



DALI SCI RS232

Datasheet

DALI RS232 Interface

Communication interface between a PC (or PLC) and modules in a DALI lighting system

Art. Nr. 22176438-HS

Replaces:

Art. Nr. 86458525 (DIN-Rail)

Art. Nr. 22176438 (DIN-Rail RJ45)

Art. Nr. 24166096 (Mouse)

DALI SCI RS232 Interface

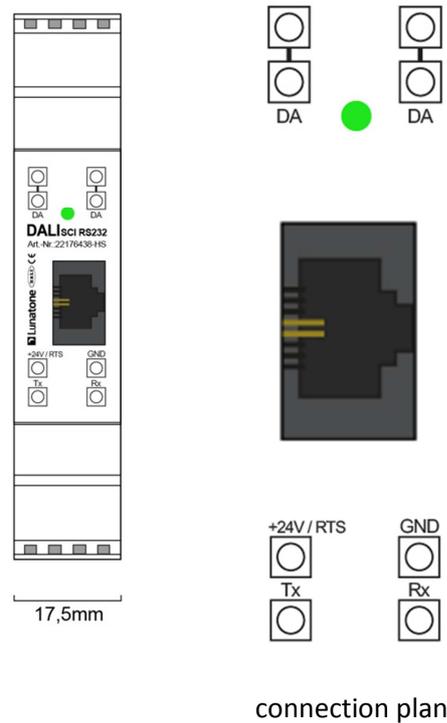
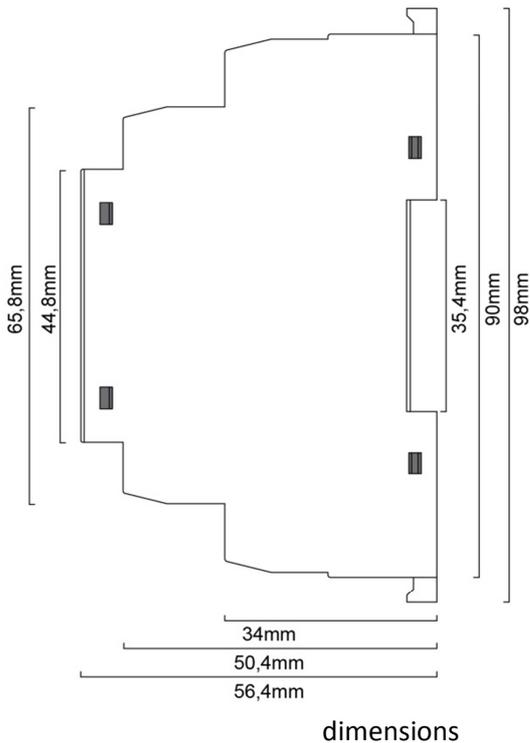
Overview

- Module with a serial interface to communicate with components in a DALI-line via RS232
- A simple way to connect a PC or PLC to a DALI network.
- bidirectional data transfer
- Addressing, configuration, status requests and monitoring
- collision detection
- Support for several proprietary DALI-protocol extensions.
- Electrical isolation
- supply via DALI-line and serial interface
- Double DALI-terminals



Specification, Characteristics

| type | DALI SCI RS232 |
|--|---|
| article number | 22176438-HS |
| GTIN | 9010342010187 |
| electrical data: | |
| typ. current consumption DALI | 10mA |
| max. current consumption DALI | 10mA |
| SCI-protocol | RS232 38400Baud, 8databits, no parity, 1 stopbit (38400,8,n,1) |
| supply | 6-24V DC |
| typ. supply current | 5mA |
| max. startup time | 150ms |
| technical data: | |
| storage and transportation temperature | -20°C ... +75°C |
| operational ambient temperature | -20°C ... +75°C |
| protection class | IP20 |
| connectors RS232 | screw terminals (max. 2.5 mm ²) RJ45 female |
| connectors DALI | screw terminals, max. 2,5mm ² |
| dimensions | 90mm x 17.5mm x 18mm |
| mounting | dinrail |



