SOUNDLIGHT
The DMX Company
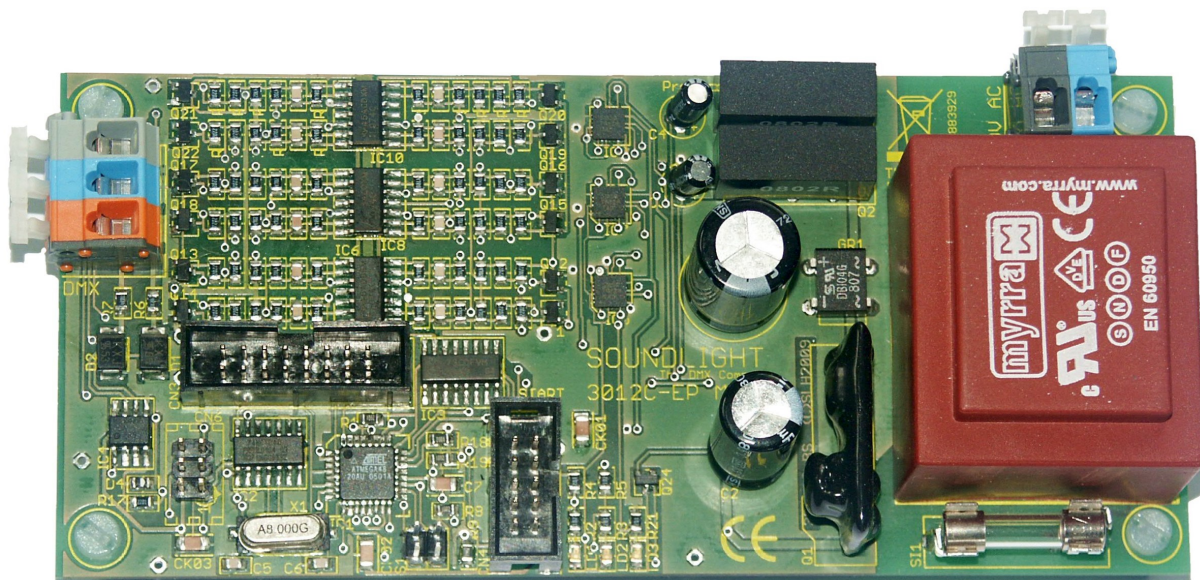
OPERATING MANUAL

DMX Demultiplexer 3012C Mk5.3 RDM

Version: Printed Circuit Board 12-channel
12x 0...+10V Out, 12x 0...-10V Out

DMX RDM

RoHS
compliant

Thank you for choosing a SOUNDLIGHT device.

The SOUNDLIGHT DMX Demultiplexer 3012C-EP is a intelligent DMX demultiplexer decoding digital data complying with standards USITT DMX512, DIN 56930-2, ANSI E1-11 DMX512-A and ANSI E1-20 DMX RDM. The card drives twelve analog voltage outputs. The decoder can be used with all standard lighting 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.

- **buffered output**
  Integrated output buffers provide excellent drive characteristics

- **simple supply**
  The power supply is from standard mains voltage 230V AC 50 Hz

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

- **cost-effective**
  The SOUNDLIGHT 3012C-EP is a cost-effective solution for many purposes.

APPLICATIONS

The DMX demultiplexer 3012C-EP is ideally suited for all kinds of analog control applications. It features 0...+10V, 1...10V or 0...-10V output drive capability to control entertainment lighting or architectural lighting gear.
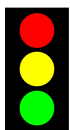
NOMENCLATURE

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

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 and arrange for a written and signed damage report by the carrier. 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 card 3012C-EP
*   the start address board 3000P
*   this manual

The decoder 3012C-EP consists of several terminal blocks. Terminals are based on screwless WAGO cage clamp techno-logy, which prevents loose connections and guarantees safe electrical contact at all times. **IMPORTANT:** Use a standard **flat blade** screw driver and press the lever to open the ter-minal, insert wire and release. Do **not** use a philipps or pozid-rive 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 below.
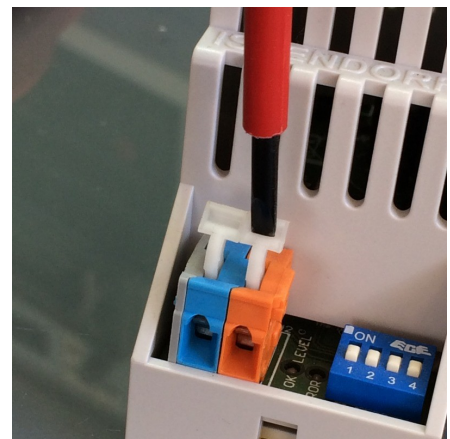
Power supply is from mains 230V AC. Power must be connected to mains inlet termin-als (black/blue) CN2.

