JB LIGHTING

SPARX 12

Operating instructions

Version 1.06
Software >= 1.1.4

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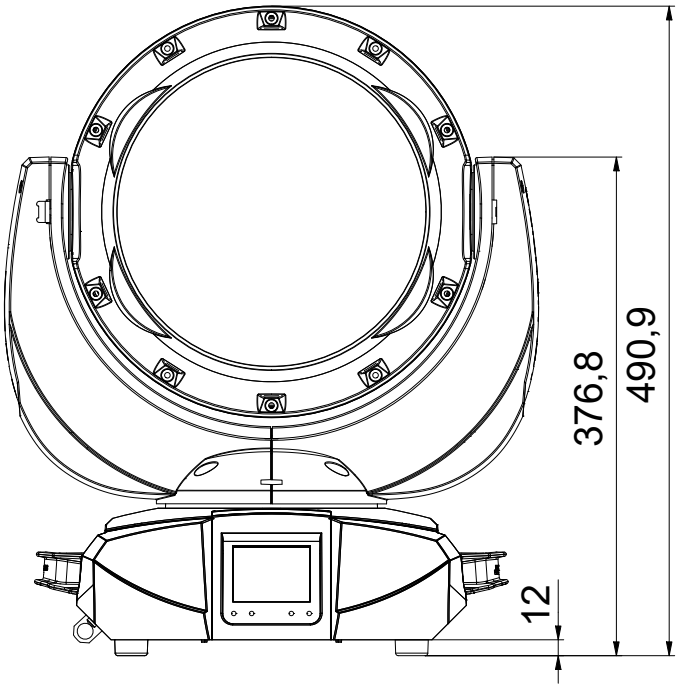
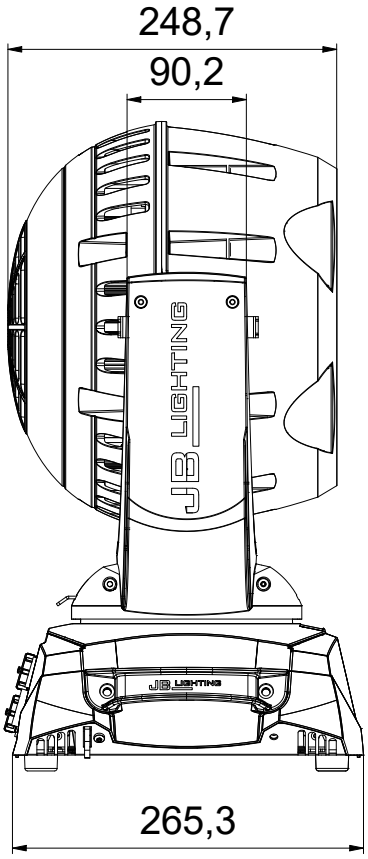
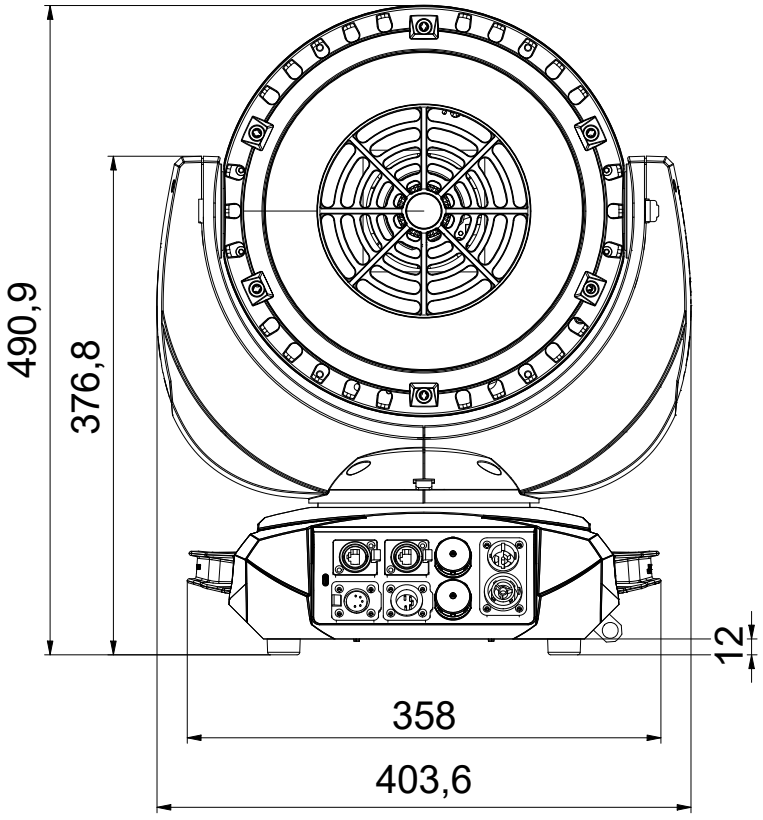
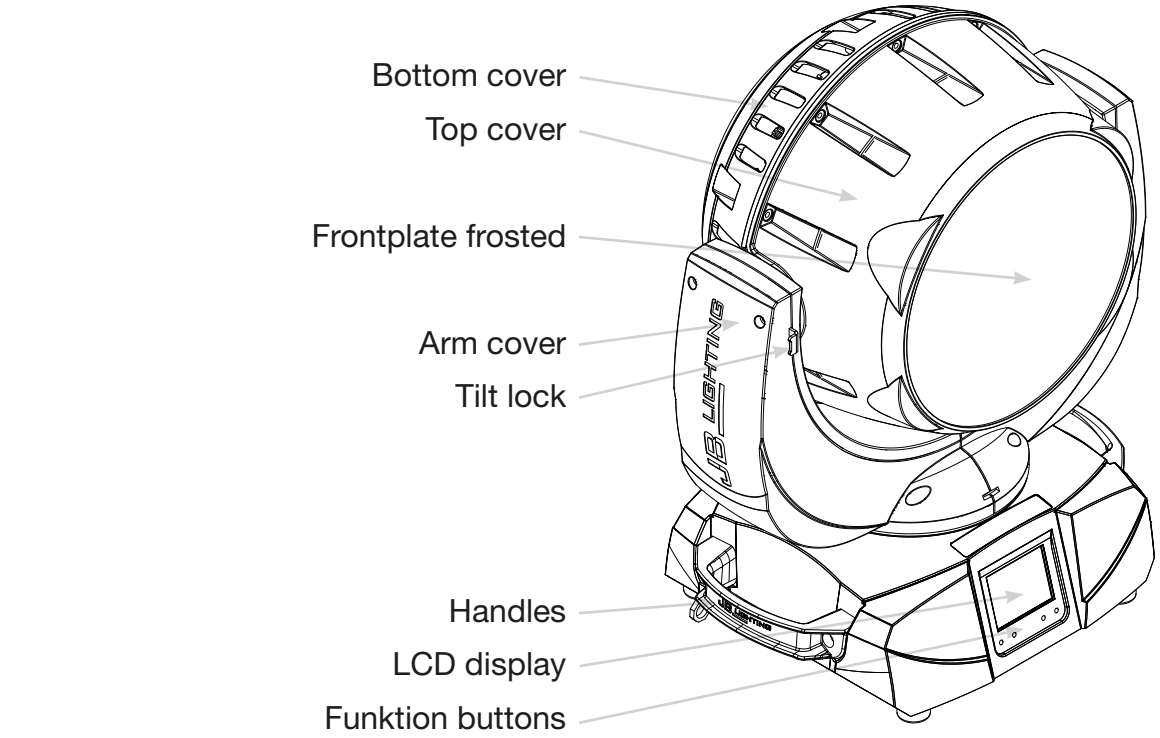
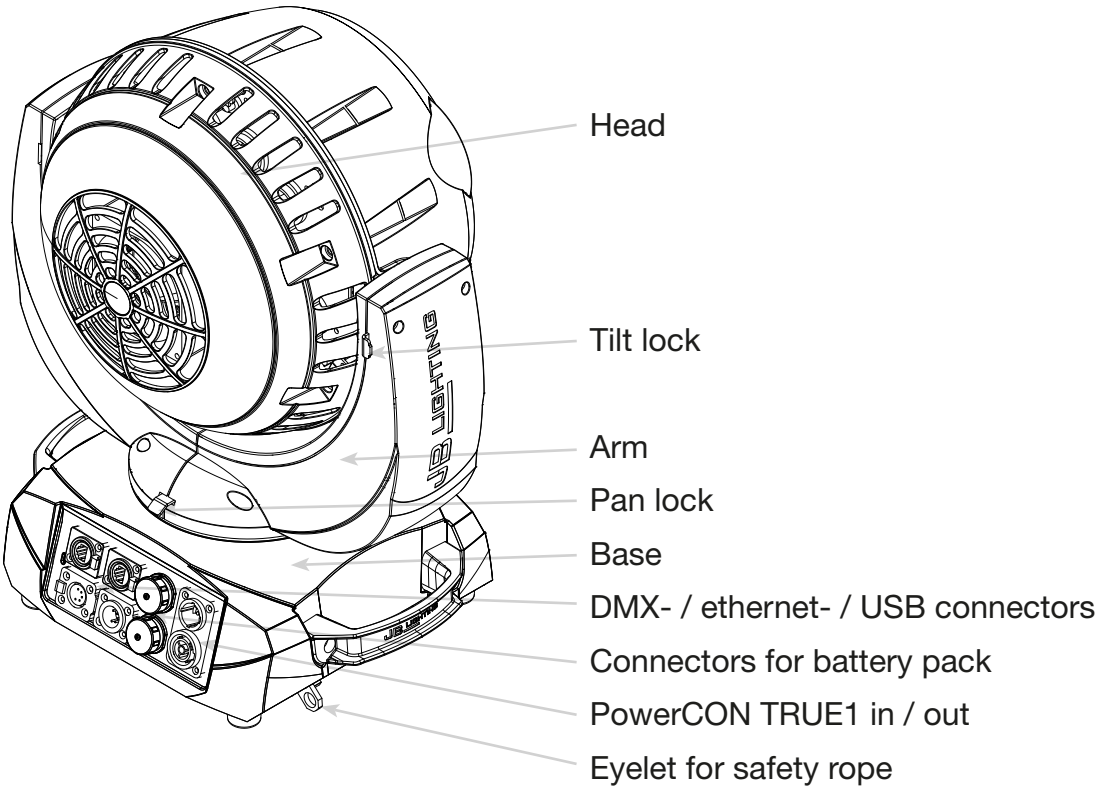
1. Dimensions and product overview








Bottom cover
Top cover
Frontplate frosted
Arm cover
Tilt lock
Handles
LCD display
Funktion buttons


Head
Tilt lock
Arm
Pan lock
Base
DMX- / ethernet- / USB connectors
Connectors for battery pack
PowerCON TRUE1 in / out
Eyelet for safety rope

2. Introduction

ATTENTION: For your own safety, please read these operating instructions carefully before first use.

This spotlight has left our company in excellent condition. To maintain this condition and to ensure safe operation, it is absolutely essential to observe the following safety instructions and warnings which are described in this operating manual.

The manufacturer accepts no liability for damage caused to the device by disregard of these operating instructions or unauthorised modifications.

Please note that damage caused by manual modifications to this unit is not covered by the warranty.

ATTENTION: This device is only suitable for professional use! Protection class IP 20 - only for use in dry environments (indoors)!

ATTENTION: JB-Lighting Lichtanlagentechnik GmbH does not authorise the use of its devices in life support systems. Life-supporting systems are systems whose purpose is to maintain or stabilise life and whose defect or malfunction may result in death or injury to persons.
The product in this manual complies with the following EU directives:
- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU

2.1 Safety instructions

ATTENTION: Allow the device to cool down and disconnect the device from the mains before opening the device. Touching live parts (high voltage) can give you an electric shock.

Ensure that the mains voltage to be connected is not higher than that indicated on the type plate. This device should only be operated with the power source indicated on the type plate. If you are not sure what type of power supply you have, contact your dealer or power supplier.

Always disconnect the device from the power supply before carrying out cleaning work or before replacing fuses or parts.

The mains plug must always be accessible after the spotlight has been installed. Do not overload the sockets or extension cables as this could result in fire or electric shock. Do not place any objects on the power cable. Do not install the spotlight in such a way that people can trip over or step on the power cable. Make sure that the power cable can never be crushed or damaged by sharp edges. Check the unit and the power cable from time to time.

Leave maintenance work to a qualified technician!

ATTENTION: This light corresponds to protection class I. For this reason, this spotlight must be connected to a mains socket with earthing contact.

Never connect this device to a dimmer pack.

During first use, some smoke and odour may occur. This is normal and does not necessarily mean that the device is defective.

The device becomes hot during operation. Never touch the device with bare hands during operation!

When replacing fuses, only use the same types with identical values! Only have fuse replacement carried out by a qualified technician

ATTENTION: DAMAGE TO EYES! Do not look into the light source for long periods during operation. This can be harmful to the eyes. Attention: potentially hazardous radiation - Risk group 2 based on DIN EN 62471

If the device has been exposed to strong temperature fluctuations (e.g. after transport), the device must not be switched on immediately. The resulting condensation can damage your device. Leave the device switched off until it has reached room temperature.

Do not shake or knock the device. Avoid brute force during installation or operation.

This light was designed for indoor use only. Do not expose this device to rain or moisture.

When choosing a mounting location, make sure that the device is not exposed to extreme heat, moisture or dust.

Ventilation openings and slots in the head and foot of the spotlight are used for ventilation to ensure reliable operation of the device and to protect it from overheating, these openings must not be covered.

Never cover the front pane when the spotlight is in use.

The openings should never be covered with substances or other objects so that the airways are blocked.

This device must not be operated in an environment without adequate ventilation.

The device may only be operated when the housing is closed and all screws/Camlocs are firmly tightened.

The device must always be secured with an additional safety device.