Connection, Installation

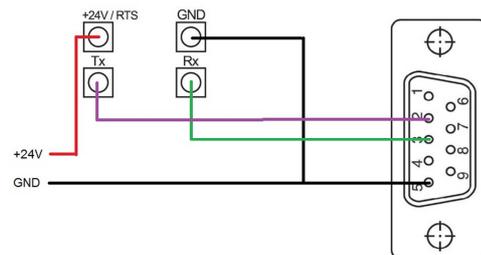
The DALI SCI RS232 is connected to the DALI-line. A typical value for the current consumption is 10mA.

The connection to the DALI-line is polarity free. For easy installation each DALI-terminal is executed as doubleclamp (linked contacts are marked on the housing).

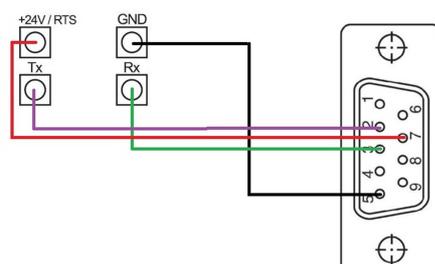
The DALI-line and the RS232 are electrically isolated.

The RS232 can be accessed either via a RJ45 connector or via screw terminals. Beside the communication signals (RxD, TxD, GND) a supply is required (6V-24V, GND). Instead of connecting 24V the RTS-Pin of the RS232 connector can be used. A typical value of the current consumption is 5mA.

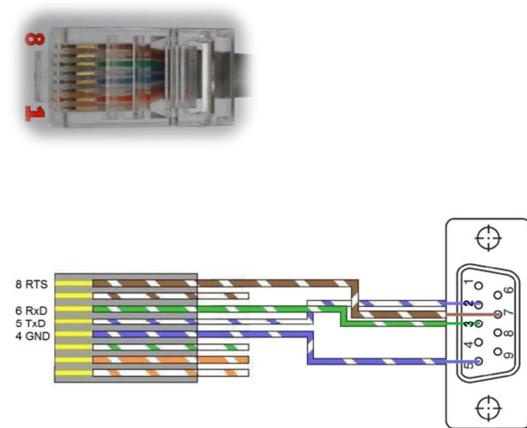
Installation with external 24V supply, connected via screw terminals (SubD to RS232 of a PC):



Installation with supply via RTS-Pin:



Connection diagram of a cable from RJ45 -> SubD (for direct connection to the RS232 of a PC, supply via RTS-Pin):



| SubD | RJ45 | Signal description |
|------|------|--------------------|
| Pin5 | Pin4 | GND |
| Pin2 | Pin5 | TxD |
| Pin3 | Pin6 | RxD |
| Pin7 | Pin8 | RTS |

Interface Configuration

In order to ensure asynchronous communication with the interface the settings of the transmission channel should be configured as followed (38400,8,n,1).

| | |
|---------------------|-------------|
| transfer rate | 38400 Baud |
| number of data bits | 8 |
| parity bit | no |
| stop bit | 1 |
| directionality | half duplex |

DALI Specifications and Operating Modes

The DALI SCI RS232 interface supports the transmission of Standard DALI commands (8

and 16bit) 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 proprietary 25bit protocol (24bit data)
- 17bit DALI, special DALI frame by Helvar
- DSI on DALI-line (16bit and 8bit), DALI-line will be held LOW for 10ms before and after sending a DSI-frame

The DALI RS232 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.

Transmission Protocol

The communication protocol between PC and DALI SCI RS232 is implemented as followed.

Both forward and backward data frame between PC and DALI RS232 consist of 5 bytes.

