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OPERATING MANUAL

DMX / LCN Dekoder SLCN8208 Mk1 RDM

DMX RDM RoHS compliant

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DMX -> LCN Decoder SLCN8208A

Thank you for choosing a SOUNDLIGHT product.

The SOUNDLIGHT DMX->LCN Decoder SLCN8208A is an intelligent decoder, converting digital lighting control information conforming to USITT DMX-512/1990, ANSI E1-11 DMX512-A, ANSI E1-20 DMX RDM or DMX DIN 56930-2 to LCN compatible key commands.
Its special advantages include:

- **universal protocol decoding**
  Recognizes all variants of the protocol as defined by USITT / ESTA / ANSI/DIN

- **future-proof**
  The unit is software controlled an can easily be adapted to any change in protocol definition.

- **universal switching**
  The decoder features four DMX personalities and can easily be adapted to specific switching needs.

- **simple supply**
  The power supply is achieved by its own PSU, power supply is 230V AC

- **signal loss**
  In the case of a loss of the drive signal the last setting will remain intact (selectable).

- **cost-effective**
  The SOUNDLIGHT SLCN 8208A RDM is a cost-effective solution for many purposes.

UNPACKING

Please unpack carefully and check that all items are intact. When leaving our factory, the interface has been in good condition. In case of damage during transport please notify the carrier immediately.

When unpacking, you should identify these items:

* the SLCN8208A Mk2 DMX Decoder Interface
* a 4-conductor IR port connector cable,
* this manual

IMPORTANT NOTE: All configuration can be done via DMX RDM. If you do not have a compliant DMX RDM controller, you may use a start address board 3000P, 3003P or 3005P to manually program start address and DMX personality. Start address boards are available as accessories.

SAFETY ISSUES

This device uses Mains Voltage (230V AC). Mains voltage can be dangerous to health. Refer to a qualified technician when cabling and powering up the interface for the first time. Applicable safety rules must be obeyed.

FUNCTIONAL DESCRIPTION

DMX512 is a level based protocol, while LCN is a command-based system. The DMX/LCN Converter converts DMX512 levels into commands, which may be further processed by LCN systems. The IR port of a standard LCN UP, UPP or SH Module is used to receive the commands. The command set resembles that of the LCN IR transmitter, thus all functions available with standard LCN IR transmission can be used. An additional mode of operation ("follow mode") is using DMX data to ramp LCN outputs A1, A2 and (virtual) output A3 to simulate RGB color control.

LCN SETUP

To connect the DMX->LCN decoder to a LCN installation, you must determine a LCN module to act as data receiver. Connect the SLCN8208 using the 4-wire 8208-LCNK adaptor cable to the IR port of the LCN module. All modules featuring a serial IR input can be used. Standard interfaces include LCN-UP, LCN-UPP, LCN-SH or LCN-HU.

IMPORTANT NOTE:
LCN modules operate directly on live electrical power 230V! Though all LCN data lines are referred to NEUTRAL, they are electrically connected to mains. Isolation to the DMX512 input is provided within the SLCN8208 interface. ***Absolutely make sure to disconnect the complete installation from mains when working on the system and wiring the interfaces.*** Never plug LCN components while mains voltage is present.

Configure the I-input of the receiving module using the LCN setup program. Configure the I input to accept the "big" IR remote control. Select the keyboard entry table (keys "A") to assign keys 1...8.

Use this simple scheme to setup the installation for a first, fast test:

key 1	OFF:	Output 1 OFF
key 1	ON/SHORT:	Output 1 ON/100%
key 1	LONG:	Empty Command
key 2	OFF:	Output 2 Ramp Stop
key 2	ON/SHORT:	Output 2 Toggle
key 2	LONG:	Output 2 Dim 100% 6 Seconds

This allows a first test using DMX data from slot #1 and slot #2. Fader 1 will light output 1 when set (fast) to 100%, Fader 2 will auto-fade output 2 when set to 50%, toggle when set to 100% and stop ramping when reset to 0%. Since on most lighting control desks all faders are doubled with flash keys ("bump buttons"), these buttons can easily be used to switch LCN outputs.

