

# OPERATING MANUAL

## DMX Stepper Motor Interface 3004S Mk2



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## Thank you for specifying SOUNDLIGHT products.

The SOUNDLIGHT DMX stepper motor decoder 3004S is a DMX decoder, which converts data signals conforming to USITT DMX-512/1990 into a two-phase stepper motor drive signal. The decoder can drive one stepper motor. The card is compatible with all standard lighting control signals. Its advantages include:

- **universal protocol decoding**  
Recognizes all variants of the protocol as defined by USITT / ESTA / DIN
- **future-proof**  
The unit is software controlled and can easily be adapted to any change in protocol definition.
- **simple supply**  
The power supply is 12V or 24V DC, depending on the stepper motor used
- **signal loss**  
In the case of a loss of the drive signal the last setting will remain intact.
- **cost-effective**  
The SOUNDLIGHT 3004S is a cost-effective solution for many purposes.

## Applications

The stepper motor interface 3004S is intended for all applications, which are to drive a stepper motor to a predefined position. The selection of the stepper motor is independent of the DMX decoder: operating voltage 12...24V, step angle 0,6...2,7 Grad.

## Connectors

The DMX stepper motor driver consists of connectors for these inputs and outputs:

### **CN5** DMX start address board (pin header 10pin)

1	n.c.
2	n.c.
3	n.c.
4	n.c.
5	XLR Pin 1 GND
6	XLR Pin 1 GND
7	XLR Pin 3 +DMX
8	XLR Pin 2 -DMX
9	XLR Pin 5 2. Link (spare)
10	XLR Pin 4 2. Link (spare)

*This connector is solely intended for connection of the supplied address decoder board.*

### **CN6** DMX input (XLR 5-pin)

1	GND
2	-DMX
3	+DMX
4	2. Link (spare)
5	2. Link (spare)

<b>CN7</b>	DMX outout (XLR 5-pin)	
	1	GND
	2	-DMX
	3	+DMX
	4	2. Link (spare)
	5	2. Link (spare)
<b>CN4</b>	Control output (DRIVE) to stepper motor	
	1	blau 0V
	2	grey OUT 1
	3	grey OUT 2
	4	grey OUT 3
	5	grey OUT 4
	6	Power Supply 12/24V DC
<b>CN3</b>	Power Supply	
	red	12/24V DC
	blue	0V GND

## SIGNAL INDICATORS

The state of the demultiplexer card is signalled with two indicator LEDs.

green: OPERATION (blinking)

red: ERROR (blinking)

Error blinking at data errors or loss of communication.

*Both indicators will be flashing randomly in very short intervals regardless of state. This is normal and does simply indicate activity of the on-board decoder.*

## START ADDRESS SWITCHES

The three decimal coding switches set the start address, that is the address of the first channel to be decoded. The setting is fully decimal, no binary conversion is necessary as is with DIL switches.

S1: Ones

S2: Tens

S3: Hundreds

If the switch block is set to non-defined address 000, all outputs are pulsed regardless of the data received. This is for testing purposes only.

## Motor Connection

The interface card can be operated with various stepper motors. Selection of the motor is determined by these parameters:

1. maximum motor voltage 24V DC (this is the maximum voltage of the decoder)
  2. minimum motor voltage 8V DC (this is the minimum operating voltage of the Decoder)
- > recommended motor voltage 12...15V DC

3. If the motor is fed from the same voltage source than the DMX stepper motor decoder, the decoder operating voltage limits must be obeyed. It is possible to operate the motor from a separate power supply (common GND). In this case, we recommend a decoder supply voltage of 9V DC stabilized.

4. A four phase (two phase) stepper motor is needed. These motors feature 6 connector leads (two times two windings plus two center taps). Stepper motors featuring only two windings (four leads) cannot be used.

5. The stepper motor resolution (stepsize, degrees) can be selected to your needs.

A recommended motor type would be UAG23N05RE (Fabrication: Burgess, sales: RS Components GmbH, 64546 Mörfelden-Walldorf, Hessenring 13b).

Without cooling, the output drivers can drive a current up to 1Ampere. Pulse currents up to 5A are allowed - being enough for most applications. As explained above, the motor power can be obtained from the decoder card or from an external power supply. The decoder driver outputs are switching against GND, that is, GND leads of separate power supplies must be connected. As the connector color schemes for stepper motors vary with manufacturer, please consult the stepper motor data sheet. If in doubt, try different variations until the stepper motor turns smoothly. The stepper motor will run automatically when the decoder is powered up.

Please refer to the schematic on page 7, showing the motor connection to the decoder.

**CN6 Drive output to stepper motor**

1	blue	0V, Masse
2	grey	OUT 1: Winding 1
3	grey	OUT 2: Winding 2
4	grey	OUT 3: Winding 3
5	grey	OUT 4: Winding 4
6	orange	+V (8...24V, Power Supply) Common for both center taps

**CN3 Power Supply**

1	orange	+V (8...24V, Power supply)
2	blue	0.0V, GND

## DMX Channel Allocation

The Decoder 3004S is using 3 DMX channels (data slots) for motor control.