Forward frame:

| | | | | |
|---------|---------|---------|---------|----------|
| 8bit | 8bit | 8bit | 8bit | 8bit |
| Control | Data_HI | Data_MI | Data_LO | Checksum |

Control

| bit7 | bit6 | bit5 | bit4 | bit3 | bit2 | bit1 | bit0 |
|------|-----------------|------|------|------|------|------|------|
| ME | identify /nDALI | Echo | 0 | 0 | MS | | |

| | | |
|---------|---------------------|---|
| bit 7: | monitor enable (ME) | 1: enable monitoring (if enabled all received DALI data will be transmitted to PC) |
| bit 6: | identify /nDALI | 1: no data on DALI-line, communication only between PC and SCI2 0: DALI output enabled (data on DALI-line) |
| bit5: | Echo | 1: immediate response (no wait for an answer from the DALI-system) 0: Wait for DALI response (max. 10ms, if no DALI-answer within this period, "NO" will be sent) |
| bit4: | Send Twice | the command is a twice command (thus to be sent 2x in 100ms) |
| Bit3-0: | mode selection (MS) | 0: not used, reserved 1: not used, reserved 2: send DALI (8bit) in Data_LO 3: send DALI (16bit), data in Data_MI, Data_LO 4: send eDALI (24bit), data in Data_HI, Data_MI, Data_LO 5: send DSI on DALI-line; 8 bit data in Data_LO, 16bit data in Data_MI, Data_LO 6: Send 17bit DALI, 16bit in Data_MI, Data_LO; 17. bit in LSB of Data_HI (=last bit after DALI-frame) 7: not used, reserved 8: send DALI-2 24bit forward frame, data in Data_HI, Data_MI, Data_LO 9-15 reserved |

Data_HI, Data_MI, Data_LO

The data are transmitted within these bytes. For detailed information check the selected mode (control byte, bit 3-0).

Checksum

XOR-ing the previously submitted 4 bytes.

Backward frame (Response from SCI2):

| | | | | |
|--------|---------|---------|---------|----------|
| 8bit | 8bit | 8bit | 8bit | 8bit |
| Status | Data_HI | Data_MI | Data_LO | Checksum |

Status

| | | | | | | | |
|------------|------|------|------|------|--------|------|------|
| bit7 | bit6 | bit5 | bit4 | bit3 | bit2 | bit1 | bit0 |
| identifier | | | | 0 | status | | |

| | | |
|---------|------------|--|
| bit7-4: | identifier | 6: DALI SCI ID |
| Bit3-0: | status | 0: OK 1: DALI answer "NO" 2: DALI 8bit in Data_LO 3: DALI 16bit in Data_MI, Data_LO |

| | | |
|--|--|---|
| | | 4: eDALI 25bit in Data_HI, Data_MI, Data_LO 5: DSI on DALI data (8bit if Data_MI=0; else 16bit in Data_MI, Data_LO) 6: 17bit DALI (16bit in Data_MI, Data_LO, 17. bit in Data_HI) 7: error: checksum: data=1; DALI-Bus short circuit: data=2; DALI receive error: data=3 unknown command: data=4 Collision detected: data=5 8: DALI2 24Bit in Data_HI, Data_MI, Data_LO 9-15: not used |
|--|--|---|

Data_HI, Data_MI, Data_LO and CheckSum comply with the rules of the forward frame.

We recommend checking the backward frame anyway to ensure that the DALI RS232 has processed the DALI command and is ready to receive a new one. The DALI SCI RS232 does not have a buffer for commands.

Please note that DALI-2 24bit forward frames, sending twice command and detailed info about errors in backward frame is supported only by the last recent DALI-2 certified version. In older version the corresponding bits and functions are not used.

Configuration Tool & Monitoring

Lunatone offers a configuration and monitoring software, called the "DALI-Cockpit". With the help of the DALI-Cockpit the entire functional range of the DALI SCI RS232 interface can be used without having to implement the transmission protocol by yourself.

Alternatively the data transfer can be processed by any program that supports the protocols described in this datasheet.

Additional Information and Equipment

Lunatone datasheets and manuals
<http://lunatone.at/en/downloads/>

Lunatone DALI products
<http://www.lunatone.at/en/>

Contact

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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.