SETUP

To put the decoder to work, power supply, DMX data input and LCN IR output must be connected.

First, connect the SLCN8208 to mains. After some seconds, the ERROR-LED (red) will start blinking. This signals "no DMX data present".

Then apply a valid DMX signal. Any lighting control desk (e.g. SOUNDLIGHT 8106A-FG) can be used. When receiving data, the ERROR-LED will extinguish and the green OK-LED will come up, signalling DMX receive activity.

When ok, connect to the LCN port (make sure to disconnect power before doing so). This will complete the hardware installation of the SLCN8208 DMX->LCN decoder.

CONNECTORS

The decoder SLCN8208A consists of these connectors:

CN1 POWER SUPPLY 230 V AC (Cage Clamp 2-pole)

1	[BLUE]	Neutral
2	[BLACK]	Live 230V
	NOTE:	mains voltage present (danger for life). only wire with power removed!

CN2 DMX Input (cage clamp, 3-pole)

1	grey:	Signal Common (GND)
2	blue:	-DMX
3	orange:	+DMX

The standard DMX connctor is a 5-pin XLR connector (see DIN 56930-2). The pin assignment resembles that of the XLR connector. To connect multiple DMX interface, the signal can be fed thru to the next device, using CN2 as input and output at the same time.

CN3 LCN IR OUTPUT (I-Port-Connector)
Use the supplied adaptor cable to connect to the LCN IR port.

CN4 Start adress board
Connect the start adress board 3000P to program the interface.

LED BLINKCODES

Green LED	Red LED	Status
on	off	OK DMX signal received
off	blinking	Error: no data signal present or out of range
4x blink red/green		saving settings to EEPROM

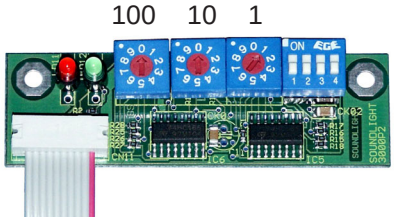
YELLOW LED: RDM-Programming active: address input locked. (see chapter: DMX RDM)

DMX START ADDRESS

It is a commonly used scheme for building automation devices to avoid configuration switches. All settings are stored permanently in non-volatile memory. When installing the decoder for the first time, the output settings (DMX PERSONALITY) and the DMX start address (number of the first DMX data slot, value 001 ... 504) must be programmed.

A start address switch board 3000P2 (decimal switches) or 3003P2 (LED display) is required to set start address and mode of operation. With DMX RDM, no start address board is required. Start address settings and DMX personality selection can be performed via DMX RDM.

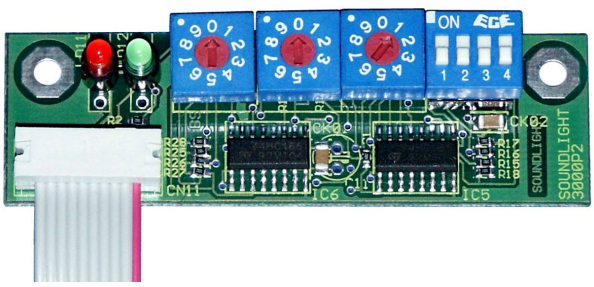
start address board w/ switches
model 3000P



Start address board 3000P

IMPORTANT NOTE: If a start address or personality setting, or a change of DMX HOLD properties has been initiated using DMX RDM commands, the external start address board will be disabled to not interfere with software driven settings. To re-enable the external start address board and take control, simply set any address from 900 to 999 (or: temporarily set the "hundreds" position to "9"). The RDM-LED will extinguish, a programming cycle will be displayed (four times red-green) and the address and DIP switches will take control again.

