SOUNDLIGHT
The DMX Company

OPERATING MANUAL

DMX Relay 3212R-H
Version Mk2

SOUNDLIGHT *The DMX Company* Bennigser Str.1 D-30974 Wennigsen Tel. 05045-91293-11

Thank you for choosing a SOUNDLIGHT device.

The SOUNDLIGHT DMX Relay Interface 3212R-H is a intelligent DMX demultiplexer decoding digital data complying with standards USITT DMX512, ANSI E1-11 DMX512-A and DIN 56930-2 as well as ANSI E1-20 DMX RDM. The card drive 12 N.O. contact relay outputs. The decoder can be used with all standard light control systems. Its special advantages include:

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

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

- **integrated hysteresis**
  Adjustable hysteresis (user selectable) ensures safe and flicker free switching

- **simple supply**
  The power supply is from standard DC voltage 24VDC

- **signal loss**
  In the case of a loss of the drive signal a pre-definable action will be taken.

- **cost-effective**
  The SOUNDLIGHT 3212R-H is a cost-effective solution for many purposes.

Features

The DMX Relay 3212R-H is a relay module to be mounted on standard 35mm DIN rail. The DMX relay can be configured via DMX using a full featured DMX RDM controller. No additional accessories are needed. DMX RDM is a bidirectional protocol conforming to international standard ANSI E1-20.

Alternatively, the start address, the device personality (operating mode) and the DMX HOLD mode can be set using a optional start address board 3000P. The device can be operated without start address board attached, since all settings are retained internally in nonvolatile memory. Start address boards are optional accessories, are not comprised with delivery and must be purchased separately.

Nomenclature

These symbols are used within this manual:

    DANGER !   May cause harm to user and/or equipment

    INFO: How to setup your device

    INFO: Status information

Applications

The DMX relay decoder 3212R-H is ideally suited for all kinds of signal switching applications. It features twelve potential-free high-power N.O. output contacts and features high noise immunity. Applications include remot control operations (e.g. smoke machine, bells, contacts, audio recorders, door openers, halogen lamps, mirror balls etc). The 3212R-H is a universal tool for stage, tv and theatre, as well as live acts. When actions have to be triggers by DMX, the 3212R-H comes in handy.

The DMX relay 3212R-H is intended for use in dry environments. It must be installed in a suitable electrical cabinet. The operating conditions (see chapter „Technical Data" must be met.

UNPACKING

Please unpack carefully and check that all items are intact. When leaving our factory, the card has been in good condition. In case of damage during transport please notify the carrier immediately. Please note that individual deadlines may apply to claim transport damages. We will only be able to replace goods damaged during transit if we receive a written and signed confirmation issued by the freight forwarder. Make sure you receive such a document and send to us a.s.a.p.

When unpacking, you should identify these items:

*   the interface 3212R-H RDM
*   he 3212R-H product data sheet

Please note that a start adderess board (3000P) is NOT included with DIN rail mount devices.
A programming adaptor (required to set DMX start address and operating options) must be ordered separately. If you already have it, there is no need to buy again: the start address board can be used for all our DMX interfaces, pcb and DIN rail mount alike. Alternatively, all parameters can be set or modified remotely using a suitable DMX RDM controller.

Connectors

The decoder 3212R-H consists of 6 terminal blocks. Terminals are based on screwless WAGO cage clamp technology, which prevents loose connections and guarantees safe electrical contact at all times. Use a standard **flat blade** screw driver and press the lever to open the terminal, insert wire and release. Do **not** use a philipps or pozidrive screwdriver to prevent damage ! Though both, solid and stranded wires may be used we recommend to use stranded wires in combination with isolated ferrules whenever possible.