Ensure that the area below the spotlight is clear during installation, alteration and removal.

ATTENTION: Allow a fixture distance of at least 0,5 meters from easily flammable material and the distance between the light emission and the surface to be illuminated must be at least 2,0 meters.

The maximum ambient temperature of 45°C must not be exceeded.

ATTENTION: The front pane must be replaced if it is visibly damaged to the extent that its function is impaired, e.g. by cracks or deep scratches!

Do not operate the device until you have become familiar with its functions. Prevent operation by persons who are not qualified to use the device. Most damage is the result of improper operation!

Please use the original packaging or specially adapted flight cases if the device is to be transported. When using the original packaging, the tilt lock must not be closed!

ATTENTION: To avoid damaging the internal parts of the light head, never let sunlight shine directly into the front pane.

3. Installation

3.1 Unpacking the device

Contents of the packaging: This spotlight, two Omega brackets with original Camloc fasteners, powerCON-TRUE1 Schuko cable and a safety note. Open the packaging at the top and remove the powerCON TRUE1 cable, the inlay and the safety instructions. The Omega brackets are located under the spotlight. Check the Sparx 12 for possible transport damage. This should be communicated immediately to the transport company.

3.2 Connection of the fixture to the power supply

The Sparx 12 is supplied with an assembled Schuko power cable with the powerCON-TRUE1 plug (only the powerCON-TRUE1 plug is included in the US version). The connection of the Sparx 12 to the power supply (100-240 volts, 50 - 60 hertz) must comply with the connection rules of the respective country.

Connection in Germany/Europe:

Wire colour	**Function**	**Symbol**
Brown	Phase	“L”
Blue	Neutral wire	“N”
Green/Yellow	Protective earth	“PE” ⏚

Connection outside Europe:
There are different mains designs around the world. The Sparx 12 may only be operated on the following power supply systems:

	Mains		Sparx 12
2 wires, 1 phase	L N		L N PE
3 wires, 1 phase	L N L		L PE N
4 wires, 3 phases	L_1 L_2 L_3 N		L N PE

ATTENTION:
In Canada, the Sparx 12 may only be operated in a 2-wire, 1 phase network with a maximum voltage of 120V!

3.3 Mains connection

Connection values: Voltage 100-240 V, frequency 50 - 60 Hz, max. power 750 VA

The electrical safety and function of the device can only be guaranteed if it is connected to a properly installed protective conductor system. It is very important that this basic safety requirement is met. If in doubt, have the electrical installation checked by a specialist. The manufacturer cannot be held responsible for damage caused by a missing or interrupted protective conductor (e.g. electric shock)! Only use the device when it is completely assembled so that no electrical components can be touched. **(Danger 100-240 V)**
If you have observed the listed points, you can plug in the devices or have them connected to the mains by a specialist.

ATTENTION: The Sparx 12 can light up immediately if standalone operation is activated or a DMX signal is present!

3.4 Wiring the power feed-through

ATTENTION: Only have it carried out by a specialist!

The Sparx 12 has a powerCON-TRUE1 out power output. Depending on the local conditions, several devices can be linked by powerCON-TRUE1 in and powerCON-TRUE1 out. Connect a maximum of two Sparx 12 in a row when using 230V/16A. Use an approved three-core cable with a cross-section of at least 1.5 mm². Cabling must be done with the original Neutrik coded plugs. The installation instructions of the manufacturer (www.neutrik.com) and the colour coding of the cable must be observed.

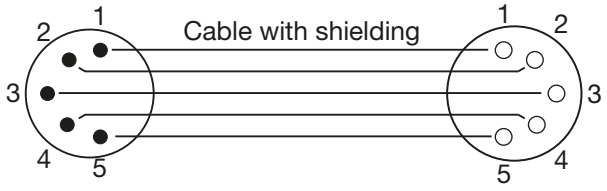
Wire colour	Function	Symbol
Brown	Phase	“L”
Blue	Neutral wire	“N”
Green/Yellow	Protective earth	„N“ ⏚

3.5 Signal connections

3.5.1 DMX cabling

The DMX cabling (signal lines) should be done with a 4-pin cable with shielding. We recommend a DMX cable (110 Ohm, 4x0.22mm²), alternatively a 2-pole micro cable can be used. The plugs and sockets are 5-pin XLR connectors, which can be purchased in specialist shops.

Pin assignment:
Pin1 = Ground/Shielding
Pin2 = DMX -
Pin3 = DMX +
Pin4 = not connected
Pin5 = not connected



The Sparx 12 has a DMX-in and DMX-out connector. Now connect the DMX output of your controller to the 1st Sparx 12 (controller DMX-Out -> Sparx 12 DMX-In). Then the 1st Sparx 12 to the 2nd Sparx 12 (Sparx 12 DMX-Out -> Sparx 12 DMX-In) and so on. In some cases, it is advisable to insert an end connector (XLR connector with a 120 Ohm resistor between pin 2 and pin 3). Whether an end connector is required depends on various factors, including the cable lengths used and the number of devices. However, as long as no problems occur in the DMX line, this is not necessary.

3.5.2 Ethernet cabling

Ethernet cabling can be done with standard network lines. The sockets on the device are Neutrik etherCON sockets. Special cables with etherCON connectors are recommended by Neutrik. The two sockets on the Sparx 12 are connected to each other via a switch. Up to 10 devices can be connected in series without any delay. Of course, the spotlights can also be supplied in a star configuration via an external switch. The received signal can be output via DMX. To do this, set the DMX OUTPUT CONFIG setting to ON in the PERSONALITY menu. After confirming with ENTER, the spotlight emits the entire received universe.

ATTENTION: Make sure that there is no signal at the DMX input at the same time !!

3.5.3 Wireless receiving

The Sparx 12 is equipped with a **Lumen radio** CRMX receiver for wireless DMX as standard. The receiver can process both DMX and RDM. If a cable and wireless connection are connected to the Sparx 12, the cable connection has priority! The received signal can be output via DMX. To do this, set the DMX OUTPUT CONFIG setting to ON in the PERSONALITY menu. After confirming with ENTER, the spotlight emits the entire received universe.

ATTENTION: Make sure that there is no signal at the DMX input at the same time !!

3.6 Mounting the devices

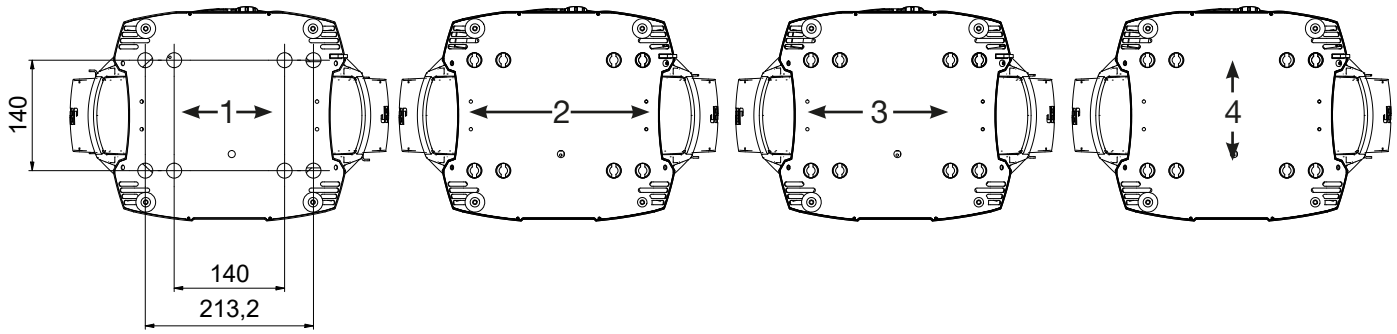
ATTENTION: Allow a fixture distance of at least 0.5 metres from easily flammable material and the distance between the light emission and the surface to be illuminated must be at least 2.0 meters.

The Sparx 12 can either be placed or suspended from a truss system in any position.

ATTENTION: Mounting horizontally to the truss system is only permitted if the omega brackets are attached to the outer camlocks. (distance 213.20mm).

If you place the device on the ground, only operate the device on a hard surface, as the air inlets in the foot must remain free!

To hang the device on a truss system, use the JB-Lighting Omega-Clamps with Camloc connectors. The Omega clamps can be mounted in the following four ways:



The Camlocs must snap in to be locked properly. Ensure that the structure (for example a truss system) to which you are attaching the fixture is secure. If you install the fixture to a hanging system (for example to a truss system) always attach a safety cable, that can hold at least 10 times the weight of the fixture. There is a corresponding eyelet on the fixture for the secondary safety device (see picture).

eyelet for the secondary safety device

4. Control panel

The Sparx 12 has a graphic colour display that can be rotated 180° when installed in a suspended position. The display can be rotated in the PERSONALITY MENU or via shortcut ENTER + UP in the main screen.
All parameters of the Sparx 12 can be set on the control panel.

Function and operation of the display
The main menu provides information regarding the set DMX mode and, when the wireless mode is switched on, the field strength of the associated transmitter module. "ENTER" calls up a sub-menu or confirms an input. "ESC" is used to exit a function or a menu item. "UP" and "DOWN" are used to navigate within the menu and to enter values.

Special areas can only be called up using a specific key combination. To do this, press and hold the "ENTER" key and then use the opposite "ESC" key to access the menu. To exit the function, proceed in reverse order.

This applies in the STANDALONE area for the MODIFY, RUN and REMOTE functions.

The main menu can also be locked to prevent unintentional access. It is also locked by pressing the "ENTER" key (keep it pressed) and then additionally locking it with the opposite "ESC" key.

Display illumination as function display
The display illumination remains switched on during the reset. After the reset, slowly flashing display illumination indicates that there is no DMX signal.

Very fast flashing display illumination after the reset indicates that a new error was saved in the “ERROR LIST”. This occurred during the reset or during operation. The error, e.g. PAN TIMEOUT is also shown on the display. This error is now set to “read” automatically but remains in the “ERROR LIST”.

Fast flashing display illumination indicates an error that is still in the “ERROR LIST” but that has already been confirmed or confirmed automatically. The Sparx 12 only starts again without error indications once the error has been deleted from the “ERROR LIST”.

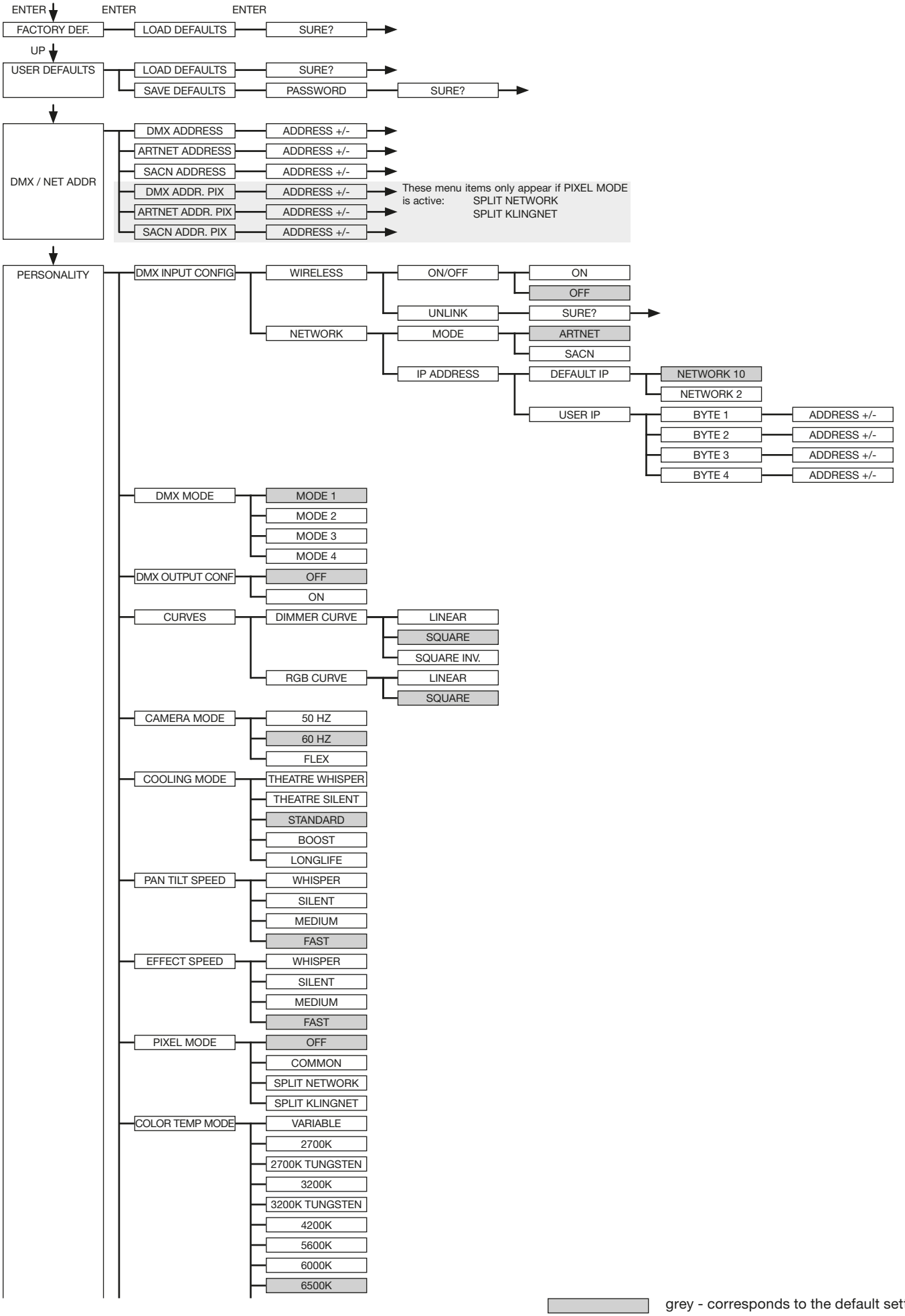
If errors occur more frequently, please contact your dealer/distributor or the JB-Lighting service department.