DIP-SWITCHES



The configuration of the decoder can be set using the DIP switches anoboard the 3000P. Similar to the DMX start address, configuration settings are retained non nonvolatile memory. Thus configuration data will be present even with the address board detached. All configuration setting can alternatively be set using DMX RDM commands. See chapter "DMX RDM" or refer to the separate RDM manual, available from www.rdm.soundlight.de, for more information.

All settings can be performed separately. Factory default is "all OFF", that means:

SWITCH 1,2	**DMX HOLD MODUS**	**S1**	**S2**
	Mode 0: no HOLD, all outputs OFF	OFF	OFF
	Mode 1: no HOLD, all outputs ON	OFF	ON
	Mode 2: DMX HOLD, "last look"	ON	OFF

SWITCH 1 **HOLD:** **default: off = no**
When HOLD has been set, the last received data will be held infinitely.

SWITCH 2 **Off value:** **default: off = all outputs OFF**
When no HOLD has been set, this setting determines the output state.

SWITCH 3,4 **DMX PERSONALITY**

Personality 1:	S3=OFF	S4=OFF	8 keys in key table A
Personality 2:	S3=OFF	S4=ON	8 keys in key table A without LONG command
Personality 3:	S3=ON	S4=OFF	8 keys in key table B
Personality 4:	S3=ON	S4=ON	3 DMX data slots (RGB) as level in group 15

The DMX personality may be set using DMX RDM.

DMX PERSONALITY 1 / 2 / 3

ASSIGNING LCN FUNCTIONS TO DMX DATA SLOTS

The decoder SLCN8208A uses 8 DMX data slots in ascending order, beginning from and including the set start address. When a start address 001 has been set, data slots 1...8 are being evalutated. Each of the DMX "channels" takes control of the associated LCN keys, for example:

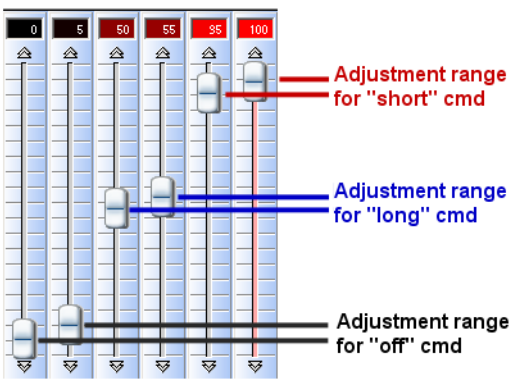
DMX data slot #1 controls LCN key #1,
DMX data slot #2 controls LCN key #2,
DMX data slot #3 controls LCN key #3,
and so on.

Since LCN allows to assign 8 keys, 8 x 3 keystrokes (short, long, off) can be automated using DMX.

DMX LEVELS

DMX levels on data slots 1...8 are converted to LCN key commands. Level assignment is:

DMX level > approx. 85% = short cmd (ON)
DMX level approx. 49%....51% = long cmd
DMX level < approx. 16% = off cmd



All DMX data slots are being evaluated simultaneously and permanently. Slow changes on all 8 data slots may generate more data than can be transmitted in time, since the maximum data transfer rate on the LCN may be exceeded. Thus some data may be slowed down. Data exceeding the transmit buffer capacity may be dropped. As a rule of thumb, this is applicable the data transfer rate:

- when evaluating one DMX data slot: up to 160 commands / minute
- when evaluating 8 DMX data slots: up to 30 commandos / minute

If you need, for example, to evaluate two DMX data slots only, make sure, that the remaining 6 DMX data slots do not carry any signal contents. Thus no LCN data telegrams are being generated. Generating LCN telegrams from unused DMX data slots and setting the key table enty to "idle command" is the wrong way, as this will allocate needed bandwidth within the LCN network.