Please refer to the connector location outlined on next page.
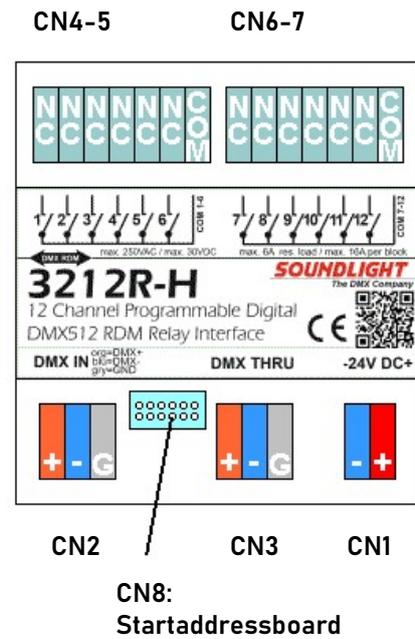
The 3212R-H consists of these connectors:

CN1   **POWER SUPPLY**

        red   +24VDC
        blue   0V

CN2   **DMX IN**

        1 grey   Masse, GND
        2 blue   -DMX
        3 orange   +DMX

CN3   **DMX THRU**

        1 grey   Masse, GND
        2 blue   -DMX
        3 orange   +DMX

CN4-5   **RELAY OUT 1...6**

CN6-7   **RELAY OUT 7...12**
        l'grey   C   (Common)
        d'grey   NO (Normally Open)
        6 Relays per block (1...6, 7...12) are routed to one common each.

CN4-5   CN6-7

CN2   CN3   CN1

CN8:
Startaddressboard

Signal Indicators

The status of the 3212R-H module is signalled with three indicator LEDs.

green: OK
        A vaild DMX control signal is present.

red: ERROR
        normally: off
        blinking: no valid DMX signal present

Yellow: RDM
        Activated when a RDM programming has taken place.
        Optionally connected mechanical address switches (start address board) are deactivated
        then.

Start Address Setting

Setting the DMX Start Address and selecting the appropriate DMX Personality can easily be done using DMX RDM (Remote Device Management).


If there is no DMX RDM Controller available, you may alternatively use a manual start address board 3000P to set DMX start address, DMX personality and DMX HOLD mode. Start address boards are available as add-ons and must be ordered separately.

The start address board 3000P makes use of decimal switches to set the address, and of DIP-Switsches to set personalty and HOLD mode.

Address seting is straightforward:

S3:   Hundreds
S2:   Tens
S1:   Ones
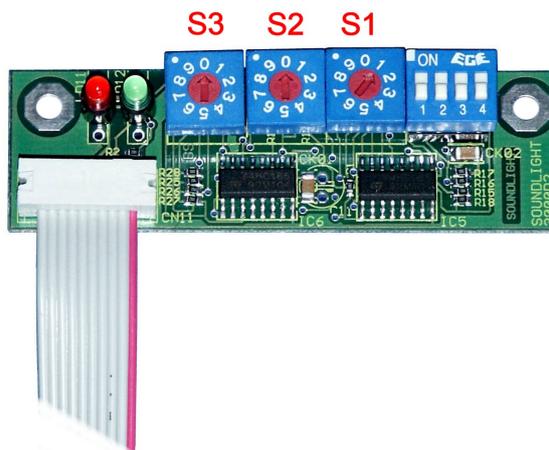
IMPORTANT NOTICE: It may take some seconds to check and verify the received switch data. As soon as the new setting has been accepted and saved to memory, both LEDs (red and green) blink alternatively four times.

IMPORTANT NOTICE: The decoder can be operated with or without start address board connected. Please note that all switches become *disengaged* and the respective settings are over-ridden when programming of DMX start address, DMX personality or HOLD mode is done via RDM.
To re-engage the switches, set the hundreds position to „9" temporarily (any address from 900 to 999 will do) and wait for a programming cycle to complete. A programming cycle is indicated by the red and the green LED blinking four times alternatively.

DIP Switch Settings

The address board DIP Switches c an be used to tset the DMX Personality and DMX Hold mode.

S1:   **HOLD MODE**
Sets the behaviour at DMX signal lossl

S1=OFF   HOLD Mode OFF
S1=ON   HOLD Mode ON: „Keep Last Look"

S2:   **SAFETY LEVEL**
Determines the relay state at loss off signal.

