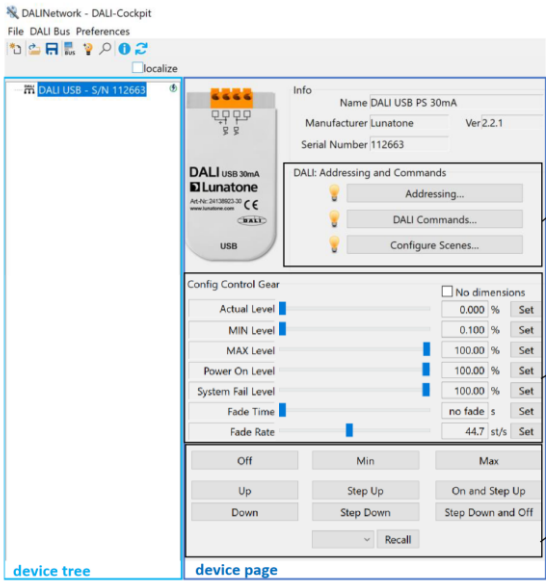
Please note that the **maximum bus supply must not exceed 250mA**. If the external bus supply already delivers 250mA, the 30mA of the DALI USB should not be activated.



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



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. 24138215-30: DALI-2 USB 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

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Requests: sales@lunatone.com

www.lunatone.com

Disclaimer

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