LCN SETUP

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IMPORTANT NOTE:
LCN modules operate directly on live electrical power 230V! Though all LCN data lines are referred to NEUTRAL, they are electrically connected to mains. Isolation to the DMX512 input is provided within the SLCN8208 interface. ***Absolutely make sure to disconnect the complete installation from mains when working on the system and wiring the interfaces.*** Never plug LCN components while mains voltage is present.

Configure the I-input of the receiving module using the LCN setup program. Configure the I input to accept the "big" IR remote control. Select the keyboard entry table (keys "A") to assign keys 1...8.

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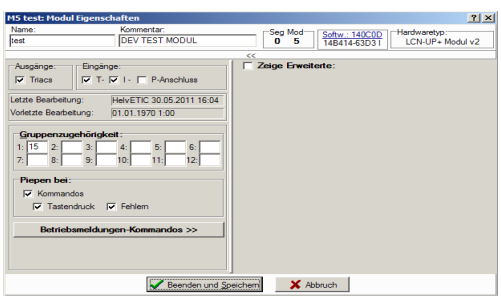
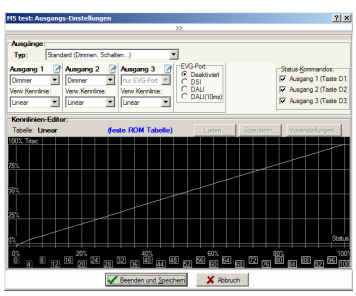
DMX PERSONALITY 2

DMX Personality 2 resembles DMX Personality 1, but no "long press" command will be issued. The preferred use of DMX personality 2 is toggling ON/OFF (e.g. using the control desk bump button).

DMX PERSONALITY 4 "FOLLOW MODE"

Direct intensity control is available using DMX Personality #4. Using this personality, only 3 DMX data slots are being evaluated to generate LCN light level data. As LCN data are being ramped, the DMX intensity level is being translated into a proportional ramping command, following the DMX intensity. Note: This limits the changing speed to a certain degree (standard ramp time: 6 seconds).
As LCN limits the intzensity resolution to 50 steps (approx. 2%/step), it is highly recommended to set the intensity curve to linear. Also, all data output are routed to group 15. Thus the LCN interface must be included in group 15 (settings: see below)