SAFETY NOTE: Mains voltage can be dangerous to health. Installation and wiring must be performed by skilled and trained technicians only. Power must be completely removed while works are carried out. Double-check wiring before re-applying power.

DMX INPUT

The DMX signal is applied to 3-pin input CN1. Pin assignment is as follows:

Pin1   grey   XLR Contact 1 = GND / Shield
Pin2   blue   XLR Contact 2 = DMX-
Pin3   orange   XLR Contact 3 = DMX+

CN4: Connector for start adress board 3000P or 3003P

CN3: Output Connector 1-12

CN1: DMX Input

CN2: Mains Line 230V AC

Pin 1
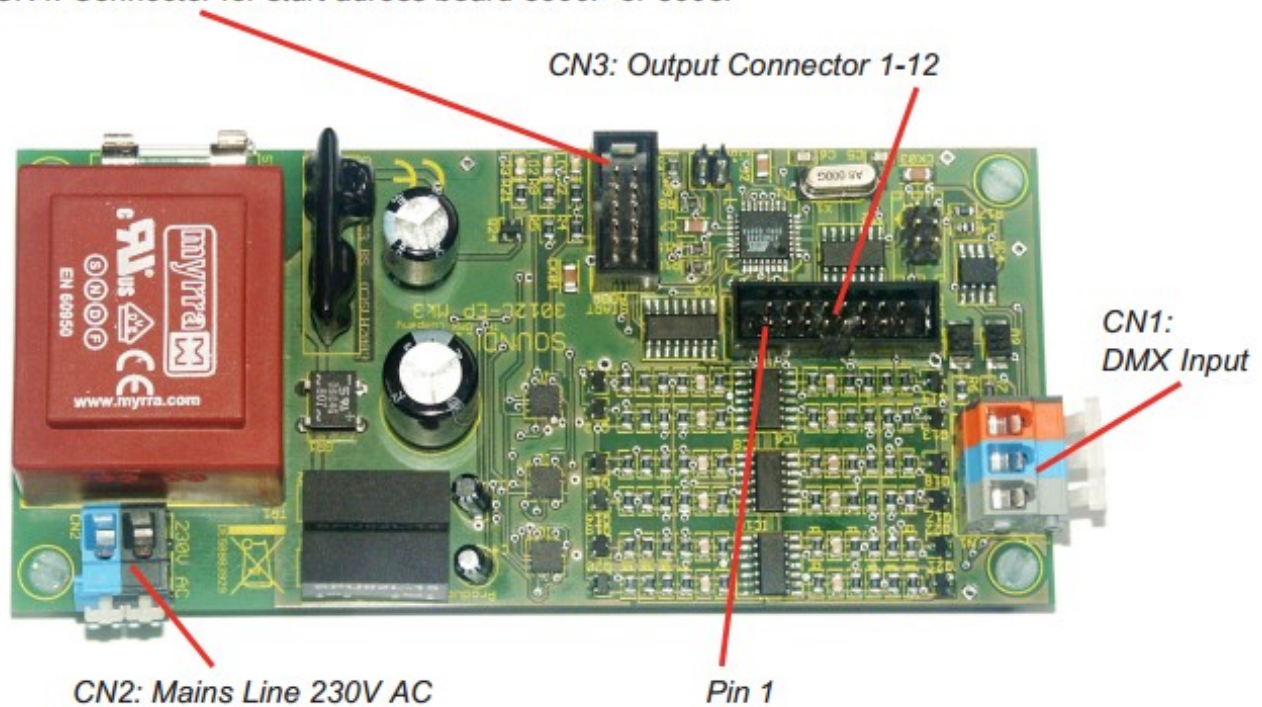
This pin assignment refers to standards USITT DMX-512/1990 and ANSI E1-11 DMX-512A.

