

OPERATING MANUAL

DALI to DMX Dekoder 7064B-H Mk1



RoHS
compliant

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SOUNDLIGHT *The DMX Company* Bennigser Str. 1 30974 Wennigsen-Steinkrug Tel.: 0511-3730267

Thank you for choosing a SOUNDLIGHT device.

The SOUNDLIGHT DALI-DMX Converter 7064B-H is an intelligent Converter, which converts DALI commands to DMX-512 output data. The interface is compatible with all standard DMX equipment. Its special advantages include:

- universal protocol decoding
Recognizes most important DALI commands. The data output format is compatible with USITT DMX512/1990, ANSI E1-11 DMX512-A, and DIN56930-2.
- future-proof
The unit is software-controlled and can easily be adapted to future protocol enhancements
- simple supply
Supply voltage is 230V AC 50 Hz standard mains power.
- signal loss hold function
In the case of a loss of the drive signal the last valid setting will remain intact.
- universal mounting
Standard DIN rail mounting allows easy integration in building control systems.
- cost-effective
The SOUNDLIGHT 7064B-H is a cost-effective solution for many purposes.

APPLICATIONS

The Converter 7064B-H is intended to control DMX512 equipment from DALI lighting control systems. This unit can be used with architectural lighting systems, building control systems and related applications. The converter is a bus participant in an externally powered standard DALI bus system. It occupies 16 predefined (short addressed) DALI addresses to simulate electronic ballasts and generates DMX512 output from these addresses.

The unit responds to automatic DALI addressing. This enables the 7064B-H to be used with fully automated DALI controllers, such as building bus protocol converters. When using automatic addressing, the order of the DMX output is being defined by the order of the DALI addresses assigned by the DALI controller.

WARNING:

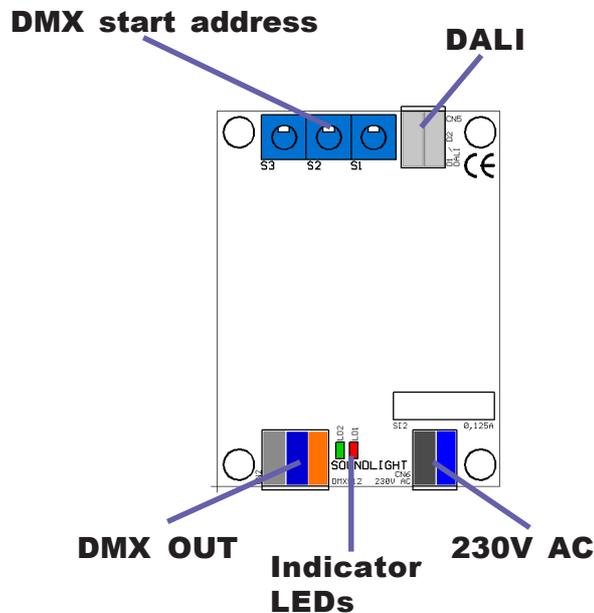
Danger to Life: This unit uses line voltage (230VAC). Mains voltage can be hazardous, risk of shock is present. Installation must only be performed by trained and skilled technicians. Make sure that the unit is being disconnected from mains during installation and system setup.



CONNECTORS

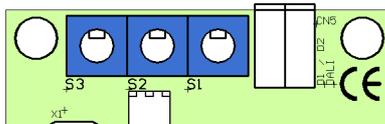
The decoder 7064B-H consists of these input and output connectors:

| | | | |
|------------|-----------------------------------|----------|-----------------------|
| CN6 | POWER SUPPLY 230V AC 50 Hz | | |
| 1 | black: | L | 230V AC |
| 2 | blue: | N | 0V AC |
| CN5 | DALI Input | | |
| 1 | grey: | D1 | polarity-insensitive |
| 2 | grey: | D2 | polarity-insensitive |
| CN4 | DMX Data Output | | |
| 1 (grey) | GND, screen | | connects to XLR Pin 1 |
| 2 (blue) | DMX - | | connects to XLR Pin 2 |
| 3 (orange) | DMX + | | connects to XLR Pin 3 |