If the Sparx 12 receives a DMX signal, the display illumination goes out after 30 seconds.

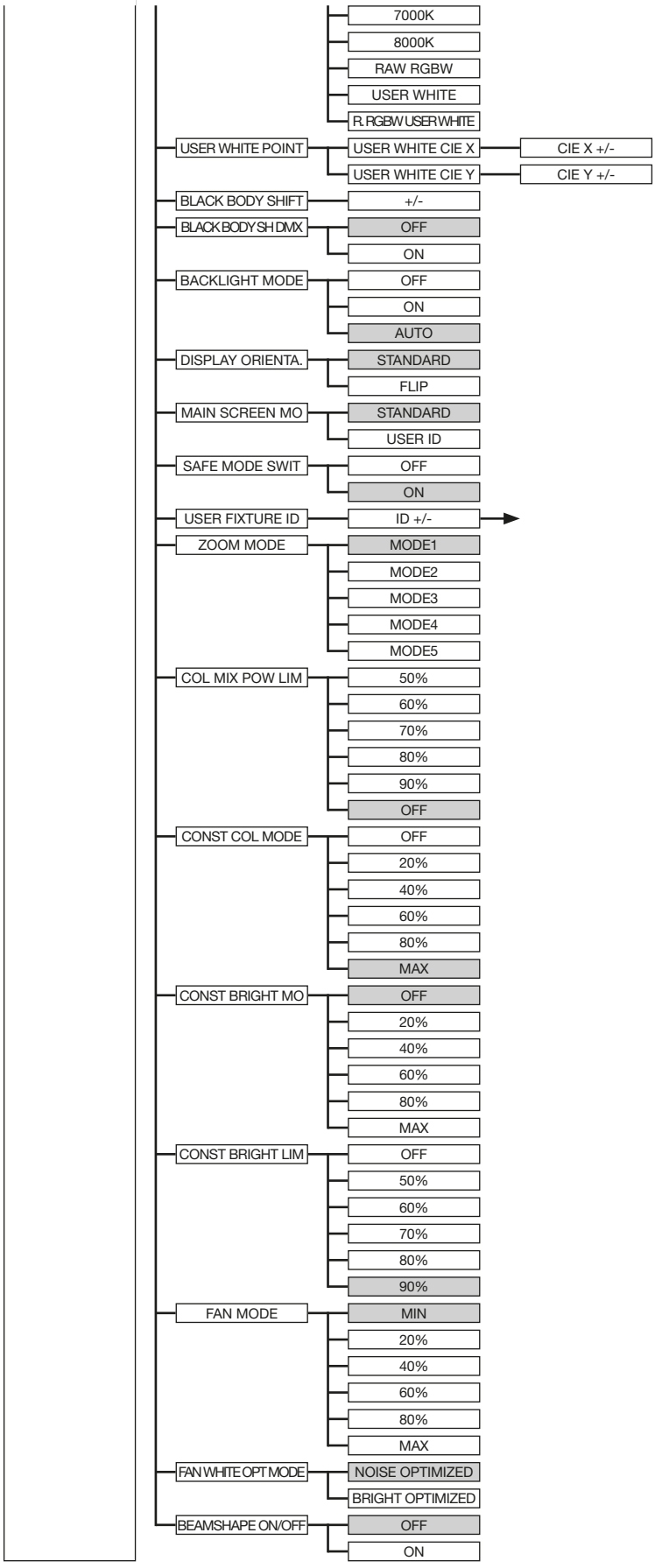
DMX addressing
In the main menu, the DMX address can be set directly by pressing the up/down keys.

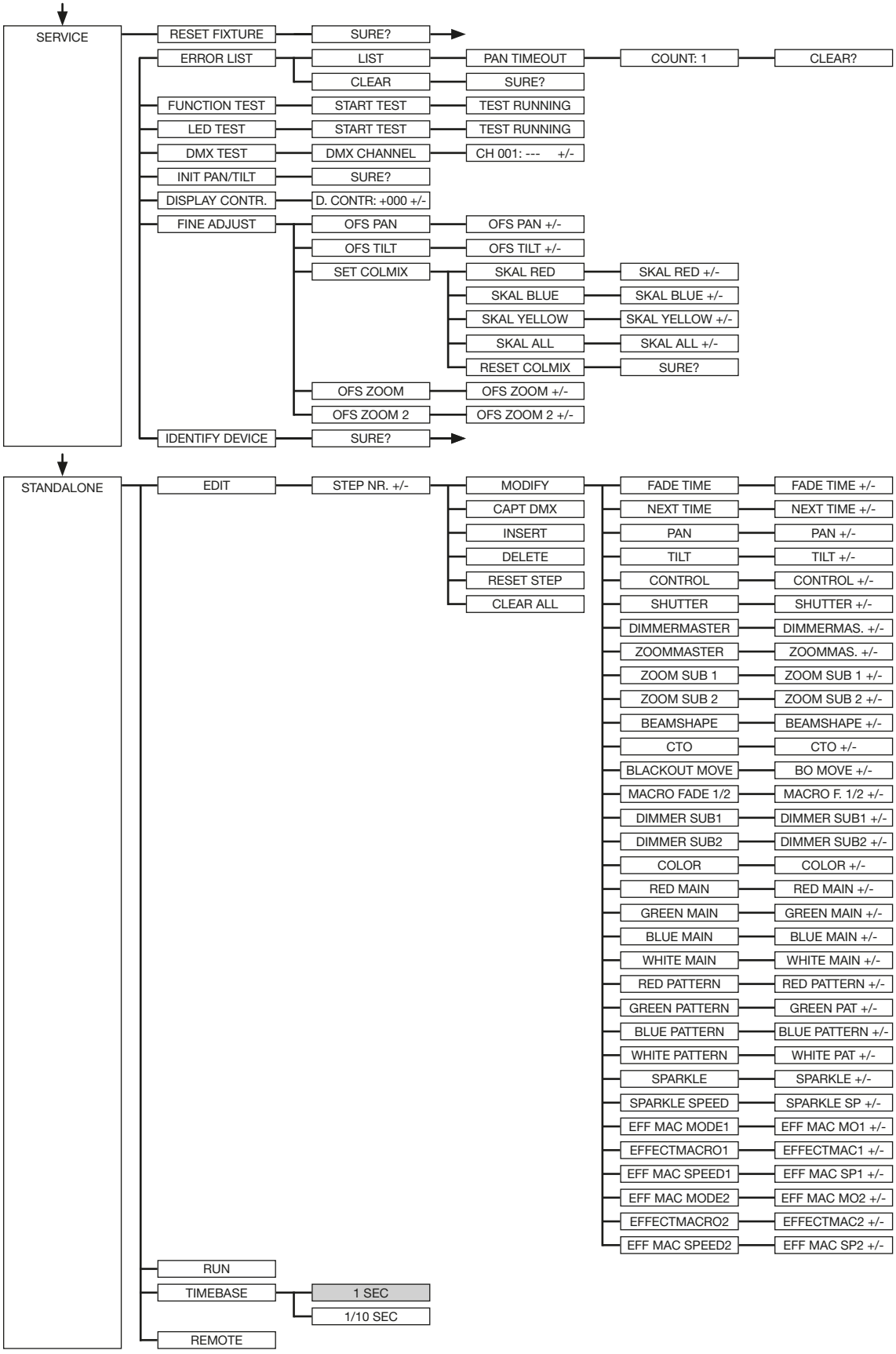
Display operation via rechargeable battery buffering
Pressing the left key below the display activates the spotlight's configuration rechargeable battery operation; the spotlight can therefore be configured without a power connection. All settings displayed in the menu can be configured, e.g. the DMX address can be set or the error list can be read.

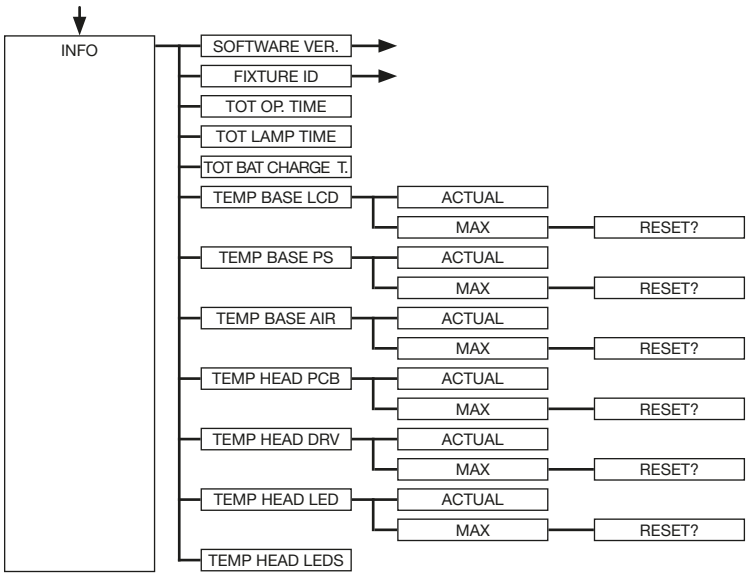
4.1 Menu overview



grey - corresponds to the default setting


7000K
8000K
RAW RGBW
USER WHITE
R. RGBW USER WHITE
USER WHITE POINT
USER WHITE CIE X
CIE X +/-
USER WHITE CIE Y
CIE Y +/-
BLACK BODY SHIFT
+/-
BLACK BODY SH DMX
OFF
ON
BACKLIGHT MODE
OFF
ON
AUTO
DISPLAY ORIENTA.
STANDARD
FLIP
MAIN SCREEN MO
STANDARD
USER ID
SAFE MODE SWIT
OFF
ON
USER FIXTURE ID
ID +/-
ZOOM MODE
MODE1
MODE2
MODE3
MODE4
MODE5
COL MIX POW LIM
50%
60%
70%
80%
90%
OFF
CONST COL MODE
OFF
20%
40%
60%
80%
MAX
CONST BRIGHT MO
OFF
20%
40%
60%
80%
MAX
CONST BRIGHT LIM
OFF
50%
60%
70%
80%
90%
FAN MODE
MIN
20%
40%
60%
80%
MAX
FAN WHITE OPT MODE
NOISE OPTIMIZED
BRIGHT OPTIMIZED
BEAMSHAPE ON/OFF
OFF
ON


SERVICE
RESET FIXTURE
SURE?
ERROR LIST
LIST
PAN TIMEOUT
COUNT: 1
CLEAR?
CLEAR
SURE?
FUNCTION TEST
START TEST
TEST RUNNING
LED TEST
START TEST
TEST RUNNING
DMX TEST
DMX CHANNEL
CH 001: --- +/-
INIT PAN/TILT
SURE?
DISPLAY CONTR.
D. CONTR: +000 +/-
FINE ADJUST
OFS PAN
OFS PAN +/-
OFS TILT
OFS TILT +/-
SET COLMIX
SKAL RED
SKAL RED +/-
SKAL BLUE
SKAL BLUE +/-
SKAL YELLOW
SKAL YELLOW +/-
SKAL ALL
SKAL ALL +/-
RESET COLMIX
SURE?
OFS ZOOM
OFS ZOOM +/-
OFS ZOOM 2
OFS ZOOM 2 +/-
IDENTIFY DEVICE
SURE?
STANDALONE
EDIT
STEP NR. +/-
MODIFY
CAPT DMX
INSERT
DELETE
RESET STEP
CLEAR ALL
FADE TIME
FADE TIME +/-
NEXT TIME
NEXT TIME +/-
PAN
PAN +/-
TILT
TILT +/-
CONTROL
CONTROL +/-
SHUTTER
SHUTTER +/-
DIMMERMASTER
DIMMERMAS. +/-
ZOOMMASTER
ZOOMMAS. +/-
ZOOM SUB 1
ZOOM SUB 1 +/-
ZOOM SUB 2
ZOOM SUB 2 +/-
BEAMSHAPE
BEAMSHAPE +/-
CTO
CTO +/-
BLACKOUT MOVE
BO MOVE +/-
MACRO FADE 1/2
MACRO F. 1/2 +/-
DIMMER SUB1
DIMMER SUB1 +/-
DIMMER SUB2
DIMMER SUB2 +/-
COLOR
COLOR +/-
RED MAIN
RED MAIN +/-
GREEN MAIN
GREEN MAIN +/-
BLUE MAIN
BLUE MAIN +/-
WHITE MAIN
WHITE MAIN +/-
RED PATTERN
RED PATTERN +/-
GREEN PATTERN
GREEN PAT +/-
BLUE PATTERN
BLUE PATTERN +/-
WHITE PATTERN
WHITE PAT +/-
SPARKLE
SPARKLE +/-
SPARKLE SPEED
SPARKLE SP +/-
EFF MAC MODE1
EFF MAC MO1 +/-
EFFECTMACRO1
EFFECTMAC1 +/-
EFF MAC SPEED1
EFF MAC SP1 +/-
EFF MAC MODE2
EFF MAC MO2 +/-
EFFECTMACRO2
EFFECTMAC2 +/-
EFF MAC SPEED2
EFF MAC SP2 +/-
RUN
TIMEBASE
1 SEC
1/10 SEC
REMOTE



4.2 FACTORY DEFAULTS - Factory settings

To reset the Sparx 12 to the factory settings, go to the menu item FACTORY DEFAULTS -> LOAD DEFAULTS. After confirming the security query SURE? by pressing the "ENTER" button for 2 seconds, all parameters are reset to the factory settings.

4.3 USER DEFAULTS - User settings

If the user has set the Sparx 12 in the PERSONALITY menu to their personal settings, these can be saved and loaded in the USER DEFAULTS menu. In order to prevent unintentional alteration of the data, you must enter the following password during the saving process: Buttons "ESC DOWN UP ENTER".