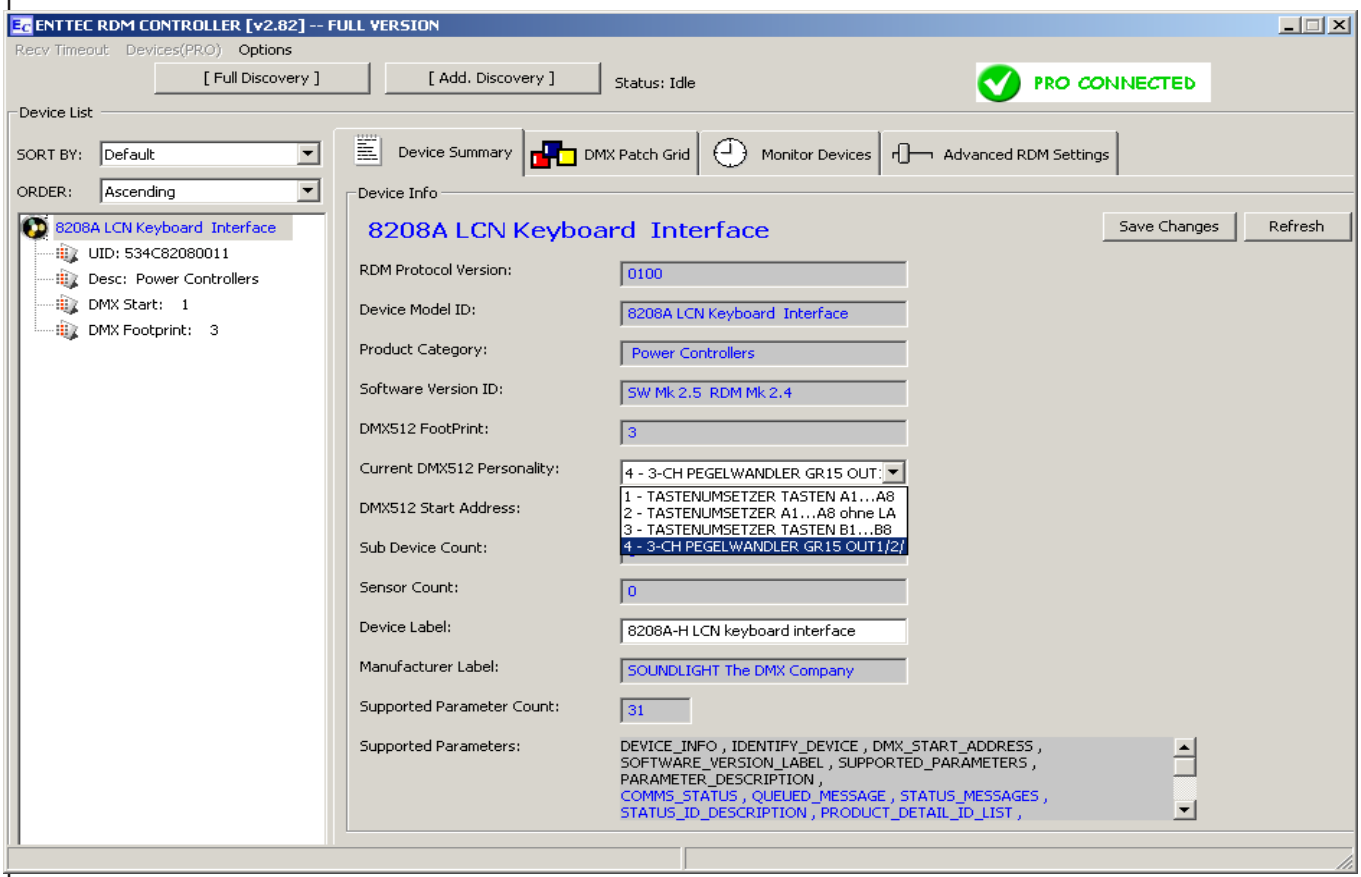
DMX RDM PROPERTIES

The DMX converter SLCN 8208 conforms to ANSI E1-20 DMX RDM standard 1.0. The unit will be recognized as a "DATA CONVERTER INTERFACE".

For a more detailed description of RDM properties, pls refer to the separate RDM manual available from our website (www.rdm.soundlight.de). All commands are decribed in more detail. Additionally, refer to the command manual coming with your RDM controller or RDM controller software. RDM commands are described in full detail in the ANSI E1-20 standards document, available from the standards store at www.ansi.org or www.plasa.org/tsp.

Select the appropriate DMX PERSONALITY to configure the DMX decoder.

NOTE:
Once settings have been changed using DMX RDM, the address switches become inactive (blocked). To re-enable start address switches, temporarily set any address from 900...999 (simply set the "hundreds" digit to "9"). This will re-enable switches.



RDM main Screen of the SLCN8208 interface

Special functions available with the SLCN8208 RDM interface include:

RESET DEVICE
Used to reset the unit. A "cold" reset or a "warm" reset are available. The "cold" reset will increase the DEVICE POWER CYCLES counter.

Function: SET
Parameters: 01 ($01) generates a warm reset
55 ($FF) generates a cold reset

DEVICE POWER CYCLES
reads the number of device power-ups. Cannot be reset.
Function: GET
Parameters: none
Return data: 1 word (0-65535, $0000-$FFFF)

DMX HOLD MODE
sets the behaviour at loss of data signal and reflects the state of DIP switches 1 and 2 (or settings F1, F2, repectively - see above).
Function: GET / SET
Parameters: 1 Byte (0-2)
0=non-hold, all outputs OFF
1=non-hold, all outputs ON
2=DMX HOLD (last valid value retained, "last look")

PLEASE NOTE:
DMX HOLD properties are not supported by RDM standard ANSI E1-20. A factory specific command (DMX HOLD) has been added to compensate these restraints. Use parameters 0...2 to set the desired HOLD mode:

0: no HOLD, all outputs OFF upon loss of signal
1: no HOLD, all Outputs ON upon loss of signal
2: DMX HOLD (last look remains active)

DMX FAIL MODE
Selects the behaviour at loss of data. This function is similar to DMX HOLD MODE (see above) but has a different parameter set to match future standard E1-37.