When the HOLD Mode (S1) has not been activated, these settings apply:
S2=OFF   all relays are set to OFF
S2=ON   all relays are set to ON

S3, S4: **DMX Personality**
Bestimmt die Schaltfunktion des Relaismoduls

Switch setting		DMX Personality
S3=OFF	S4=OFF	Personality 1 12 individual relays (12 addresses)
S3=OFF	S4=ON	Personality 2 2x 6 individual relays (6 addresses) *Use DMX RDM to invert the second block. This can be used to close relay contacts in block 1, while those of block 2 will open simulktaneously.e Invertierung für den 2. Block kann über DMX RDM gesetzt werden.*

S3=ON   S4=OFF   Personality 3
                               Ladder mode
                               Relays are engaged depending on control signal value.
                               for Relay 1:   trigger level   016 (6%)
                               for Relay 2:   trigger level   056 (22%)
                               for Relay 3:   trigger level   096 (38%)
                               for Relay 4:   trigger level   136 (53%)
                               for Relay 5:   trigger level   176 (69%)
                               for Relay 6:   trigger level   216 (85%)
                               ;

S3=ON   S4=ON   Personality 4
                               Bit mode
                               Relays are engaged by their respective Bit. 2 DMX data slots are used, Bit assignment is as follows:

DMX slot 1:	*Rel8*	*Rel7*	*Rel6*	*Rel5*	*Rel4*	*Rel3*	*Rel2*	*Rel1*
DMX slot 2:	*---*	*---*	*---*	*---*	*Rel12*	*Rel11*	*Rel10*	*Rel9*

Relays

This decoder is fitted with contact relays designed for a switching current of **max 6A at 230V** (resistive load only!). When selecting and ordering the appropriate relay card, please note, that all data given by the relay manufacturers are for **RESISTIVE LOAD** only. Incandescent lamps may be considered resistive loads. Switching inductive loads, such as transformers or solenoids, requires lower loads - we strongly recommend not to exceed 50% of the resistive load data. Besides, contacts may burn due to inductive spikes and sparks. Make sure to add protective circuitry (RC combinations, VDR resistors) if switching inductive loads. Switching inductive loads on the mains power supply may also generate high frequence noise and degrade the power supply quality. If switching capacitive loads (electronic ballasts or psu) inrush current limiting devices may be required to prevent contact damage. If in doubt pls consult the relay maker data sheet.

max. ON current: 6A bei 230V AC resistive load
                                    6A bei 30V DC
max. continuous current: 6A bei 230V resistive load
max. switching voltage: 230V AC @ resistive load
Contact finnting: 1x N.O.

Approbationen

Technical Data

Dimensions: 85 mm x 66 mm x 112 mm (B x H x T)
                        for DIN rail 35mm, width 5 units
Power Supply: 24V DC   max. 120mA (all relays engaged)
                                        max. 35mA (idle)*
DMX Protocol: DIN 56930-2, DMX512/1990, ANSI E1-11 DMX512-A,
                        ANSI E1-20 DMX RDM, ANSI E1-37
DMX IN: 1 Unit Load
DMX OUT: fed thru
Switch Out: max. 6A @ 230V resistive load
Operating Temperature: 0...50C
Storage Temperature: -10...+70°C
Weight: 192g
Order Code.:   3212R-H

                        =no address board connected

The decoder 3212R-H is fully compliant to DMX RDM standard 1.0. The devive will be recognized as "DMX Relay" withing category „RELAY_MECHANICAL" and can be configured to multiple personalities (modes of operation).

Table of RDM Functions

Special RDM Functions:

RESET_DEVICE: calling with parameter =1 results in „warm reset"
                                 calling with parameter = 255 results in „cold reset"
DEVICE_POWER_CYCLES: reads device startups
DEVICE_HOURS: reads device hours (non-resettable)
DMX HOLD MODE: set DMX HOLD mode
                                 (Param= 0...2, see below)