4.4 DMX / NET ADDR - DMX addressing / Artnet addressing / sACN addressing

The DMX addressing can be done either directly in the display. Press the "UP" or "DOWN" button to set the desired DMX address. The value is confirmed with the "ENTER" key. However, the DMX addressing can also be done within the menu item DMX / NET ADDR, and there under DMX ADDRESS.

To set the Artnet address, the menu item ARTNET ADDRESS must be selected in the DMX / NET ADDR menu. The Artnet address can now be set using the UP / DOWN buttons. The Artnet address is displayed in the form 000.00.00. This display corresponds to: Net.Subnet.Universum. The sACN address can then be selected in the DMX / NET ADDR -> sACN ADDRESS menu. The address can now be set using the UP / DOWN buttons. The sACN address is displayed in the form 00000.

4.5 PERSONALITY - Personal settings

The PERSONALITY menu is used for personal configuration of the spotlight. Most of these settings are also adjustable via the headlamp control channel. For this purpose, the corresponding DMX value must be sent for 2 seconds, then the headlight adopts the setting. Exempted here are the setting of the DMX smoothing these values must be permanently applied, as well as the setting of the COOLING MODE, this depends on the switch SAFE MODE SWITCH, this is on OFF the COOLING MODES can be switched directly, this is on ON additionally DIMMER and SHUTTER must get the DMX value 0. Only then can be switched.

DMX INPUT CONFIG
In this menu item the options WIRELESS and NETWORK are available.

Under WIRELESS -> ON / OFF the factory-installed radio DMX receiver module of Lumen-Radio can be activated or deactivated and via WIRELESS -> UNLINK the connection to the connected transmitter can be deleted. In order to connect the fixture to a transmitter, wireless must be set to ON on the fixture and the connection button must be pressed briefly on the transmitter. The transmitter is now looking for all fixtures where wireless is enabled and fixtures that are not connected to a transmitter. If the Sparx 12 has successfully connected to the transmitter, the display shows a level indication of the current reception quality. If the Sparx 12 is additionally connected via the DMX / etherCON connection sockets, these signals have priority over the radio link. Using the key shortcut ESC and DOWN, pressed in the main menu, the headlamp can be booked out of the booked transmitter (see page 24).

Under NETWORK -> MODE you can toggle between Artnet operation and sACN operation.
For network operation, the IP address of the spotlight must be selected or set under NETWORK -> IP ADDRESS. Each headlight has a unique standard IP address.
Under IP ADDRESS -> DEFAULT IP this can be changed from the network 10.xxx.xxx.xxx to a network 2.xxx.xxx.xxx. For your own self-definable IP address, you can set your own desired IP address under IP ADDRESS -> USER-IP. This address is divided into BYTE1 to BYTE 4 and can be set one after the other.

DMX OUTPUT CONFIG - configuration of the DMX output
Under this menu item, the DMX output of the headlamp can be activated, that is a received Artnet, or wireless DMX signal can be output by activating this menu item -> ON via the DMX socket again. Make sure that there is no signal at the DMX input at the same time !!

DMX MODE - setting the DMX modes
The Sparx 12 has a 3 DMX modes (see channel assignment). Modes 1 and 2 are standard modes. Mode1 can be used to operate all Sparx 12 parameters optimally and easily. Mode 2 is the 16-bit variant of Mode 1; most channels can be adjusted more finely here. Mode 4 provides extended programming options with 96 channels.

CURVES - setting the curves for dimmer and color mixing
Dimmer curve:
The dimmer curve can be changed from exponential (square) to exponential inverse (square inv.) or linear. The dimmer curve "exponential" (factory setting) results in a softer fade-in and fade-out behaviour of the spotlight.
RGBW curve:
The RGBW curve can be changed from exponential (square) to linear. The RGB curve "exponential" (factory setting) results in a softer fade-in and fade-out behaviour of the colors.

CAMERA MODE - Sets the refresh rate of the LEDs
In order to avoid flickering during TV recordings, the Sparx 12 can be adapted to various camera systems or TV standards from 50 HZ (PAL, Secam, repetition frequency 100Hz) to 60 Hertz (NTSC, repetition frequency 120Hz). The flex mode (600Hz) is set if different camera systems are used or if recordings with mobile phone cameras or similar non-professional cameras are used. The Sparx 12 is set to 60 Hertz at the factory. The changeover is also possible with the lighting desk via the control channel.

COOLING MODE - Adjust the brightness and fan volume
In the menu item COOLING MODE the fan control and the brightness of the Sparx 12 can be adjusted. The following setting options are available.

THEATRE WHISPER: Volume 29 dB(a). In this mode, the headlight runs with the same brightness up to an ambient temperature of 45 °C; it is not necessary to increase the fan in this mode.

THEATRE SILENT: from 45° C ambient temperature, the headlight controls the fans a little bit upwards and thus remains in the same brightness.

STANDARD: starting at approx. 45 °C ambient temperature, the fans will run high to cool the LED accordingly. The brightness remains constant up to 60 °C ambient temperature.

BOOST: the fans run a bit more in this mode, from about 45 °C ambient temperature, the fans regulate again accordingly high.

LONGLIFE: The fans run a bit more in this mode, from about 45 °C ambient temperature, the fans regulate again accordingly high. We would prefer this mode for permanent installations, since the LED module is operated cooler.

There is no danger to the life of the device as the Sparx 12 has a temperature safety shutdown. In addition, the LEDs are switched off from an ambient temperature of 60 °C.

PAN TILT SPEED - Pan / Tilt speed setting
In the PAN TILT SPEED menu item you can set the maximum speed, the acceleration and thus also the movement volume of the P12. The following setting options are available.

WHISPER: The speed of Pan / Tilt is reduced so much that a volume of 29dB (A) is not exceeded.

SILENT: The speed of Pan / Tilt is slightly faster and thus louder as compared to the Whisper setting.

MEDIUM: The acceleration and deceleration ramps are set very soft so that the headlamp brakes softly and starts.

FAST: The acceleration and deceleration ramps are set very hard so that the headlamp moves very fast and directly at maximum speed.

EFFECT SPEED - Sets the effect speed
In the menu item EFFECT SPEED you can set the maximum speed, the effects and thus also the volume of the effects of the Sparx 12. The following setting options are available.

WHISPER: The speed of the effects is reduced so much that a volume of 29dB (A) is not exceeded.

SILENT: The speed of the effects is slightly faster and thus a bit louder than with the Whisper setting.

MEDIUM: The acceleration and deceleration ramps of the effects are set very soft, so that the effects are very soft and thus cause little noise.

FAST: The acceleration and deceleration ramp effects are set to maximum speed. Very fast gobo and color changes are possible!

PIXEL MODE - Sets the type of single LED drive
In the menu item PIXEL MODE you can set the type of single LED control.

OFF: The single LED control is switched off.

COMMON: The single LED control is done via DMX, thereby correspondingly Sparx 12 76 (19 Leds x 4) further DMX channels are added to DMX configuration. If Black Body Shift is set to be used via Channel the Single LED Control starts 1 Address later. For example Sparx 12 is used Mode 2, Sparx 12 has now with Black Body shift channel 51 channels and the single pixel control starts at channel 52.

SPLIT NETWORK: The single LED control is done via Artnet. No further DMX channels are used here. If Black Body Shift is set to be used via Channel the Single LED Control starts minimum 1 Address later. For example Sparx 12 is used Mode 2, Sparx 12 has now with Black Body shift channel 51 channels and the single pixel control starts at channel 52.

SPLIT KLINGNET: The single LED control is done via KLINGNET. No further DMX channels are used here.

COLOR TEMP MODE - Sets the base color temperature of the fixture
This menu item allows you to set the basic color temperature of the headlamp. The whites are exactly on the "Black Body Line". The following color temperatures and functions can be set here.

VARIABLE: The CTO channel can be used to set fixed color temperatures.
DMX 20 -> Color temperature 2000K
DMX 21-> Color temperature 2100K
etc ... to
DMX 200 -> color temperature 20000K

2700K: C olor temperature 2700K

2700K TUNGSTEN: 2700K color temperature with tungsten emulation

3200K: color temperature 2700K

3200K TUNGSTEN: 3200K color temperature with tungsten emulation

4200K: color temperature 4200K

5600K: color temperature 5600K

6000K: color temperature 6000K

6500K: 6500K color temperature, this is the default color temperature

7000K: color temperature 7000K

8000K: color temperature 8000K

RAW RGBW: The spotlight works not adjusted, i.e. the individual RGBW channels can be controlled separately. However, the headlight is set by default in such a way that the headlight still keeps the colors constant. This can also be influenced by the menu items COLOR MIX POWER LIMIT, CONSTANT COLOR MODE, CONSTANT BRIGHTNESS MODE and CONSTANT BRIGHTNESS LIMIT.

USER WHITE: The spotlight works not adjusted, i.e. the individual RGBW channels can be controlled separately. However, the headlight is set by default in such a way that the headlight still keeps the colors constant. This can also be influenced by the menu items COLOR MIX POWER LIMIT, CONSTANT COLOR MODE, CONSTANT BRIGHTNESS MODE and CONSTANT BRIGHTNESS LIMIT. In this mode, the color temperature of the white LED is matched to the white LED of the A12 by adding red and green.

RAW RGBW USER WHITE: The spotlight works not adjusted, i.e. the individual RGBW channels can be controlled separately. However, the headlight is set by default in such a way that the headlight still keeps the colors constant. This can also be influenced by the menu items COLOR MIX POWER LIMIT, CONSTANT COLOR MODE, CONSTANT BRIGHTNESS MODE and CONSTANT BRIGHTNESS LIMIT. In this mode, the color temperature of the white LED is adjusted to a white tone that can be set via the menu item PERSONALITY -> USER WHITE POINT. This could be done by specifying the x/y coordinates of the desired color value.

USER WHITE POINT - Setting the white point for the RAW RGBW USER WHITE
This option allows you to set the white point for the RAW RGBW USER WHITE option. To do this, use a measuring device to measure the desired white point on any headlight and then enter the coordinates (USER WHITE CIE X/Y) in the PERSONALITY - USER WHITE POINT menu item. If the RAW RGBW USER WHITE option is now selected in the COLOR TEMPERATURE MODE, the spotlight uses the set color temperature for the white channel.

BLACK BODY SHIFT - Adjusting the green/magenta balance (+-Green)
With this option, the white point can be shifted towards green or magenta. With this option, the Sparx 12 can be adapted to "old" headlights with a green/magenta shift.

BLACK BODY SHIFT DMX - Setting an additional channel for +-green
With this option you can add an additional DMX channel to the existing channels. The green/magenta balance can then be carried out via this additional channel.

BACKLIGHT MODE - Setting the display backlight
This menu item controls the backlight of the display.

OFF: The backlight of the display is always off. The lighting only switches on when the button is pressed. Errors that are indicated by flashing are not displayed in this mode!

ON: The backlight of the display is always on.

AUTO: The backlight is switched on / off due to the action.

DISPLAY ORIENTATION - Adjusting the display orientation
This menu item turns the display orientation. The display also rotates when the ENTER and UP shortcuts are pressed in the main screen.

MAIN SCREEN MODE - main screen view
With this menu item the display of the main screen can be changed. Either the standard (STANDARD) screen is displayed with DMX address and DMX mode or the USER FIXTURE ID. This ID is used to number the headlights and to display this number in the display.

SAFE MODE SWITCH - Setting option for the mode of switching the cooling mode
With this setting it can be decided whether the changeover of the menu item COOLING MODE can be done directly "OFF" or whether for safety the dimmer and the shutter of the headlamp must be closed before switching -> "ON"

USER FIXTURE ID - Set the user fixture number
Used to set the USER FIXTURE ID (0-65535). This can be displayed via MAIN SCREEN MODE and serves as an info display of the fixture number.

ZOOM MODE - Setting the zoom modes
This option adjusts the type of zoom, i. how the main zoom reacts in conjunction with the zoom of the outer ring and the middle area.

Mode 1: Zoom / Zoom2 / Zoom3: Zoom2 / 3 TwinZoom -> Masterzoom controls to the lower zoom value (Zoom2 or 3) then takes it to the higher zoom value and then moves with both to DMX 255.

Mode 2: Zoom / Zoom2 / Zoom3: Masterzoom "takes" the low zoom value and moves with it to the higher zoom value and then takes both up to DMX255.

Mode 3: Zoom / Zoom2 / Zoom3: Master Zoom scales both zoom from the set value Zoom2 / Zoom3 to DMX255.

Mode 4: Zoom / Zoom2 / Zoom3: Zoom3 acts as frost. Masterzoom pushes the frost intelligently.

Mode 5: Zoom / Zoom2 / zoom3: Master zoom acts as a switchover between TwinZoom mode and Zoom / Frost mode. Zoom DMX 000 -> Zoom2 / 3 in Zoom / Frost mode, Zoom DMX 255 -> Zoom2 / 3 in TwinZoom mode.

COLOR MIX POWER LIMIT - Adjustment of total power consumption
This option reduces the overall power consumption. The setting options are 50% -90% power consumption or OFF -> full power.

CONSTANT COLOR MODE - Adjust color fidelity
The headlamp is configured to hold the set color / white tone to 100%, even in RAW mode. This sometimes has the result that the headlight after some time with some colors / whites in the brightness readjust something as the red LED is the most heat-sensitive LED in the system. The CONSTANT COLOR MODE lets you set the color fidelity in percent. This allows me as a user to choose whether I value color fidelity or the brightness is more important to me. This can be set from 0% - OFF to 100% - max. color fidelity.

CONSTANT BRIGHTNESS MODE - setting for constant brightness
Since the LEDs, in particular the red LED lose relatively much brightness in the event of heat, this menu item allows the headlight to be configured so that the headlight retains a predefined brightness permanently. For this purpose, the brightness is reduced from the beginning to be able to readjust according to the set color. The setting options are adjustable from 0% -100%, whereby 100% means the maximum reduction of brightness to have enough air to keep the brightness constant. 0% means that the function is switched off.