ANALOG OUTPUT

The dimmer control signals are provided on a 16-pin ribbon connector. Suitable connectors are available from a variety of manufacturers. Outputs are short circuit protected and designed to drive a load of 1mA @ 10VDC (10kOhms input impedance). Output voltage can be trimmed using special RDM commands (see chapter RDM).

Analog output connector: CN3

1:	Output 1
2:	Output 2
3:	Output 3
4:	Output 4
5:	Output 5
6:	Output 6
7:	Output 7
8:	Output 8
9:	Output 9
10:	Output 10
11:	Output 11

12:	Output 12
13,14,15,16:	GND, Shield

INSTALLATION

4 mounting holes 3,2mm (marked) are provided for installation of the pcb. We recommend to use plastic spacers (min. 6mm) to provide sufficient isolation distance when using a metallic housing.

SIGNAL INDICATORS

The demultiplexer status is signalled using three indicator LEDs.

green: Operation, DMX signal present

red: ERROR
normally OFF
Blinks when data errors occur or when DMX signal is missing.

Red and Green blink 4 times alternatively when a programming cycle is be-
ing performed (e.g. start address programming).
Red/Green blink repeatedly on IDENTIFY

yellow: off: output voltage 0..+10V, on: output voltage 0...-10V selected

Start Address Switches

The DMX relay demultiplexer 3012C-EP has been preset to DMX start address 001. If another start address is required, it must be set using a start address board 3000P, 3003P, 3005P orn 3006P.. The start address board 3000P is contained with delivery, the start address board 3003P, 3005P or 3006P is optionally available. The 3012C-EP can be operated with or without start address board connected.

Use the BCD switches to set the DMX start address, that is the address of the first DMX channel (DMX data slot) used to control output #1. Set-
ting is straightforward, there is no binary calculation re-
quired as would be necessary with DIP switches.

S3: Hundreds
S2: Tens
S1: Ones
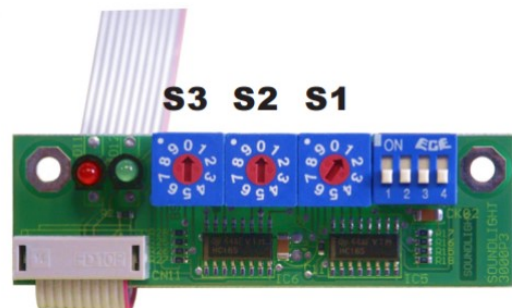
The allowed DMX start address range is 001 ... 512.
With settings above 501, only the first outputs will be available. Settings above 512 are reserved for special control purposes (see below).

SERVICE SETTINGS

The demultiplexer 3012C can be set to various service settings. The service settings are provided to test individual outputs. These settings are available:

801:	Output 1 set to100%
802:	Output 2 set to 100%
803:	Output 3 set to 100%
804:	Output 4 set to 100%
805:	Output 5 set to 100%
usw. bis	
812:	Output 12 set to 100%

TEST PROGRAMS

The demultiplexer 3012C features some self-test programs to check the output performance.

997:	All outputs blink simultaneously
998:	All outputs ramp simultaneously from 0% to 100%
999:	Running light 1-12

DIP SWITCHES

The DMX demultiplexer 3012C-EP can be set to various operating modes using
DIP switches 1...4:

S1:   HOLD Mode
S1=OFF	HOLD Mode OFF
S1=ON	HOLD Mode ON ("Keep Last Look")

S2:   Safety Level
When the HOLD MODE is not activated, these settings apply:
S2=OFF	All outputs go to "OFF" (0%)
S2=ON	All outputs go to "ON" (100%)

S3:   Output Smoothing
S3=OFF	Standard mode (fast)
S3=ON	Interpolation mode (slow)

S4:   MASTER Modus
S4=OFF	12-ch Mode
S4=ON	13-ch Mode (CH13 = MASTER)

The 3012C-EP can be programmed to provide 0...+10V output (default setting) or to 0...-10V output (negative polarity). To configure the output polarity, pls proceed as follows:

1. - remove power (disconnect mains voltage)
2. - Set a start address 880 to select negative output polarity (0...-10V), or
   set a start address 881 to select positive output polarity (0...+10V)
3. - re-apply power (connect to mains voltage)
4. - the LEDs will indicate a programming cycle (red/green blinking 4x alternatively)
5. - remove power an re-set the standard start address
   - done.