IMPORTANT NOTICE: The decoder can be operated with or without start address board connected. Please note that all switches become *disengaged* and the respective settings are overridden when programming of DMX start address, DMX personality or HOLD mode is done via RDM.
To re-engage the switches, set the hundreds position to „9" temporarily (any address from 900 to 999 will do) and wait for a programming cycle to complete. A programming cycle is indicated by the red and the green LED blinking four times alternatively.
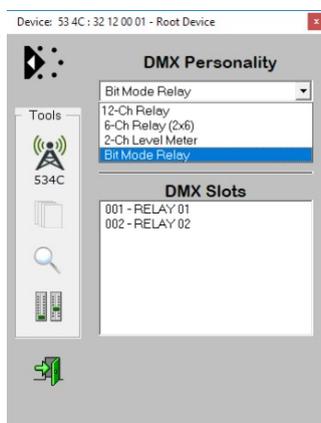
Selecting the DMX Personality via RDM
(Screenshot from JESE Get/Set Software)
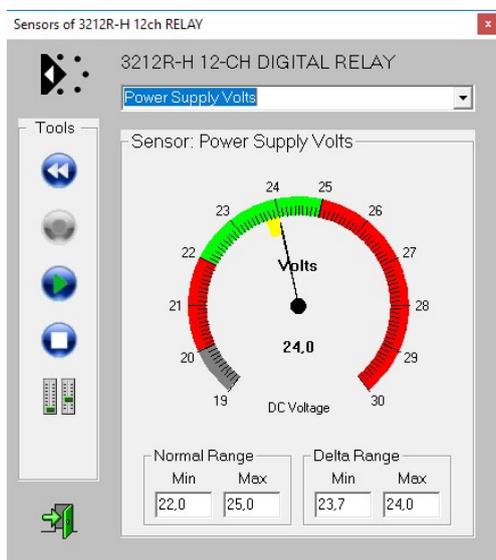
The 3212R-H consists of a integrated sensor for power supply monitoring.
(Screenshot from JESE Get/Set Software)

More RDM Functions

Please check our RDM-Website *https://www.soundlight.eu/rdm* for more information, or download the free RDM Manual from our Manuals Site *https://www.soundlight.eu/produkte/manuals*

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 DMX interface ist warranted against defects in metarials and workmanship for a period of 12 month, 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.

CE Conformity

This DMX relay is microprocessor controlled and uses high frequency. The interface has been tested in our EMC lab to comply with EN55015 and IEC65/144. To ensure the best performance regarding radiated and conducted emissions we suggest to install the interface 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.

End of Lifetime

When the useful lifetime of this product has been reched, it must be disposed of properly. Electronic devices must not be placed in domestic waste. Consult your local authorities to find the nearest collection point of used electric and electronic devices. SOUNDLIGHT is a WEEE registered company (Reg No. DE58883929).

Service

There are no parts within the DMX relais card 3212R-H which require the user's attention. Should your unit require servicing, please send it to the factory, freight paid.

Accessories

Setting the DMX start address, the DMX personality, or the DMX HOLD mode and other parameters requires a suitable DMX RDM controller or a start address board. We recommend these devices:

DMX START ADDRESS BOARD 3000P

Address board to set start address, personality and DMX HOLD mode.

Address boards are not contained with delivery and must be ordered separately.

For more info refer to:
www.soundlight.eu/produkte/3000p
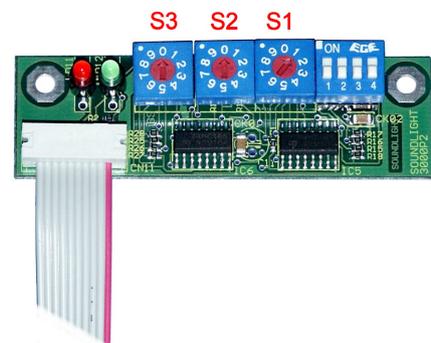
DMX RDM CONTROLLER GET/SET USBRDM-TRI

The USBRDM-TRI Interface connects via USB and comes with RDM controller software „GET/SET". This software allows to administer all RDM supported functions of the Relay module.

The USBRDM-TRI Mk2 can be inserted into a existing DMX line (e.g. from light control desk to fixtures) to add DMX RDM functionality for legacy setups.

For more info refer to: www.soundlight.eu/produkte/usbrdm-tri2