CONSTANT BRIGHTNESS LIMIT - Sets the limit for constant brightness control
This setting is used to influence the CONSTANT BRIGHTNESS MODE. If the CONSTANT BRIGHTNESS MODE is at 80% or 90%, it is ensured that with white tones the headlight has sufficient air to keep the white tone constant in the brightness. If you want to display colors with red or red colors you can use the CONSTANT BRIGHTNESS LIMIT to limit these shades in your control and thus ensure more brightness in these shades! This setting can be adjusted from 0% (Function Off) to 90% for Maximum Limit. This means that if the limit is set to 90%, the headlamp red is allowed to control by a maximum of 10%, 0% means that the limit is switched off and the headlamp is allowed to control red tones and reds to the maximum.

FAN MODE - Sets the basic volume in the selected COOLING MODE
In the selected COOLING MODE, I can use this menu item to let the fan run even faster before the regulation starts, so from the beginning the LED is cooled more and thus more brightness is achieved. Always with the background information that the headlamp keeps the colors constant.

FAN WHITE OPT MODE - Setting whether the headlight works in a noise-optimized or brightness-optimized manner
You can set whether the fixture works in brightness-optimized - BRIGHTNESS OPTIMIZED or noise-optimized - NOISE OPTIMIZED. This setting only affects standard and boost mode.

BEAMSHAPE ON / OFF - Setting whether a beamshape is mounted or not
In order to shorten the reset time of the headlamp, the option off - no beamshape can be set here when the beamshape is not mounted, so that the headlamp does not attempt to initialize the beamshape during the basic reset, which reduces the reset time of the headlamp.

4.6 STANDALONE operation

In standalone operation, up to 10 program steps can be stored in the Sparx 12, which can then run in an endless loop. The images can be saved in two ways. Either you program the desired DMX values directly on Sparx 12 and save them, or you set the DMX values via a connected DMX console and then store them in the Sparx 12.
The menu items MODIFY, RUN and REMOTE can only be called up using a specific key combination. To do this, press and hold “ENTER”, and also press “ESC”. Before activating these menu items, remove all other devices in the DMX line that send DMX, e.g. consoles or other spotlights that are not configured as slave devices, as otherwise damage to the DMX drivers may occur.

Programming the standalone programme on the spotlight display:
Call up the STANDALONE, EDIT menu item. In the STEP NR+/- menu item, select the desired step and you can change it and its channel parameters in the following menu items: In the MODIFY menu item, set the desired lighting scene and position and determine the individual sequence times of the steps with FADE TIME and NEXT TIME (time for the complete step).
Use INSERT to insert an additional programming step. The DMX values of the previous step are copied to the new step.
Use DELETE to delete a step. The display shows STEP NR: 1/X. Use the selection keys to move to the desired step.
With RESET STEP you reset one step to its default values (DMX 000). The display shows STEP NR: 1/X. Use the selection keys to select your step. CLEAR ALL resets the complete standalone programming steps. Under MODIFY you will find STEP1/1 again. In the STANDALONE, TIMEBASE menu item you have the possibility to change the Fade Time and Next Time from 1 second to 1/10 second.

Accept the DMX values from an external console:
To accept the DMX values of a connected console, you must first enable the Capture DMX input. To do this, go to the CAPT DMX menu item. The display now shows CAPTURE DMX 01/01, press the Enter key to switch to STARTCAPTURE. The Sparx 12 now reacts to the signals from the external console.

Starting the standalone program:
Call up the STANDALONE menu and navigate to the RUN submenu. Confirm the selection by pressing the key combination “ENTER” (press and hold) and simultaneously “ESC”. The display then shows: S-ALONE: 01/XX and the program runs in an endless loop.
Deactivation: Press and hold the “ESC” key and then also press "ENTER". The menu jumps back one level and RUN appears in the display.

Operation via master-slave function:
Connect the Sparx 12 via DMX lines and activate the REMOTE menu item for all slave devices. To do this, navigate in the STANDALONE menu to the REMOTE sub-menu. Activate the REMOTE function by pressing and holding “ENTER”, and also pressing “ESC”. The spotlight is in slave mode when the display shows the status REMOTE INACTIVE or REMOTE ACTIVE.
REMOTE INACTIVE: The Sparx 12 is in slave mode but does not receive a DMX signal.
REMOTE ACTIVE: The Sparx 12 is in slave mode and receives a DMX signal.
The master device is programmed via the MODIFY menu item and started via RUN (press and hold “ENTER” and also press “ESC”).

4.7 INFO menu

The Info menu informs you about the respective software, the fixture id, about the total operating time and the different temperatures of the spotlight. The first two menu items in the Info area are the software version and the fixture ID, whereby the software version is an important source of information for our service requests, the fixture ID is less important source of internal information. Under the menu item TOT OPERATE TIME the complete operating time of the headlight is displayed. The menu item TOT LAMP TIME provides information about the pure operating time of the LED module. TOT BAT CHARGE TIME shows the complete charging time of the battery (battery backup). The TOT OPERATE TIME, TOT LAMP TIME and TOT BAT CHARGE TIME can not be deleted! The following temperatures are also displayed:

TEMP BASE LCD, the temperature on the display board

TEMP BASE PS, the temperature of the power supply unit

TEMP BASE AIR, the air temperature in the foot

TEMP HEAD PCB, the temperature of the head board

TEMP HEAD DRV, the temperature of the LED driver board

TEMP HEAD LED, the average temperature of the LEDs

TEMP HEAD LEDs, the individual current temperatures of the LEDs

Both the current temperature and the maximum temperature are displayed. The maximum temperatures can be individually deleted.

4.8 Shortcuts - quick operation

ESC + DOWN:
Pressing the ESC + DOWN button on the main screen will log the headlamp off the programmed Lumen Radio Wireless transmitter. The headlight is now ready to be logged in another transmitter.

ENTER + UP:
If ENTER + UP is pressed in the main screen, the screen orientation is rotated by 180 °.

ENTER + ESC
By pressing the ENTER and ESC key, the headlight is locked for user input -> LOCKED. ESC and ENTER release the lock again!

5. Control options

5.1 DMX

5.1.1 Overview of DMX channels Sparx 12

The Sparx 12 has 4 DMX modes. The respective mode can be set in the PERSONALITY -> DMX MODE menu item. The set mode is displayed in the main menu. The individual LED control can be attached to any mode PERSONALITY -> PIXELMODE

	Mode 1(M1) 34 channels	Mode 2 (M2) 49 channels	Mode 3 (M3) 23 channels
Channel 1	Pan	Pan	Pan
Channel 2	Pan fine	Pan fine	Pan fine
Channel 3	Tilt	Tilt	Tilt
Channel 4	Tilt fine	Tilt fine	Tilt fine
Channel 5	Control channel	Control channel	Control channel
Channel 6	Shutter	Shutter	Shutter
Channel 7	Dimmer (master)	Dimmer (master)	Dimmer (master)
Channel 8	Zoom (master)	Dimmer fine (master)	Zoom (master)
Channel 9	Zoom 2	Zoom (master)	Zoom 2
Channel 10	Zoom 3	Zoom 2	Zoom 3
Channel 11	Beamshape	Zoom 3	Beamshape
Channel 12	CTO	Beamshape	CTO
Channel 13	Blackout move	Beamshape fein	Color wheel emulation
Channel 14	Layer 1 / 2 crossfade	CTO	Red background color (main)
Channel 15	Dimmer sub1 (inner zone)	CTO fine	Green background color (main)
Channel 16	Dimmer sub2 (outer ring)	Blackout move	Blue background color (main)
Channel 17	Color wheel emulation	Layer 1 / 2 crossfade	White background color (main)
Channel 18	Red background color (main)	Layer 1 / 2 crossfade fine	Sparkle
Channel 19	Green background color (main)	Dimmer sub1 (inner zone)	Sparkle speed
Channel 20	Blue background color (main)	Dimmer sub1 fine (inner zone)	Effect macro mode Layer
Channel 21	White background color (main)	Dimmer sub2 (outer ring)	Effect macro Layer
Channel 22	Red foreground color (pattern)	Dimmer sub2 fine (outer ring)	Effect macro speed Layer
Channel 23	Green foreground color (pattern)	Color wheel emulation	Transition pixel mode
Channel 24	Blue foreground color (pattern)	Red background color (main)	Black body shift (switchable)
Channel 25	White foreground color (pattern)	Red background color fine (main)	
Channel 26	Sparkle	Green background color (main)	
Channel 27	Sparkle speed	Green background color fine (main)	
Channel 28	Effect macro mode Layer 1	Blue background color (main)	
Channel 29	Effect macro Layer 1	Blue background color fine (main)	
Channel 30	Effect macro speed Layer 1	White background color (main)	
Channel 31	Effect macro mode Layer 2	White background color fine (main)	
Channel 32	Effect macro Layer 2	Red foreground color (pattern)	
Channel 33	Effect macro speed Layer 2	Red foreground color fine (pattern)	
Channel 34	Transition pixel mode	Green foreground color (pattern)	
Channel 35	Black body shift (switchable)	Green foreground color fine (pattern)	
Channel 36		Blue foreground color (pattern)	
Channel 37		Blue foreground color fine (pattern)	
Channel 38		White foreground color (pattern)	
Channel 39		White foreground color fine (pattern)	
Channel 40		Sparkle	
Channel 41		Sparkle speed	
Channel 42		Effect macro mode Layer 1	
Channel 43		Effect macro Layer 1	
Channel 44		Effect macro speed Layer 1	
Channel 45		Effect macro mode Layer 2	
Channel 46		Effect macro Layer 2	

Mode 4 (M4) 96 channels	Single pixel control Sparx12 - 76 channels „addable“ to every mode
Pan	Red (LED group 1)
Pan fine	Green (LED group 1)
Tilt	Blue (LED group 1)
Tilt fine	White (LED group 1)
Control channel	Red (LED group 2)
Shutter	Green (LED group 2)
Dimmer (master)	Blue (LED group 2)
Zoom (master)	White (LED group 2)
Zoom 2	Red (LED group 3)
Zoom 3	Green (LED group 3)
Beamshape	Blue (LED group 3)
CTO	White (LED group 3)
Pan/tilt speed	Red (LED group 4)
Effect speed	Green (LED group 4)
Blackout move	Blue (LED group 4)
Red glow	White (LED group 4)
Green glow	Red (LED group 5)
Blue glow	Green (LED group 5)
White glow	Blue (LED group 5)
Layer 1 / 2 crossfade	White (LED group 5)
Dimmer sub1 (inner zone)	Red (LED group 6)
Segment shutter	Green (LED group 6)
Color wheel emulation	Blue (LED group 6)
Red background color (main)	White (LED group 6)
Green background color (main)	Red (LED group 7)
Blue background color (main)	Green (LED group 7)
White background color (main)	Blue (LED group 7)
Red foreground color (pattern)	White (LED group 7)
Green foreground color (pattern)	Red (LED group 8)
Blue foreground color (pattern)	Green (LED group 8)
White foreground color (pattern)	Blue (LED group 8)
Sparkle	White (LED group 9)
Sparkle speed	Red (LED group 9)
Effect macro	Green (LED group 9)
Segment (mapping)	Blue (LED group 9)
Pattern mode	White (LED group 10)
Pattern	Red (LED group 10)
Pattern- / macro speed	Green (LED group 10)
Color spread	Blue (LED group 10)
Segment shutter	White (LED group 10)
Color wheel emulation	Red (LED group 11)
Red background color (main)	Green (LED group 11)
Green background color (main)	Blue (LED group 11)
Blue background color (main)	White (LED group 11)
White background color (main)	Red (LED group 12)
Red foreground color (pattern)	Green (LED group 12)

Mode 1(M1) 34 channels	Mode 2 (M2) 49 channels	Mode 3 (M3) 23 channels
Channel 47	Effect macro speed Layer 2	
Channel 48	Transition pixel mode	
Channel 49	Transition pixel mode fine	
Channel 50	Black body shift (switchable)	
Channel 51		
Channel 52		
Channel 53		
Channel 54		
Channel 55		
Channel 56		
Channel 57		
Channel 58		
Channel 59		
Channel 60		
Channel 61		
Channel 62		
Channel 63		
Channel 64		
Channel 65		
Channel 66		
Channel 67		
Channel 68		
Channel 69		
Channel 70		
Channel 71		
Channel 72		
Channel 73		
Channel 74		
Channel 75		
Channel 76		
Channel 77		
Channel 78		
Channel 79		
Channel 80		
Channel 81		
Channel 82		
Channel 83		
Channel 84		
Channel 85		
Channel 86		
Channel 87		
Channel 88		
Channel 89		
Channel 90		
Channel 91		
Channel 92		
Channel 93		
Channel 94		
Channel 95		
Channel 96		
Channel 97		