FUNCTION: GET / SET
Parameters: GET: nothing, returns 7 bytes
SET: 7 bytes

DMX HOLD	DMX FAIL MODE
0: goto OFF	$00 $00 $00 $00 $FF $FF $00
1: goto ON	$00 $00 $00 $00 $FF $FF $FF
2: keep last	$00 $00 $FF $FF $FF $FF $FF

PIN SETTING
Allows to define a PIN code to lock various functions. This parameter is used to get and set the PIN code for devices that support locking. The lock state is set using the LOCK_STATE message.

FUNCTION: SET
Parameters: 2 words (4 bytes): <current PIN> <new PIN>
A PIN can be any value between 0000(dec) and 9999(dec), that is, $0000 and $270F. The default PIN is 0000. Please keep the PIN in a safe place, since there is no way to retrieve a lost PIN.
Example: Set the PIN to1234(dec)
Enter: 000004D2 since 1234(dec) = 04D2(hex)

LOCK STATE
This parameter is used to determine the lock state for devices that support locking. A lock, when applied, can have a variable level of what is protected against in the device. The locking mechanism is designed to deter tampering and is not intended to provide absolute security.
With the 4704A-EP, there are two different lock states available.

FUNCTION: GET / SET
Parameters: GET: none,
returns 2 Bytes: <current lock state><# of lock states>
SET: 3 bytes: <PIN> <desired lock state>
LOCK STATES: 0= no lock state active
1= lock configuration
2= lock setup
3= lock both

Configuration lock includes:
- SET DMX PERSONALITY
- SET DMX FAIL MODE
- SET DMX HOLD

Setup loock includes:
- SET RDM SLOT LABELS
- SET DMX FOOTPRINT

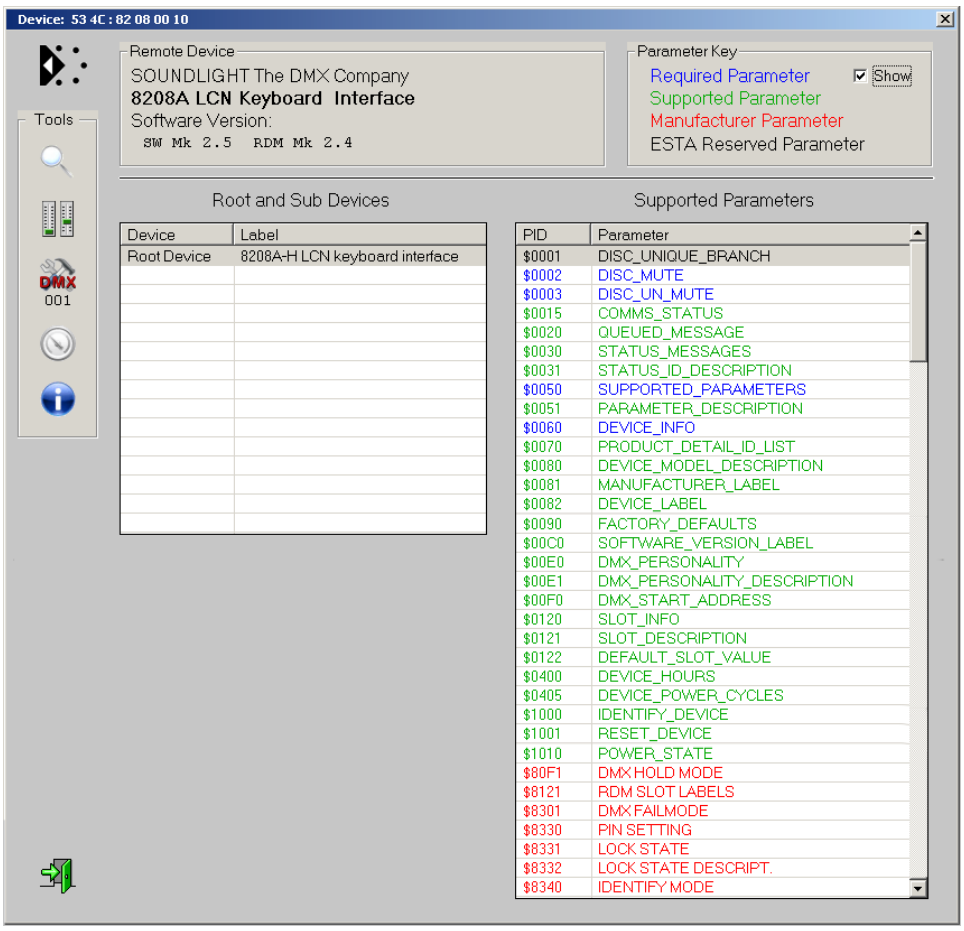
Example: using the PIN defined above, set the lock state to "lock setup". Enter data: 04 D2 02