Alternatively, the output polarity can be changed via DMX RDM. The appropriate command is labelled "OUTPUT POLARITY" (PID DC40). Default setting is FF (normal, positive output). To change to negative output, write "00".

The DMX Demultiplexer 3012C-EP complies to DMX RDM standard 1.0.

Device: 41 43 : 30 12 00 00   ✕

Remote Device
AC Lasers Ltd.
AC Laser 12-Way Beam Interface
Software Version:
  SW Mk 5.6   RDM Mk 5.0

Parameter Key
Required Parameter   ☑ Show
Supported Parameter
Manufacturer Parameter
PLASA Reserved Parameter

Root and Sub Devices

Device	Label
Root Device	AC Lasers 12-Way Beam Interface

Supported Parameters - Root Device

PID	Parameter
$0001	DISC_UNIQUE_BRANCH
$0002	DISC_MUTE
$0003	DISC_UN_MUTE
$0015	COMMS_STATUS
$0020	QUEUED_MESSAGE
$0030	STATUS_MESSAGES
$0031	STATUS_ID_DESCRIPTION
$0050	SUPPORTED_PARAMETERS
$0051	PARAMETER_DESCRIPTION
$0060	DEVICE_INFO
$0070	PRODUCT_DETAIL_ID_LIST
$0080	DEVICE_MODEL_DESCRIPTION
$0081	MANUFACTURER_LABEL
$0082	DEVICE_LABEL
$0090	FACTORY_DEFAULTS
$00C0	SOFTWARE_VERSION_LABEL
$00E0	DMX_PERSONALITY
$00E1	DMX_PERSONALITY_DESCRIPTION
$00F0	DMX_START_ADDRESS
$0120	SLOT_INFO
$0121	SLOT_DESCRIPTION
$0122	DEFAULT_SLOT_VALUE
$0200	SENSOR_DEFINITION
$0201	SENSOR_VALUE
$0340	DIMMER_INFO
$0341	MINIMUM_LEVEL
$0342	MAXIMUM_LEVEL
$0343	CURVE
$0344	CURVE_DESCRIPTION
$0345	OUTPUT_RESPONSE_TIME
$0346	OUTPUT_RESPONSE_TIME_DESCRIPTION
$0347	MODULATION_FREQUENCY
$0348	MODULATION_FREQUENCY_DESCRIPTION
$0400	DEVICE_HOURS
$0405	DEVICE_POWER_CYCLES
$0501	DISPLAY_LEVEL
$0640	LOCK_PIN
$0641	LOCK_STATE
$0642	LOCK_STATE_DESCRIPTION
$1000	IDENTIFY_DEVICE
$1001	RESET_DEVICE
$1010	POWER_STATE
$1040	IDENTIFY_MODE
$80F1	DMX HOLD MODE
$8341	MIN/MAX MODE
$8401	SET SENSOR LIMITS
$DC40	OUTPUT POLARITY
$DCCA	DC OUT CALIBRATION
$DCCD	CURVE DEFINITION
$FF01	RDM FACTORY SETUP

Tools

DMX
001

Table of RDM functions of the DMX demultiplexer 3012C-EP

For more information regarding DMX RDM pls refer to our website, www.dmxrdm.eu
Additional information can be obtained from these sites:
    www.rdmprotocol.org   The RDM protocol working group website
    www.rdm.soundlight.de   The SOUNDLIGHT RDM website

The 3012C-EP is identified as "Demultiplexer" within the "DIMMER" category. It can be set to four DMX personalities (operating modes):

using fast output :
-        DMX PERSONALITY 1
         as 12-channel unit using 12 indidually controllable outputs
-        DMX PERSONALITY 2
         as 13-channel unit using 12 controllable outpts plus master (CH13)

using avaraged (slow) output :
-        DMX PERSONALITY 3
         as 12-channel unit using 12 indidually controllable outputs
-        DMX PERSONALITY 4
         as 13-channel unit using 12 controllable outpts plus master (CH13)