START ADDRESS

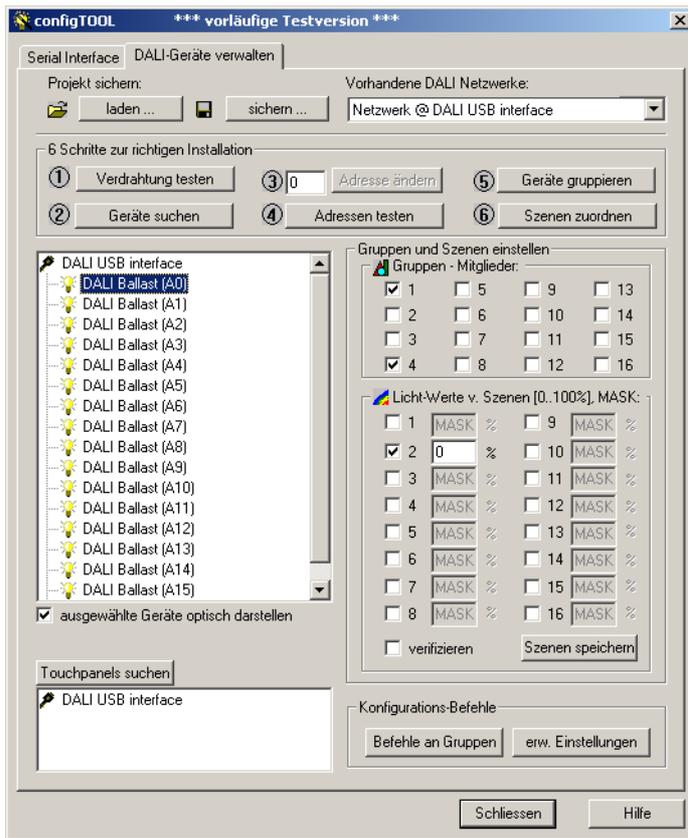
The DMX start address is preset to 001 and can be adjusted via the onboard start address switch block. The unit will send 256 DMX data slots with 16 channels filled, that is, with DMX start address set to 001, DMX channels 001 to 016 contain the output data. Each DMX address reflects the respective DALI device number; that is: DALI device #3 data will be output of DMX data channel (DMX data slot) number 003.



The start address switches are to set the DMX start address, from left to right: S3: Hundreds, S2: Tens, S1: Ones

Valid start address settings include 001 thru 241. Settings above 241 may not output all DMX data generated.

The DALI protocol is firmware encoded and processes DALI addresses 1 thru 16, and DALI groups 1 thru 16. All intensity values and parameters sent to any of these DALI addresses will be processed by the interface.



Please note that the 7064B-H comes with pre-set DALI short addresses 1...16 for easy setup. They can be re-addressed by defining another DALI base address, which will maintain the data block. For changing the DALI base address setup of the 7064B-H, see chapter "DALI SETUP". Alternatively, the DALI controller may assign all addresses automatically.

SETUP

We recommend to use our USB-DALI Adapter for a simple setup of the DALI system. This chapter shows a quick introduction to DALI programming using our interface. If using other type of DALI controllers, please refer to the respective instruction manual.

Connect these devices to the DALI bus:

- a DALI PSU
- the USB DALI Adapter
- the DALI DMX Converter 7064B-H

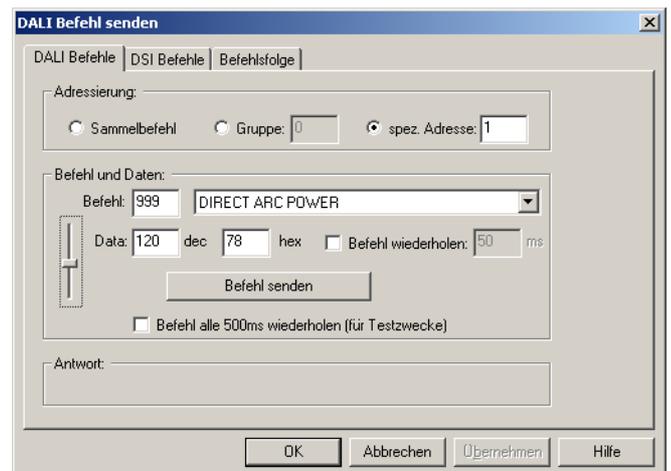
Please connect a DMX tool (DMX Tester), a dimmer Pack or a DMX colour changer to the 7064B-H DMX output. This is to identify and monitor a change of DMX values. Of course a DMX tester, such as our 3512A, would be most helpful since it allows direct reading of DMX channel values.