Mode 4 (M4) 96 channels	Single pixel control Sparx12 - 76 channels „addable“ to every mode
Green foreground color (pattern)	Blue (LED group 12)
Blue foreground color (pattern)	White (LED group 12)
White foreground color (pattern)	Red (LED group 13)
Sparkle	Green (LED group 13)
Sparkle speed	Blue (LED group 13)
Effect macro	White (LED group 13)
Segment (mapping)	Red (LED group 14)
Pattern mode	Green (LED group 14)
Pattern	Blue (LED group 14)
Pattern- / macro speed	White (LED group 14)
Color spread	Red (LED group 15)
Layer 1 / 2 crossfade	Green (LED group 15)
Dimmer sub2 (outer ring)	Blue (LED group 15)
Segment shutter	White (LED group 15)
Color wheel emulation	Red (LED group 16)
Red background color (main)	Green (LED group 16)
Green background color (main)	Blue (LED group 16)
Blue background color (main)	White (LED group 16)
White background color (main)	Red (LED group 17)
Red foreground color (pattern)	Green (LED group 17)
Green foreground color (pattern)	Blue (LED group 17)
Blue foreground color (pattern)	White (LED group 17)
White foreground color (pattern)	Red (LED group 18)
Sparkle	Green (LED group 18)
Sparkle speed	Blue (LED group 18)
Effect macro	White (LED group 18)
Segment (mapping)	Red (LED group 19)
Pattern mode	Green (LED group 19)
Pattern	Blue (LED group 19)
Pattern- / macro speed	White (LED group 19)
Color spread	
Segment shutter	
Color wheel emulation	
Red background color (main)	
Green background color (main)	
Blue background color (main)	
White background color (main)	
Red foreground color (pattern)	
Green foreground color (pattern)	
Blue foreground color (pattern)	
White foreground color (pattern)	
Sparkle	
Sparkle speed	
Effect macro	
Segment (mapping)	
Pattern mode	
Pattern	
Pattern- / macro speed	
Color spread	
Transition pixel mode	
Black body shift (switchable)	

5.1.2 DMX channel assignment for Mode 1 / 2 / 3 - modes with optimized number of channels

M1	M2	M3	Funktion	DMX
1	1	1	**Pan** (X) movement 540.73°	000-255
2	2	2	**Pan** (X) fine	000-255
3	3	3	**Tilt** (Y) movement 237.78°	000-255
4	4	4	**Tilt** (Y) fine	000-255
5	5	5	**Control channel** To enable uniform dimming manually via faders for all light mixing consoles, 5 different settings for the DMX smoothing are available. If the DMX signal is interrupted or too few packets are sent on some DMX consoles, this channel can be used to adjust the response of the headlamp. The Minimum DMX Smoothing setting should work on most popular consoles. The values for DMX smoothing must be permanently applied. For the other values such as Cooling Mode, Color Temperature, Zoom Modes ..... the values must be present for 2 seconds, then the device will be permanently switched over. The exception is the setting of the COOLING-MODE, here it depends on the switch SAFE MODE SWITCH, if it is on OFF the COOLING-MODES can be switched directly, if this is ON the DIMMER and SHUTTER must get the DMX-value 0. Only then can be switched.	
			Setting for minimal DMX smoothing (A dimmed shutter sequence is possible) Dimmer fade out via fader (fast - slow) Not used	000-007 008-031
			Setting for minimum / medium DMX smoothing Dimmer fade out via fader (fast - slow) Not used	032-039 040-063
			Setting for medium DMX smoothing Dimmer fade out via fader (fast - slow)	064-071
			Color Mix Power Limit - Sets the total power consumption 50% 60% 70% 80% 90% Off	 072-072 073-073 074-074 075-075 076-076 077-077
			Constant Color Mode - Adjust color fidelity Off 20% 40% 60& 80% Max	 078-078 079-079 080-080 081-081 082-082 083-083
			Constant Brightness Mode - setting for constant brightness control Off 20% 40% 60% 80% Max	 084-084 085-085 086-086 087-087 088-088 089-089

			Constant Brightness Limit - Sets the limit for constant brightness control	
			off	090-090
			50%	091-091
			60%	092-092
			70%	093-093
			80%	094-094
			90%	095-095
			Setting for medium/maximum DMX smoothing	
			Dimmer fade out via fader (fast - slow)	096-103
			BACKLIGHT MODE - Display backlight configuration	
			AUTO - the fixture controls the backlight automatically	104-104
			ON - the backlight is always on	105-105
			OFF - the backlight is always off until a key is pressed	106-106
			DISPLAY ORIENTATION - display flip or not	
			STANDARD - the display can be read when the headlamp is on a surface	107-107
			FLIP - the display orientation is rotated by 180 °, hanging readable	108-108
			not used	109-109
			MAIN SCREEN MODE - view of the main screen	
			STANDARD - the main screen displays the DMX address, the DMX mode, and when wireless is enabled, the field strength.	110-110
			USER FIXTURE ID - the main screen displays the user definable fixture ID / headlight number	111-111
			not used	112-112
			USER FIXTURE ID SET - set fixture ID	
			the USER ID can be set. The headlamp takes the 16-bit value of Pan for the fixture id	113-113
			USER CIE - set the white color of RAW RGB USER WHITE	
			USER CIE X - The headlamp takes the 16-bit value of Pan for the USER CIE X	114-114
			USER CIE Y - The headlamp takes the 16-bit value of Pan for the USER CIE Y	115-115
			BLACK BODY SHIFT - set of green shift	
			BLACK BODY SHIFT - The headlamp takes the 16-bit value of Pan for the BLACK BODY SHIFT. Values from -99 to +99 (DMX values 0 to 65535, 32768 is no shift)	116-116
			not used	117-127
			Setting for maximum DMX smoothing	
			Dimmer fade out via fader (fast - slow)	128-135
			DIMMER CURVE - selection of dimmer curve	
			LINEAR - linear dimmer curve	136-136
			SQUARE - exponential dimmer curve	137-137
			SQUARE INVERSE - exponential inverse dimmer curve	138-138
			not used	139-139
			RGBW(Y) CURVE - selection of RGBW(Y) curve	
			LINEAR - linear frost curve	140-140
			SQUARE - exponential RGB(Y) curve	141-141
			not used	142-142
			PAN/TILT SPEED - selection of PAN/TILT speed	
			WHISPER	146-146
			SILENT	147-147
			MEDIUM	148-148
			FAST	149-149

			EFFECT SPEED - selection of effect speed	
			WHISPER	150-150
			SILENT	151-151
			MEDIUM	152-152
			FAST	153-153
			Not used	154-156
			FAN WHITE OPT MODE - work with optimized noise or brightness	
			Noise-optimized operation (only for boost and standard mode)	157-157
			Brightness-optimized work (only for boost and standard mode)	158-158
			not used	159-159
			COOLING MODE - adjust the fan volume and brightness	
			This takes place with dimmer / shutter set to closed (DMX 000) then after 2 seconds the fixture will switch this option, except the switch "SAFE MODE SWITCH" in the PERSONALITY menu is set to OFF, then the changeover can take place directly without dimmer and shutter having to be closed.	
			THEATRE WHISPER	160-160
			THEATRE SILENT	161-161
			STANDARD	162-162
			BOOST	163-163
			LONGLIFE	164-164
			not used	165-169
			COLOR TEMPERATURE - adjustment of the color temperature of the fixture	
			Color temperature 2000K (CTO 2000K - 20000K)	170-170
			Color temperature 2700K (CTO 2700K - 2700K	171-171
			Color temperature 2700K tungsten dim out	172-172
			Color temperature 3200K (CTO 3200K - 2700K)	173-173
			Color temperature 3200K tungsten dim out	174-174
			Color temperature 4200K (CTO 4200K - 2700K)	175-175
			Color temperature 5600K (CTO 5600K - 2700K)	176-176
			Color temperature 6000K (CTO 6000K - 2700K)	177-177
			Color temperature 6500K (CTO 6500K - 2700K)	178-178
			Color temperature 7000K (CTO 7000K - 2700K)	179-179
			Color temperature 8000K (CTO 8000K - 2700K)	180-180
			RAW RGBW	181-181
			USER WHITE	182-182
			RAW RGBW USER WHITE	183-183
			Not used	184-184
			ZOOM MODE - zoom modi	
			Mode 1: Zoom / Zoom2 / Zoom3: Zoom2 / 3 TwinZoom -> Masterzoom controls to the lower zoom value (Zoom2 or 3) then takes it to the higher zoom value and then moves to both DMX255	185-185
			Mode 2: Zoom / Zoom2 / Zoom3: Masterzoom „takes“ the low zoom value and moves it to the higher zoom value and then takes both to DMX255	186-186
			Mode 3: Zoom / Zoom2 / Zoom3: Master zoom scales both zoom from the set value Zoom2 / Zoom3 to DMX255	187-187
			Mode 4: Zoom / Zoom2 / Zoom3: Zoom3 acts as frost. Masterzoom pushes the frost intelligently	188-188
			Mode 5: Zoom / Zoom2 / zoom3: Master zoom acts as a switchover between TwinZoom mode and Zoom / Frost mode. Zoom DMX 000 -> Zoom2 / 3 in Zoom / Frost mode, Zoom DMX 255 -> Zoom2 / 3 in TwinZoom mode	189-189
			FAN MODE - Sets the basic volume in the selected COOLING MODE	
			min	190-190
			20%	191-191
			40%	192-192
			60%	193-193
			80%	194-194
			Max	195-195

			BEAMSHAPE ON / OFF - Setting whether a beamshape is mounted or not off on **BLACK BODY SHIFT DMX - Activation of the additional channel for Black Body Shift** Off On Not used **Camera mode - Sets the LED refresh rate** Camera Mode, 50Hz (after 2 seconds) Camera Mode, 60Hz (after 2 seconds) Camera Mode, FLEX 600Hz (after 2 seconds) Not used **RESET - Performing a complete fixture reset** Reset (after 2 seconds) Not used	 196-196 197-197 198-198 199-199 200-207 208-215 216-223 224-231 232-239 240-247 248-255
6	6	6	**Shutter** Shutter closed Shutter open Shutter pulse opening >10Hz (0,6 sec - 4,8 sec) Shutter open Fade effect with dimmer (slow - fast) Shutter open Shutter closed Shutter pulse opening <10Hz (0,6 sec - 4,8 sec) Shutter open Shutter pulse closing (0,6 sec - 4,8 sec) Shutter closed Shutter fade, 0% (0,6 sec - 4,8 sec) Shutter open Shutter fade, 100% (0,6 sec - 4,8 sec) Shutter closed Shutter random 100% (0,6 sec - 4,8 sec) Shutter open Shutter random 0% (0,6 sec - 4,8 sec) Shutter closed Shutter random fade 0% (0,6 sec - 4,8 sec) Shutter open Shutter random fade 100% (0,6 sec - 4,8 sec) Shutter open	 000-015 016-095 096-110 111-111 112-125 126-126 127-127 128-142 143-143 144-158 159-159 160-174 175-175 176-190 191-191 192-206 207-207 208-222 223-223 224-238 239-239 240-254 255-255
7	7	7	**Dimmer** 0 - 100%	000-255
	8		**Dimmer** fine 16Bit	000-255
8	9	8	**Zoom** 0-100% (master, narrow 3° - wide 70°)	000-255
9	10	9	**Zoom 2** 0-100% (inner zone, narrow 3° - wide 70°)	000-255
10	11	10	**Zoom 3** 0-100% (outer ring respectively frost, narrow 3° - wide 70°)	000-255
11	12	11	**Beamshape positioning / rotation** Beamshape positioning 0 ° - 360 ° Beamshape rotation right (fast - slow) Beamshape rotation stop Beamshape rotation left (slow - fast)	 000-191 192-222 223-224 225-255

	13		**Beamshape positioning / rotation** fine 16Bit	000-255
12	14	12	**CTO** 0 - 100%	000-255
	15		**CTO** fine 16Bit	000-255
13	16		**Blackout Move** Not used Selection of segments for shutter effects in link with the shutter channel Not used Blackout at pan/tilt Blackout on color change Not used Blackout at pan/tilt and color change The fade time of the dimmer can be set from slow to 5sec - max.	 000-000 001-070 071-095 096-127 128-159 160-223 224-255
14	17		**Crossfade layer 1/2** 0 - 100%	000-255
	18		**Crossfade layer 1/2** fein 16Bit	000-255
15	19		**Dimmer sub1** 0 - 100% (inner zone)	000-255
	20		**Dimmer sub1** fine 16Bit (inner zone)	000-255
16	21		**Dimmer sub2** 0 - 100% (outer ring)	000-255
	22		**Dimmer sub2** fine 16Bit (outer ring)	000-255
17	23	13	**Color wheel emulation** Inactive, color mixing only via RGB White (according to color temperature setting headlights) White / red Red Red / yellow Yellow Yellow / magenta Magenta Magenta / green Green Green / orange Orange Orange / blue Blue Blue / turquoise Turquoise Turquoise / white White 2700 Kelvin White 2700 Kelvin, tungsten dimming White 3200 Kelvin White 3200 Kelvin, tungsten dimming White 4200 Kelvin White 5600 Kelvin White 6000 Kelvin White 6500 Kelvin White 7000 Kelvin White 8000 Kelvin Color change effect (fast - slow) Color change effect (stop) Color change effect (fast - slow)	 000-000 001-003 004-007 008-011 012-015 016-019 020-023 024-027 028-031 032-035 036-039 040-043 044-047 048-051 052-055 056-059 060-063 064-064 065-065 066-066 067-067 068-068 069-069 070-070 071-071 072-072 073-191 192-222 223-224 225-255

18	24	14	**Red** background color (main) 0-100%	000-255
	25		**Red** background color (main) fine 16 Bit	000-255
19	26	15	**Green** background color (main) 0-100%	000-255
	27		**Green** background color (main) fine 16 Bit	000-255
20	28	16	**Blue** background color (main) 0-100%	000-255
	29		**Blue** background color (main) fine 16 Bit	000-255
21	30	17	**White** background color (main) 0-100%	000-255
	31		**White** background color (main) fine 16 Bit	000-255
22	32		**Red** foreground color (pattern) 0-100%	000-255
	33		**Red** foreground color (pattern) fine 16 Bit	000-255
23	34		**Green** foreground color (pattern) 0-100%	000-255
	35		**Green** foreground color (pattern) fine 16 Bit	000-255
24	36		**Blue** foreground color (pattern) 0-100%	000-255
	37		**Blue** foreground color (pattern) fine 16 Bit	000-255
25	38		**White** foreground color (pattern) 0-100%	000-255
	39		**White** foreground color (pattern) fine 16 Bit	000-255
26	40	18	**Sparkle - glitter effect** Sparkle effect inactive Sparkle effect intensity (minimum - maximum)	 000-000 001-255
27	41	19	**Sparkle speed** **Sparkle effect complete fixture** Faded (slow -> fast) Switched (slow -> fast) **Sparkle effect color neutral complete fixture** Faded (slow -> fast) Switched (slow -> fast) **Sparkle effect inner zone of the fixture** Faded (slow -> fast) Switched (slow -> fast) **Sparkle effect color neutral inner zone of the fixture** Faded (slow -> fast) Switched (slow -> fast) **Sparkle effect outer area of the fixture** Faded (slow -> fast) Switched (slow -> fast) **Sparkle effect color neutral outer area of the fixture** Faded (slow -> fast) Switched (slow -> fast) Switched (fast)	 000-015 016-031 032-047 048-063 064-079 080-095 096-111 112-127 128-143 144-159 160-175 176-191 192-255