LOCK_STATE_DESCRIPTION

Returns a description for the requested lock state.

FUNCTION: GET

Parameters: GET: 1 byte (no. of lock state requested)
returns: 1-33 bytes <# lock state> <text: 0..32 bytes>



complete list of DMX RDM commands

BUS TERMINATION

It is good common practise to terminate the DMX data line at the far end. When the SLCN8208A has bben placed as the last device on the DMX data line, a termination resistor of 120 Ohms (1/4W) should be placed between terminals 2 (DMX-) and 3 (DMX+) of the DMX connector.

Only ONE termination resistor must be used per data line.

TECHNICAL DATA

Dimensions:	DIN rail mount standard housing, 2 TE (2U)
Power supply:	230V AC 2W
DMX IN:	1 Unit Load
DMX OUT:	fed thru
LCN OUT:	to LCN IR Port, connector cable included
LCN Data rate:	approx. 6 telegrams/sec
LCN Data buffer:	max. 256 commands
Bestell-Nr.:	SLCN8208A RDM Mk1

CE Conformity

CE This DMX decoder is microprocessor controlled and uses high frequency (8 MHz quartz). The interface has been tested in our EMC lab to comply with EN5022B and IEC65/144. To ensure the best performance regarding radiated and conducted emissions we suggest to install the interface card in a closed, conductive (e.g. metal) housing, which must be connected to GND.
Please make sure that shielded data cable is used and the shield is connected properly to the GND pin. Shield must never make contact to other signal lines.

FCC Statement

This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

FCC Caution: Any change or modification to the product not expressly approved by SLH could void the user's authority to operate the device.

Disturbances

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

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

Limited Warranty

This instrument ist warranted against defects in materials and workmanship for a period of 24month, 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 arccordance with the manual;
- connection to wrong voltage or current;
- misuse.

End-of-Liftetime Procedures

Electronic devices are not domestic waste and must be disposed of properly. If the end of lifetime of this device has been reached, it must be recycled by your local WEEE recycling system or collection point.
SOUNDLIGHT is a WEEE registered company (registration code DE-58883929)

Service

There are no parts within the DMX Decoder SLCN8208 RDM which require the user's attention. Should your unit require servicing, please send it to the factory, freight paid.

Internet-Hotline

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

product page:	http://www.soundlight.de/produkte/slcn8208
manuals:	http://www.manuals.soundlight.de
RDM info:	http://www.rdm.soundlight.de