Start the "configTool" program which comes with the USB-DALI tool and click button (2) "search devices". Then simply click "continue (weiter)" on all screens without changing any settings. This will lead to a list of 16 DALI Devices (ballasts), which are being simulated by the 7064B-H.

By clicking the individual ballasts you can see the group assignment; you may change this to match your needs. Simply click the check boxes to set or reset a group membership.

Then click the button "extended settings (erw. Einstellungen)". This will take you to a page which allows to issue single DALI commands.

The screen shot below shows how to send a "Direct Arc Power" command for the specific DALI

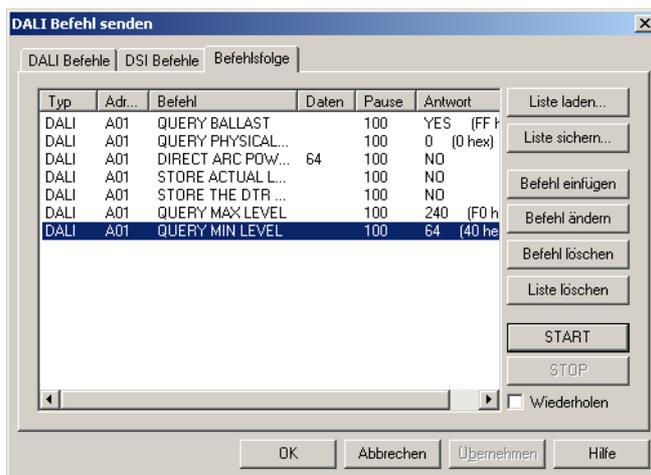


address #1. Please note, that programming nomenclature always starts with a "0", that is, "0" denotes DALI unit #1, "1" denotes DALI unit #2, and finally "15" denotes DALI unit #16.

The data parameter can be entered manually or by moving the fader. Then click the "send command (Befehl senden)" button to issue the command. Using the example shown DMX channel 2 should be driven to a value of 120, that is approximately 50% intensity.

Please note the the full DMX value range is from 000 (min) to 255 (max). The DALI value range is from 000 to 254 only, because value 255 is used for the DALI-specific "MASK" command. (A MASK value normally excludes the DALI device from that command). If the DMX output value 255 is used (e.g. for firing a lamp or resetting a device), it can only be generated using a Direct Arc command!

If "global command (Sammelbefehl)" is selected, ALL outputs will be driven to the value selected simultaneously.



Use the tab "command list (Befehlsfolge)" to create and save command sequences, which will be used frequently. A command list may be helpful for initial initialization of the interface: set and store values for min level, max level etc.

A typical command sequence would be:

- Set an Arc Level.
- copy the actual level to the Data Transfer Register (DTR)
- Store the DTR to the appropriate destination register.

Refer to a DALI guide for more information about DALI commands.

DALI COMMANDS

Not all DALI Commands are supported for DMX512 conversion. Use the "Direct Arc" command whenever possible to generate DMX output.