28	42	20	**Effect macro mode layer 1**	
			Color set 1	
			Effects faded	000-000
			Effects switched	001-001
			Effects forward crossfaded (crossfade over effect macro speed DMX 000 <-> 255)	002-002
			Effects backward crossfaded (crossfade over effect macro speed DMX 000 <-> 255)	003-003
			Regular interval:	
			Effect random flash fast	004-004
			Effect random snap open / ramp close	005-005
			Effect random flash slow	006-006
			Effect random ramp open / snap close	007-007
			Random interval:	
			Effect random flash fast	008-008
			Effect random snap open / ramp close	009-009
			Effect random flash slow	010-010
			Effect random ramp open / snap close	011-011
			Not used	012-031
			From DMX 32 color set 2, from DMX 64 color set 3, from DMX 96 color set 4	
29	43	21	**Effect macro layer 1**	
			Macros switched off	000-000
			Static color effects - fixture 2 colors	
			Inner zone - background color (main)	
			Outer ring - foreground color (pattern)	
			Color wheel emulation overwrites background color (main)	
			Beam fixture 2 colors segment shutter complete fixture	001-001
			Beam fixture 2 colors segment shutter inner zone	002-002
			Beam fixture 2 colors segment shutter outer ring	003-003
			Beam fixture 2 colors segment shutter off	004-004
			Color wheel emulation overwrites foreground color (pattern)	
			Beam fixture 2 colors segment shutter complete fixture	005-005
			Beam fixture 2 colors segment shutter inner zone	006-006
			Beam fixture 2 colors segment shutter outer ring	007-007
			Beam fixture 2 colors segment shutter off	008-008
			Beam fixture 2 colors segment shutter complete fixture	009-010
			Numbers 1-9, 0	011-020
			Numbers 1-9 turned 180 °	021-029
			Smiley small	030-030
			Smiley big	031-031
			Smiley small turned 180 °	032-032
			Smiley small turned 180 °	033-033
			Static beams Foreground (pattern)	034-038
			Static rings foreground color (pattern)	039-043
			Static double rings foreground color (pattern)	044-052
			Running effects - fixture inside and outside area	
			Background color (main), foreground color (pattern)	
			Color wheel emulation responds according to the selected color set - effect macro mode Layer 1	
			Pattern rings	053-059
			Pattern cake pieces small	060-069
			Pattern cake pieces big	070-079
			Pattern lines horizontally	080-086
			Pattern lines vertically	087-093
			Pattern lines diagonally	094-107
			Pattern propeller	108-114
			Pattern half / half vertical	115-116
			Pattern half / half horizontal	117-118
			Pattern half / half diagonal	119-122
			Pattern spiral	123-129
			Color spread effects	130-138

			Running Effects - Headlight inner area **Background color (Main), Foreground color (Pattern / Pattern)** **Color wheel emulation responds according to the selected color set - effect macromode Layer 1**	
			Pattern rings	139-145
			Pattern cake pieces small	146-165
			Pattern lines horizontally	166-172
			Pattern lines vertically	173-179
			Pattern lines diagonally	180-193
			Pattern propeller	194-200
			Pattern half / half vertical	201-202
			Pattern half / half horizontal	203-204
			Pattern half / half diagonal	205-208
			Pattern spiral	209-215
			Color spread effects	216-224
			Running effects - headlight outer ring **Background color (main), foreground color (pattern)** **Color wheel emulation responds according to the selected color set - effect macromode layer 1**	
			1 point is running	225-245
			2 points are running	246-248
			3 points are running	249-251
			Colorspread effects	252-255
30	44	22	**Effect macro speed 1**	
			Forward (fast -> slow)	000-127
			Backwards (slow -> fast)	128-255
31	45		**Effect macro mode layer 2**	
			Same assignment as effect macromode Layer 1	000-100
32	46		**Effect macro layer 2**	
			Same assignment as effect macro Layer 1	000-100
33	47		**Effect macro speed 2**	
			Same assignment as effect macro speed 1	000-100
34	48	23	**Transition pixel mode**	000-255
	49		**Transition pixel mode** fine 16Bit	000-255
35	50	24	**Black Body Shift - can be activated via the personality menu**	
			Off	000-000
			Minus green (-100% -> -1%)	001-127
			Neutral white	128-128
			Plus green (+1% -> +100%)	129-255

5.1.3 DMX channel assignment for Mode 4 with extended programming options

M4	Funktion	DMX
1	**Pan** (X) movement 540.73°	000-255
2	**Pan** (X) fine	000-255
3	**Tilt** (Y) movement 237.78°	000-255
4	**Tilt** (Y) fine	000-255
5	**Control channel** To enable uniform dimming manually via faders for all light mixing consoles, 5 different settings for the DMX smoothing are available. If the DMX signal is interrupted or too few packets are sent on some DMX consoles, this channel can be used to adjust the response of the headlamp. The Minimum DMX Smoothing setting should work on most popular consoles. The values for DMX smoothing must be permanently applied. For the other values such as Cooling Mode, Color Temperature, Zoom Modes ..... the values must be present for 2 seconds, then the device will be permanently switched over. The exception is the setting of the COOLING-MODE, here it depends on the switch SAFE MODE SWITCH, if it is on OFF the COOLING-MODES can be switched directly, if this is ON the DIMMER and SHUTTER must get the DMX-value 0. Only then can be switched. **Setting for minimal DMX smoothing** (A dimmed shutter sequence is possible) Dimmer fade out via fader (fast - slow) Not used **Setting for minimum / medium DMX smoothing** Dimmer fade out via fader (fast - slow) Not used **Setting for medium DMX smoothing** Dimmer fade out via fader (fast - slow) **Color Mix Power Limit - Sets the total power consumptio** 50% 60% 70% 80% 90% Off **Constant Color Mode - Adjust color fidelity** Off 20% 40% 60& 80% Max **Constant Brightness Mode - setting for constant brightness control** Off 20% 40% 60% 80% Max	

	Constant Brightness Limit - Sets the limit for constant brightness control	
	off	090-090
	50%	091-091
	60%	092-092
	70%	093-093
	80%	094-094
	90%	095-095
	Setting for medium/maximum DMX smoothing	
	Dimmer fade out via fader (fast - slow)	096-103
	BACKLIGHT MODE - Display backlight configuration	
	AUTO - the fixture controls the backlight automatically	104-104
	ON - the backlight is always on	105-105
	OFF - the backlight is always off until a key is pressed	106-106
	DISPLAY ORIENTATION - display flip or not	
	STANDARD - the display can be read when the headlamp is on a surface	107-107
	FLIP - the display orientation is rotated by 180 °, hanging readable	108-108
	not used	109-109
	MAIN SCREEN MODE - view of the main screen	
	STANDARD - the main screen displays the DMX address, the DMX mode, and when wireless is enabled, the field strength.	110-110
	USER FIXTURE ID - the main screen displays the user definable fixture ID / headlight number	111-111
	not used	112-112
	USER FIXTURE ID SET - set fixture ID	
	SET - the USER ID can be set. The headlamp takes the 16-bit value of Pan for the fixture id	113-113
	USER CIE - set the white color of RAW RGB USER WHITE	
	USER CIE X - The headlamp takes the 16-bit value of Pan	114-114
	USER CIE Y - The headlamp takes the 16-bit value of Pan	115-115
	BLACK BODY SHIFT - set of green shift	
	BLACK BODY SHIFT - The headlamp takes the 16-bit value of Pan, Values from -99 to +99 (DMX values 0 to 65535, 32768 is no shift)	116-116
	not used	117-127
	Setting for maximum DMX smoothing	
	Dimmer fade out via fader (fast - slow)	128-135
	DIMMER CURVE - selection of dimmer curve	
	LINEAR - linear dimmer curve	136-136
	SQUARE - exponential dimmer curve	137-137
	SQUARE INVERSE - exponential inverse dimmer curve	138-138
	not used	139-139
	RGBW CURVE - selection of RGBW curve	
	LINEAR - linear frost curve	140-140
	SQUARE - exponential RGB(Y) curve	141-141
	not used	142-142
	PAN/TILT SPEED - selection of PAN/TILT speed	
	WHISPER	146-146
	SILENT	147-147
	MEDIUM	148-148
	FAST	149-149

	EFFECT SPEED - selection of effect speed	
	WHISPER	150-150
	SILENT	151-151
	MEDIUM	152-152
	FAST	153-153
	Not used	154-156
	FAN WHITE OPT MODE - work with optimized noise or brightness	
	Noise-optimized operation (only for boost and standard mode)	157-157
	Brightness-optimized work (only for boost and standard mode)	158-158
	Not used	159-159
	COOLING MODE - adjust the fan volume and brightness	
	This takes place with dimmer / shutter set to closed (DMX 000) then after 2 seconds the fixture will switch this option, except the switch "SAFE MODE SWITCH" in the PERSONALITY menu is set to OFF, then the changeover can take place directly without dimmer and shutter having to be closed.	
	THEATRE WHISPER	160-160
	THEATRE SILENT	161-161
	STANDARD	162-162
	BOOST	163-163
	LONGLIFE	164-164
	Not used	165-169
	COLOR TEMPERATURE - adjustment of the color temperature	
	Color temperature 2000K (CTO 2000K - 20000K)	170-170
	Color temperature 2700K (CTO 2700K - 2700K	171-171
	Color temperature 2700K tungsten dim out	172-172
	Color temperature 3200K (CTO 3200K - 2700K)	173-173
	Color temperature 3200K tungsten dim out	174-174
	Color temperature 4200K (CTO 4200K - 2700K)	175-175
	Color temperature 5600K (CTO 5600K - 2700K)	176-176
	Color temperature 6000K (CTO 6000K - 2700K)	177-177
	Color temperature 6500K (CTO 6500K - 2700K)	178-178
	Color temperature 7000K (CTO 7000K - 2700K)	179-179
	Color temperature 8000K (CTO 8000K - 2700K)	180-180
	RAW RGBW	181-181
	USER WHITE	182-182
	RAW RGBW USER WHITE	183-183
	Not used	184-184
	ZOOM MODE - zoom modi	
	MODE 1: Zoom / Zoom2 / Zoom3: Zoom2 / 3 TwinZoom -> Master-zoom controls to the lower zoom value (Zoom2 or 3) then takes it to the higher zoom value and then moves to both DMX255	185-185
	MODE 2: Zoom / Zoom2 / Zoom3: Masterzoom „takes“ the low zoom value and moves it to the higher zoom value and then takes both to DMX255	186-186
	MODE 3: Zoom / Zoom2 / Zoom3: Master zoom scales both zoom from the set value Zoom2 / Zoom3 to DMX255	187-187
	MODE 4: Zoom / Zoom2 / Zoom3: Zoom3 acts as frost. Masterzoom pushes the frost intelligently	188-188
	MODE 5: Zoom / Zoom2 / zoom3: Master zoom acts as a switchover between TwinZoom mode and Zoom / Frost mode. Zoom DMX 000 -> Zoom2 / 3 in Zoom / Frost mode, Zoom DMX 255 -> Zoom2 / 3 in TwinZoom mode	189-189

	FAN MODE - Sets the basic volume in the selected COOLING MODE	
	min	190-190
	20%	191-191
	40%	192-192
	60%	193-193
	80%	194-194
	Max	195-195
	BEAMSHAPE ON / OFF - Set a beamshape is mounted or not	
	off	196-196
	on	197-197
	BLACK BODY SHIFT DMX - Activation of the additional channel for Black Body Shift	
	Off	198-198
	On	199-199
	Not used	200-207
	CAMERA MODE - Sets the LED refresh rate	
	Camera Mode, 50Hz (after 2 seconds)	208-215
	Camera Mode, 60Hz (after 2 seconds)	216-223
	Camera Mode, FLEX 600Hz (after 2 seconds)	224-231
	Not used	232-239
	RESET - performing a complete fixture reset	
	Reset (after 2 seconds)	240-247
	Not used	248-255
6	**Shutter**	
	Shutter closed	000-015
	Shutter open	016-095
	Shutter pulse opening >10Hz (0,6 sec - 4,8 sec)	096-110
	Shutter open	111-111
	Fade effect with dimmer (slow - fast)	112-125
	Shutter open	126-126
	Shutter closed	127-127
	Shutter pulse opening <10Hz (0,6 sec - 4,8 sec)	128-142
	Shutter open	143-143
	Shutter pulse closing (0,6 sec - 4,8 sec)	144-158
	Shutter closed	159-159
	Shutter fade, 0% (0,6 sec - 4,8 sec)	160-174
	Shutter open	175-175
	Shutter fade, 100% (0,6 sec - 4,8 sec)	176-190
	Shutter closed	191-191
	Shutter random 100% (0,6 sec - 4,8 sec)	192-206
	Shutter open	207-207
	Shutter random 0% (0,6 sec - 4,8 sec)	208-222
	Shutter closed	223-223
	Shutter random fade 0% (0,6 sec - 4,8 sec)	224-238
	Shutter open	239-239
	Shutter random fade 100% (0,6 sec - 4,8 sec)	240-254
	Shutter open	255-255
7	**Dimmer** 0 - 100%	000-255
8	**Zoom** 0-100% (master, narrow 3° - wide 70°)	000-255
9	**Zoom 2** 0-100% (inner zone, narrow 3° - wide 70°)	000-255
10	**Zoom 3** 0-100% (outer ring, narrow 3° - wide 70°)	000-255