Select the appropriate personality to select the desired operating mode.
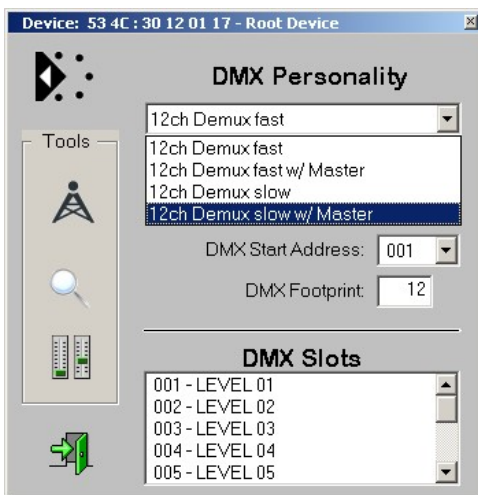
Personality-Menu
(recorded with JESE GET/SET RDM Controller)

RDM Special Functions:

RESET_DEVICE:	Create a warm reset using parameter 1
	Create a cold reset using parameter 255 (FFhex)
DEVICE_POWER_CYCLES:	Reads the number of device power-ups
IDENTIFY:	All outputs flashing
SET_FACTORY_DEFAULTS:	Resets all settings to factory default values
POWER_STATE:	Sets the output polarity
	Using parameter 255(FF hex) to set positive polarity (0...+10V)
	Using parameter 00 to set negative polarity (0...-10V)
DEVICE_HOURS:	Reads the number of operating hours

IMPORTANT NOTICE: Start address and DIP switches (on start adress board 3000P only) are getting disabled when programming a start address or personality via DMX RDM, because RDM programming -which may differ from switch settings- prevails. Any start address setting 900...999 (simply set the hundreds position to "9") will **re-activate** the switches and override existing RDM assignments.

RDM Sensors:

Der 3012C-EP (from Rev. 5.1) consists of sensors to monitor power supply and internal pc board temperature. Sensor ranges are internally set. Upon under- or overvoltage a warning status message will be generated automatically.

Voltage sensor
typ. supply voltage: 20V

Temperature sensor
0...50°C

RDM Master Mode:

Use the personality settings to select DMX master mode. DMX input channel 13 will be set as master channel. Output will only be generated when the master channel is set to a value <>0.

RDM Output Calibration:

The demultiplexer output voltage can be calibrated using RDM function DCCA "DC OUT CALIBRATION".

DC OUT CAL MENU
This menu allows to set 12 individual calibration values for outputs 1...12. Data entry uses hexadecimal number format.
(*shown: JESE GET/SET controller*)

GET entry values:

none	displays list of calibration factors
00 xx	displays calibration factor for channel xx (xx=01...0C)

SET entry values:

00 xx yy	Sets calibration factor yy for channel xx (yy=00...FF; xx=01...0C)
FF FF yy	Sets calibration factor yy for all outputs

IMPORTANT NOTICE! Do not change any settings when you do not have appropriate measurement instruments or basic knowledge of RDM programming. The 3012C-EP has been set to default values to match technical specifications.

TECHNICAL DATA

Dimensions:	140 mm x 65 mm x 25 mm
Power supply:	230V AC approx. 4 W
DMX IN:	1 Unit Load
DMX OUT:	fed-thru
Analog Out:	0...+10V, max. 1 mA
	alternatively 0...-10V, max. -1mA
Operating temperature:	0...+50°C
Storage Temperature:	-10...+70°C
Humidity:	non-condensing
Order code:	3012C-EP

CE CONFORMITY

C E

This DMX demultiplexer is microprocessor controlled and uses high frequency (8 MHz quartz). The interface has been tested in our EMC lab to comply with CE requirements. 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 demultiplexer 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.

SERVICE

There are no parts within the DMX demultiplexer 3012C-EP which require the user's attention. Should your unit require servicing, please send it to the factory, freight paid.

LIMITED WARRANTY

This DMX interface ist warranted against defects in metarials and workmanship for a period of 24 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.

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. 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).

INTERNET-HOTLINE

Updated and foreign laguage manuals can be downloaded from our website:
www.soundlight.eu/produkte/manuals
There you can also download a copy of the RDM Manual explaining many RDM commands in more detail.

Check our domain www.soundlight.eu/rdm for more information on the new DMX RDM standard.