This is a list of supported commands:

| | |
|-----|-------------------------------|
| 0 0 | off |
| 0 1 | increase |
| 0 2 | decrease |
| 0 3 | increase one step |
| 0 4 | decrease one step |
| 0 5 | goto MAX level |
| 0 6 | goto MIN level |
| 0 7 | decrease and OFF if necessary |
| 0 8 | increase and ON if necessary |
| 1 X | goto scene X |

COMMANDS

| | |
|-----|----------------------------|
| 2 1 | save actual level to DTR |
| 2 A | save DTR as MAX level |
| 2 B | save DTR as MIN level |
| 2 D | save DTR as Power ON level |

| | |
|-----|--|
| 2 E | save DTR as FADE TIME |
| 4 X | save DTR as Scene X, where: 11111111 (\$FF) = delete scene |
| 5 X | delete Scene X |
| 6 X | add to group X |
| 7 X | remove from group X |

QUERIES

| | | |
|-----|-------------------------------|--|
| 9 1 | Query: ballast present | |
| 9 3 | Query: output present | |
| 9 7 | Query: version number | |
| 9 8 | Query: content of DTR | |
| 9 9 | Query: device type | response: 00 for standard device |
| 9 A | Query: physical minimum level | response: 01 or 86 (depends on characteristic) |
| A 0 | Query: actual level | |
| A 1 | Query: maximum level | |
| A 2 | Query: minimum level | |
| A 3 | Query: power on level | |
| B X | Query: level scene X | |
| C 0 | Query groups 0-7 | „1“ = group set LSB = group 0 |
| C 1 | Query groups 8-15 | LSB = group 8 |

The RESET command will access ALL addresses and thus should be used carefully. Addressing commands are supported.

SETUP / STARTUP

Upon Power-Up the Power-ON Level will be activated. POWER ON is set to 100% by default and can be re-programmed using DALI commands:

Command sequence: command 257: SET DATA TRANSFER REGISTER to xxx (level value)
command 45: STORE THE DTR AS POWER ON LEVEL

This command can be issued in broadcast mode (all addresses affected), in single address mode or in group address mode.

DALI BUS POWER LOSS

A loss of power on the DALI bus will automatically be detected after approx. 0,5 seconds. The LEDs will change from green to red. The SYS FAIL level setting will be recalled. Default setting is 100%. The Sys Fail level can be re-programmed using DALI commands:

command sequence: command 257: SET DATA TRANSFER REGISTER to xxx (level value)
command 44: STORE THE DTR AS SYSTEM FAILURE LEVEL

This command can be issued in broadcast mode (all addresses affected), in single address mode or in group address mode.

On the DALI input, the 7064B-H must at least be connected to:

- a DALI power supply
- a DALI bus master



Some touch boards, e.g. the Tridonic DALI touch board, already comprise a DALI power supply. As soon as the DALI bus is connected and powered up, the green LED will indicate that the 7064B-H is ready to work.

To start initially, set the DMX start address to 001.

Disconnecting the DALI bus will stop the 7064B-H from working and output the predefined SYSTEM FAILURE LEVEL.

Several functions can be configured to meet specific needs. All settings are retained in nonvolatile memory and are restored at power-up. User-configurable settings are read at power-up. To make changes, proceed as follows:

- power off the unit.
- set the required programming address
- power on the 7064B-H. Both LEDs should blink alternatively 10 times.
- restore the standard start address, e.g. 001

CHANGING THE DALI BASE ADDRESS

Upon delivery, the DALI base address is set to 1. That is, the 7064B-H will occupy DALI addresses 1-16. You can set the DALI base address as follows:

- set a programming address of 800+ base

Example: To set a DALI base address of 40 set the switches to 840. This will generate a DALI address range of 40...55. The maximum offset allowed is 49.

Setting the base address to 0 (programming address "800") will erase all address setup information. The unit must then be re-addressed completely: by automatic DALI addressing or by selecting another DALI base address.