SLOT 1:	0...127:	Motor off
	128...255:	Motor on
SLOT 2:	0...255	Position
SLOT 3:	0...255	Speed (0= fastest)

The decoder 3004S-HR is using 4 data slots for motor control

SLOT 1:	0...127:	Motor off
	128...255:	Motor on
SLOT 2:	0...255	Position LowByte
SLOT 3:	0...255	Position HighByte
SLOT 4:	0...255	Speed (0= fastest)

## Technical Data

Dimensions:	72 mm x 70 mm x 45 mm
Power Supply:	8...24V DC
DMX IN:	1 Unit Load
DMX OUT:	fed thru
Motor Out:	8...24V Impulse signal (depending on power supply voltage)
BestellNr.:	3004S-EP (8-Bit control) 3004S-HR (16-Bit control)

## DISTURBANCES

If a trouble-free operation cannot be guaranteed, disconnect the relay card 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.

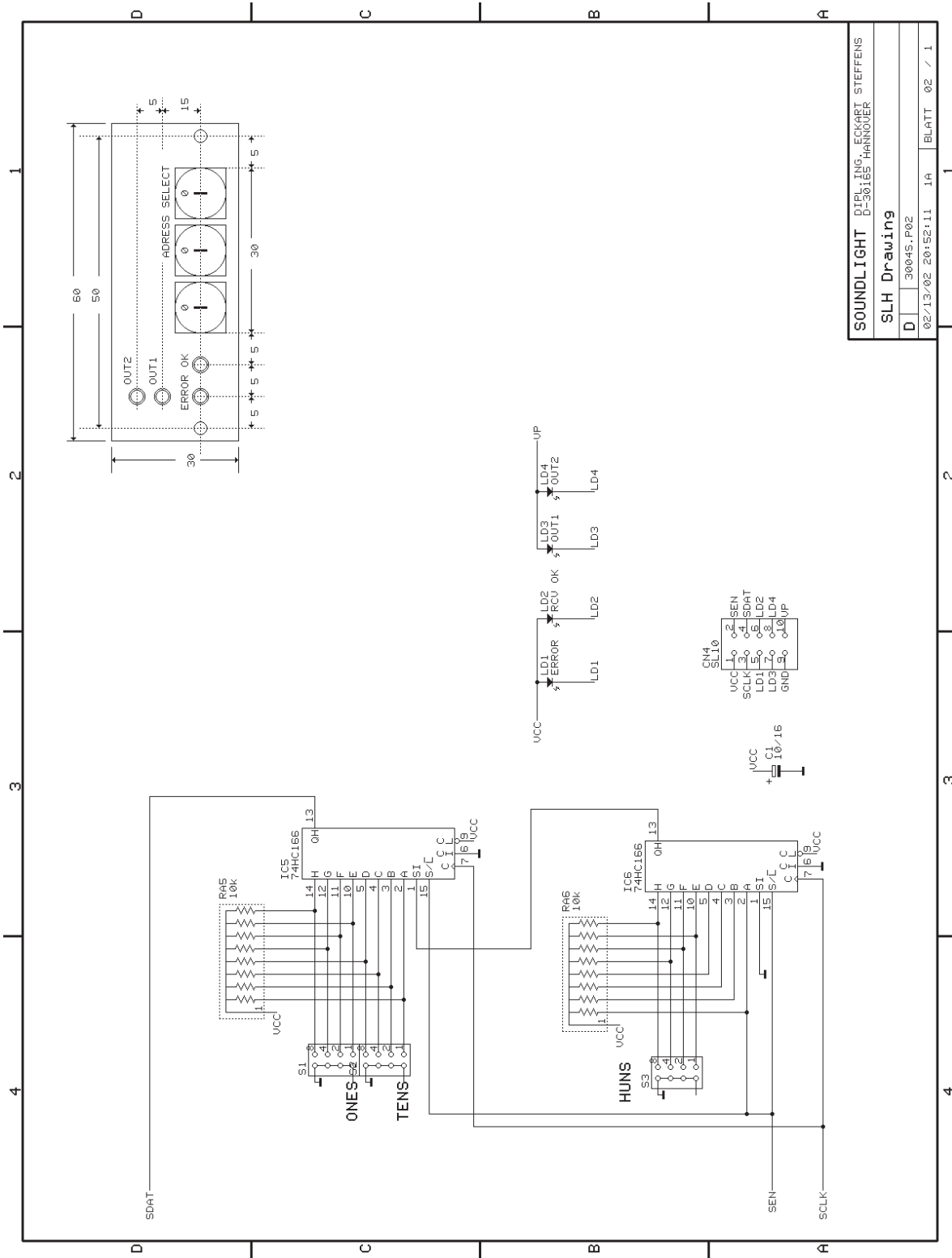
## SERVICE

There are no parts within the DMX stepper motor driver 3004S 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 [info@soundlight.de](mailto:info@soundlight.de). We will check your message and reply accordingly.





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SLH Drawing

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