CHANGING THE DALI DEVICE TYPE

Upon delivery, the DALI device type is set to 0, that is, the 7064B-H will preset itself as electronic ballast. The device type may be changed. You can set the DALI device type as follows:

- set a programming address of 880 + device type

Common device types are:

| | | |
|------|---|---|
| 0 | = | electronic ballast (recommended, default setting) |
| 1 | = | EM ballast |
| 2 | = | HID ballast |
| 3 | = | Halogene converter |
| 4 | = | Incandescent lamp dimming |
| 5 ff | = | undefined |

Example: To set all devices to identify themselves as halogene converters, set the switches to 883

CHANGING THE MAX DMX LEVEL

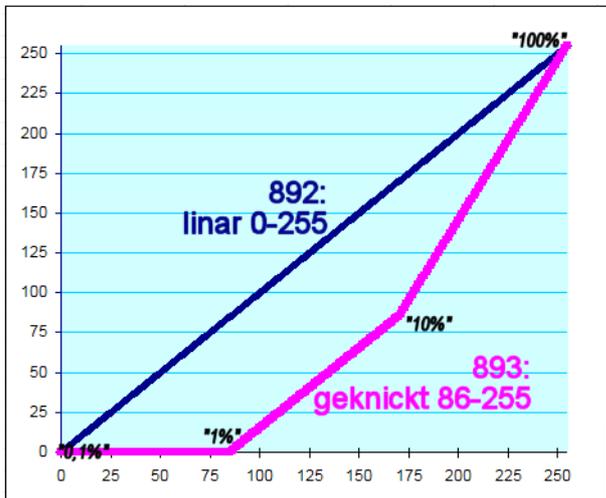
The DALI value range is defined from 0 ("OFF") to 254 ("FULL") , whil DMX levels are defined from 0 ("OFF") to 255 ("FULL"). A direct conversion would generate a missing value of 255, or, in other words, the maximum output could never be reached. If this is required (e.g. RESET-function, lamp ignition etc.) the converter 7064B-H can be adjusted to convert the DALI 100% level(254) to the DMX 100% level (255).

```
programming address: 890: maximum DMX 100% output value is 255 ($FF)
programming address: 891: maximum DMX 100% output value is 154 ($FE) (DEFAULT)
```

CHANGING THE CHARACTERISTIC

The output characteristic follows a linear curve, that is, all DALI parameter values are output as DMX values as they appear. A DALI value of 196 will thus generate a DMX value of 196.

There are, however, many DALI controllers starting at an intensity level of 1% (DALI value 086). Outputting and starting at a DMX value of 86 would drive most DMX drivers to more than 30% intensity immediately. That is why we have introduced a bended characteristic starting at 086 (1%).



```
programming address: 892: linear characteristic 000...255 (DEFAULT)
programming address: 893: bended characteristic 086...255
```

Please note that the DALI intensity curve always follows a logarithmic law. Most simple DMX drivers often use a linear (linear angle) characteristic, which may produce a different behaviour when fading. Always make sure that DMX drivers using a logarithmic intensity curve (e.g. SOUNDLIGHT DMX-LED-Driver 9006A-H) are being specified for use with the 7064B-H converter.

CHANGING THE DMX CHANNEL ALLOCATION

The DMX data are output as a block of 16 data slots beginning with the start address set. Example: start address set to: 11

| | | | | | | | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Address | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| Ballast | - | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | - | - | - | - | - |

Using RGB drivers on the DMX line might generate this allocation:

| | | | | | | | | | | | | | | | | | | | | | | |
|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Address | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| Ballast | - | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | - | - | - | - | - |
| Function: | - | R | G | B | | | | R | G | B | | | | R | G | B | | | | | | |
| | | | | | R | G | B | | | | R | G | B | | | | | | | | | |

Thus setting the DMX start address of the first driver requires a setting to 11, the second must be set to 14, the third to 17, the fourth to start address 20, the fifth to 23.

To connect RGB drivers using more than three DMX data slots (e.g. drivers incorporating extra effects or master fader control) the DMX data slot allocation can be re-arranged to provide three

DATA slots followed by two empty (unused) slots:

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|-----|
| Address | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | ... |
| Ballast | - | 01 | 02 | 03 | - | - | 04 | 05 | 06 | - | - | 07 | 08 | 09 | - | - | 10 | 11 | 12 | - | - | 13 | etc. | |

Alternatively, groups of four can be defined to match RGBW- or RGBA-drivers:

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| Address | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | ... |
| Ballast | - | 01 | 02 | 03 | 04 | - | - | 05 | 06 | 07 | 08 | - | - | 09 | 10 | 11 | 12 | - | - | 13 | 14 | 15 | 16 | |

All intermediate data slots are filled with 0. This can be changed to 255 (100%) if a full level (e.g. master value) is needed.

Use these programming addresses:

programming address: 894: 16-slot data block beginning with start address (DEFAULT)
all other data slots: 000
programming address: 895: 5 RGB blocks using 2 intermediate data slots
programming address: 896: 4 RGBW blocks using 2 intermediate data slots
programming address: 897: change intermediate data slot value to 255

RESTORE FACTORY SETTINGS

Upon delivery, the interface is configured using these settings:

| | | |
|--------------------|-----|--|
| DALI OFFSET: | 1 | (first DALI address is "1") |
| DEVICE TYPE: | 0 | (electronic Ballast) |
| KENNLINIE: | | linear (fullrange) |
| DMXAUSGABE: | | 16 data slots (1 Block) |
| MINLEVEL: | 01 | |
| MAXLEVEL: | 254 | |
| POWER ON LEVEL: | 254 | |
| SYS FAILURE LEVEL: | 254 | |
| GROUP ASSIGNMENT: | | slot 1 = group1, slot 2 = group 2, slot 3 = group 3 etc. |
| Szene 1: | | all OFF (0%) |
| Szene 2-16: | | all ON (100%) |

To restore these parameters use:

programming address: 899: restore Factory Defaults

TECHNICAL DATA

| | |
|------------------------|---|
| Power supply: | 230V AC 50/60 Hz, ca. 2,4W |
| DALI IN: | optically isolated, potential free, polarity independent |
| DALI input current: | approx. 2,2mA @16V |
| DALI Devices: | 16 |
| DMX OUT: | data format according to: USITT DMX512/1990, ANSI E1-11 DMX512-A, DIN56930-2 |
| DMX OUT: | 256ch w/ 16ch data |
| Mounting: | DIN rail |
| Protection: | IP20 |
| Operating temperature: | 0-50°C |
| Storage temperature: | -20-+70°C |

Dimensions: 65 mm x 105 mm x 65 mm
Weight: 260g
Order code: 7064B-H

DISTURBANCES

If a trouble-free operation cannot be guaranteed, disconnect the interface and secure it against unwanted operation. This is especially necessary, when

- the unit has visible damages;
- the unit does not operate;
- internal parts are loose;
- connection cables show visible damages.

LIMITED WARRANTY

This instrument is warranted against defects in materials and workmanship for a period of 12 months, beginning with the date of purchase. The warranty is limited to repair or exchange of the hardware product; no further liability is assumed. SOUNDLIGHT is not responsible for damages or for loss of data, sales or profit which arise from usage or breakdown of the hardware product. In Germany, SOUNDLIGHT will repair or replace established defects in hardware, provided that the defective part is sent in, freight paid, through the responsible dealer along with warranty card and/or sales receipt prior to expiration of warranty.

Warranty is void:

- when modifying or trying to repair the unit without authorisation;
- modification of the circuitry;
- damages by interference of other persons;
- operation which is not in accordance with the manual;
- connection to wrong voltage or current;
- misuse.

CE MARKING



The unit has been tested in our lab and has been marked to comply with CE requirements. To ensure compliance, use grounded power leads only and make sure that properly shielded data lines (CAT5, DMX data cable or Digital Audio cable to AES/EBU specifications) are used. Any modifications not approved by the manufacturer may void CE compliance.

SERVICE

There are no parts within the DMX interface 7064B-H which require the user's attention. Should your unit require servicing, please send it to the factory, freight paid.

INTERNET-HOTLINE

Please check our internet domain <http://www.soundlight.de> for new versions, updates etc. If you have any comments which may be worth considering, please send a message to support@soundlight.de. We will check your message and reply accordingly.

END-OF-LIFETIME



When the useful lifetime of this product has been reached, it must be disposed of properly. Electronic devices must not be placed in domestic waste. Contact your local authorities for information about the nearest collection facility. SOUNDLIGHT is a WEEE registered company (WEEE DE 58883929)