							11	**Beamshape positioning / rotation** Beamshape positioning 0 ° -540 ° Beamshape rotation right (fast - slow) Beamshape rotation stop Beamshape rotation left (slow - fast)	 000-191 192-222 223-224 225-255
							12	**CTO** 0 - 100%	000-255
							13	**Pan/tilt speed** Movement in real time Movement delayed (fast - slow)	 000-003 004-255
							14	**Effect speed** Effects in real time Effects delayed (fast - slow)	 000-003 004-255
							15	**Blackout Move** Not used Selection of segments for shutter effects in link with the shutter channel Not used Blackout at pan/tilt Blackout on color change Not used Blackout at pan/tilt and color change The fade time of the dimmer can be set from slow to 5sec - max.	 000-000 001-070 071-095 096-127 128-159 160-223 224-255
							16	**Red** Glow 0-100%	000-255
							17	**Green** Glow 0-100%	000-255
							18	**Blue** Glow 0-100%	000-255
							19	**White** Glow 0-100%	000-255
20	Inner Zone LED -19 Layer 1		Inner Zone LED 1-19 Layer 2	58	Outer Ring LED 20-37 Layer 3		Outer Ring LED 20-37 Layer 4	**Crossfade layer** 0 - 100%	000-255
21				59				**Dimmer sub1** 0 - 100%	000-255
22		40		60		78		**Segment shutter**	000-255
23		41		61		79		**Color wheel emulation** Inactive, color mixing only via RGB White (according to color temperature settings of fixture) White / red Red Red / yellow Yellow Yellow / magenta Magenta Magenta / green Green Green / orange Orange Orange / blue Blue Blue / turquoise Turquoise Turquoise / white	 000-000 001-003 004-007 008-011 012-015 016-019 020-023 024-027 028-031 056-059 060-063 064-064 065-065 066-066 067-067 068-068 069-069

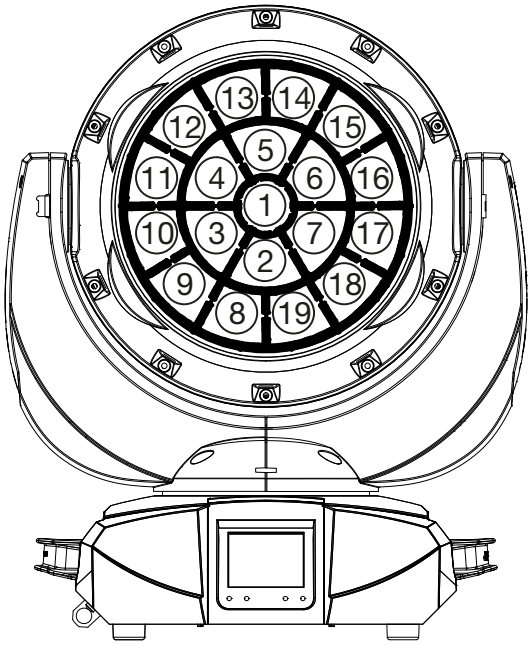
								White 2700 Kelvin	070-070
								White 2700 Kelvin, tungsten dimming	071-071
								White 3200 Kelvin	072-072
								White 3200 Kelvin, tungsten dimming	073-191
								White 4200 Kelvin	192-222
								White 5600 Kelvin	223-224
								White 6000 Kelvin	225-255
								White 6500 Kelvin	032-035
								White 7000 Kelvin	036-039
								White 8000 Kelvin	040-043
								Color change effect (fast - slow)	044-047
								Color change effect (stop)	048-051
								Color change effect (fast - slow)	052-055
24		42		62		80		**Red** background color (main) 0-100%	000-255
25		43		63		81		**Green** background color (main) 0-100%	000-255
26		44		64		82		**Blue** background color (main) 0-100%	000-255
27		45		65		83		**White** background color (main) 0-100%	000-255
28		46		66		84		**Red** foreground color (pattern) 0-100%	000-255
29		47		67		85		**Green** foreground color (pattern) 0-100%	000-255
30		48		68		86		**Blue** foreground color (pattern) 0-100%	000-255
31		49		69		87		**White** foreground color (pattern) 0-100%	000-255
32		50		70		88		**Sparkle - glitter effect** Sparkle effect inactive Sparkle effect intensity (minimum - maximum)	 000-000 001-255
33		51		71		89		**Sparkle speed** **Sparkle effect** Faded (slow -> fast) Switched (slow to fast) **Sparkle effect color neutral** Faded (slow -> fast) Switched (slow to fast)	 000-015 016-031 032-047 048-255
34		52		72		90		**Effect macro (empty)**	000-255
35		53		73		91		**Mapping** 0-100%	000-255
								Pattern mode **Block 0-31: RGBW LED's of the inactive segment are deactivated.** Pattern faded Pattern switch Pattern switch with cross fade clockwise Pattern switch with cross fade anti clockwise Pixel random flash fast Pixel random snap open / ramp close Pixel random flash slow Pixel random ramp open / snap close } regular interval	 000-000 001-001 002-002 003-003 004-004 005-005 006-006 007-007

								Pattern mode	
								Block 0-31: RGBW LED's of the inactive segment are deactivated.	
								Pixel random flash fast	008-008
								Pixel random snap open / ramp close — random	009-009
								Pixel random flash slow — interval	010-010
								Pixel random ramp open / snap close	011-011
								Static effects	012-031
								Block 32-63: RGBW LED's of the inactive segment illuminate in foreground (pattern) color	
								Pattern faded	032-032
								Pattern switch	033-033
								Pattern switch with cross fade clockwise	034-034
								Pattern switch with cross fade anti clockwise	035-035
								Pixel random flash fast	036-036
								Pixel random snap open / ramp close — regular	037-037
								Pixel random flash slow — interval	038-038
								Pixel random ramp open / snap close	039-039
								Pixel random flash fast	040-040
								Pixel random snap open / ramp close — random	041-041
								Pixel random flash slow — interval	042-042
								Pixel random ramp open / snap close	043-043
								Static effects	044-063
								Block 64-95: RGBW LED's of the inactive segment illuminate in background (main) color	
								Pattern faded	064-064
								Pattern switch	065-065
								Pattern switch with cross fade clockwise	066-066
								Pattern switch with cross fade anti clockwise	067-067
								Pixel random flash fast	068-068
								Pixel random snap open / ramp close — regular	069-069
								Pixel random flash slow — interval	070-070
								Pixel random ramp open / snap close	071-071
								Pixel random flash fast	072-072
								Pixel random snap open / ramp close — random	073-073
								Pixel random flash slow — interval	074-074
								Pixel random ramp open / snap close	075-075
								Static effects	076-095
								Block 96-127: RGBW LED's of the inactive segment illuminate in Glow RGBW color. Glow RGBW overlays also the active LEDs.	
								Pattern faded	096-096
								Pattern switch	097-097
								Pattern switch with cross fade clockwise	098-098
								Pattern switch with cross fade anti clockwise	099-099
								Pixel random flash fast	100-100
								Pixel random snap open / ramp close — regular	101-101
								Pixel random flash slow — interval	102-102
								Pixel random ramp open / snap close	103-103
								Pixel random flash fast	104-104
								Pixel random snap open / ramp close — random	105-105
								Pixel random flash slow — interval	106-106
								Pixel random ramp open / snap close	107-107
								Static effects	108-127
								Block 128-159: RGBW LED's of the inactive segment illuminate in Glow RGBW color. Only the inactive LEDs illuminate in Glow RGBW color.	
								Pattern faded	128-128
								Pattern switch	129-129
								Pattern switch with cross fade clockwise	130-130
								Pattern switch with cross fade anti clockwise	131-131

36		54		74		92		Pixel random flash fast	132-132
								Pixel random snap open / ramp close (regular)	133-133
								Pixel random flash slow (regular)	134-134
								Pixel random ramp open / snap close (regular)	135-135
								Pixel random flash fast	136-136
								Pixel random snap open / ramp close (random)	137-137
								Pixel random flash slow (random)	138-138
								Pixel random ramp open / snap close (random)	139-139
								Static effects	140-159
								Block 160-191: same as block 0-31 without glow RGBW. (use together with color spread channel - working with foreground color.	
								Pattern faded	160-160
								Pattern switch	161-161
								Pattern switch with cross fade clockwise	162-162
								Pattern switch with cross fade anti clockwise	163-163
								Pixel random flash fast	164-164
								Pixel random snap open / ramp close (regular)	165-165
								Pixel random flash slow (regular)	166-166
								Pixel random ramp open / snap close (regular)	167-167
								Pixel random flash fast	168-168
								Pixel random snap open / ramp close (random)	169-169
								Pixel random flash slow (random)	170-170
								Pixel random ramp open / snap close (random)	171-171
								Static effects	172-191
								Macros, combined effects of segment, pattern mode and pattern	192-235
								Not used	236-255
37		55		75		93		**Pattern - pattern process art (If pattern mode is set to „static“ you can choose the steps of the patterns with this channel)**	
								Pattern inactiv	000-000
								Process art 1: 1, 2, 3, 4, 1, 2, 3, 4, Constitutiv, LED‘s are not holding, always start from the beginning	001-001
								Process art 2: 1, 2, 3, 4, 3, 2, 1, Constitutiv - degradativ, LEDs are not holding	002-002
								Process art 3: 1, 1+2, 1+2+3, 1+2+3+4, 1, 1+2, 1+2+3, 1+2+3+4 Constitutiv, holding start from the beginning	003-003
								Process art 4: 1, 1+2, 1+2+3, 1+2+3+4, 4+3+2, 4+3, 4, 0 Constitutiv, holding, degradativ adverse	004-004
								Process art 5: 1, 1+2, 1+2+3, 1+2+3+4, 3+2+1, 2+1, 1, 0 Constitutiv – degradativ , holding	005-005
								Process art 6: 1+3, 2+4 even - odd, complete pattern	006-006
								Process art 7: 1+4, 2+3 jump first pattern - last pattern / second pattern - second to last pattern / and so on	007-007
								Not used	008-127
								Random patterns 1 - 7	128-135
								Not used	136-255

| | | |

Arrangement of LED groups 1-19 (Sparx 12)
The pan/tilt values are set to 0°/-77°; the display shows in the same direction as the LEDs.



Sparx 12

5.1.4 TwinZoom effects with 2-colour beam

The Sparx 12 has the option of generating 2-colour TwinZoom effects. To do this, the effects macro channel layer 1 must be set to a DMX value of between 1 and 8. Select the settings according to the segment shutter and colour wheel emulation function (see page 42). In order to fill the inner area with a colour, the background colour - main must be set. You can set the colour of the outer ring using the 2nd RGBW colour set - foreground colour - pattern (page 35). The TwinZoom can be used to obtain fantastic beam effects (use the Zoom, Zoom 2 and Zoom 3 channels for this). To do this, set the zoom mode (see page 40) to zoom mode 1.

5.1.5 Colour mixing / CTO

The Sparx 12 has a colour wheel emulation channel, main RGBW, pattern RGBW, glow RGBW and a CTO channel. In order to survey the functions, they are allocated different priorities. The colour wheel channel has first priority over the main RGBW. You can only work with the RGBW colour mixtures if the colour wheel channel is set to DMX value 000. The RGBW glow channels are used to generate basic lighting in the lighting field and to then superimpose this with the RGBW. The spotlight always mixes the colours using RGB in the optimum combination of RGBW channels. The white channel can be used to generate pastel colours as soon as the RGB channel has a DMX value of less than 255.
The CTO channel can be used both in conjunction with the colour wheel emulation channel and with RGBW colour mixing. It depends on the base colour adjustment in which the spotlight is operated. -> PERSONALITY -> COLOR TEMP MODE. If a fixed colour temperature value is set, e.g. 6500K, the spotlight can be set to between 6500K and 2700K using the CTO channel. In the PERSONALITY -> COLOR TEMP MODE -> VARIABLE, the CTO channel can be used to set the spotlight to 2000K-20000K. The DMX values of the CT channel x 100 correspond to the colour value in Kelvin, DMX32 -> CTO 3200K. The CTO always runs on the black body line!

5.1.6 Control channel

The control channel can be used to switch various functions of the headlamp. The following functions can be switched.

Response of the headlamp when dimming via faders
COLOR MIX POWER LIMIT - Adjustment of total power consumption
CONSTANT COLOR MODE - Adjust color fidelity
CONSTANT BRIGHTNESS MODE - setting for constant brightness
CONSTANT BRIGHTNESS LIMIT - Setting the limit for constant regulation of the speed
BACKLIGHT MODE - Display backlight
DISPLAY ORIENTATION - Display orientation
MAIN SCREEN MODE - main screen view
USER FIXTURE ID SET - Set fixture number
USER WHITE POINT - Setting the color temperature of the "white LED"
BLACK BODY SHIFT - Adjustment +- green
DIMMER CURVE - Dimmer curve adjustment
RGBW CURVE - Setting the RGBW curve
PAN / TILT SPEED - pan / tilt speed
EFFECT SPEED - effect speed
COOLING MODE - Adjust the fan volume and brightness
COLOR TEMP MODE - setting the color temperature
ZOOM MODE - Setting the zoom modes
FAN MODE - Sets the basic volume in the selected COOLING MODE
BEAMSHAPE ON / OFF - Setting whether a beamshape is mounted or not
BLACK BODY SHIFT DMX - Activation of the additional channel for BLACK BODY SHIFT
CAMERA MODE - Sets the LED refresh rate
RESET - A basic reset of the headlight is performed

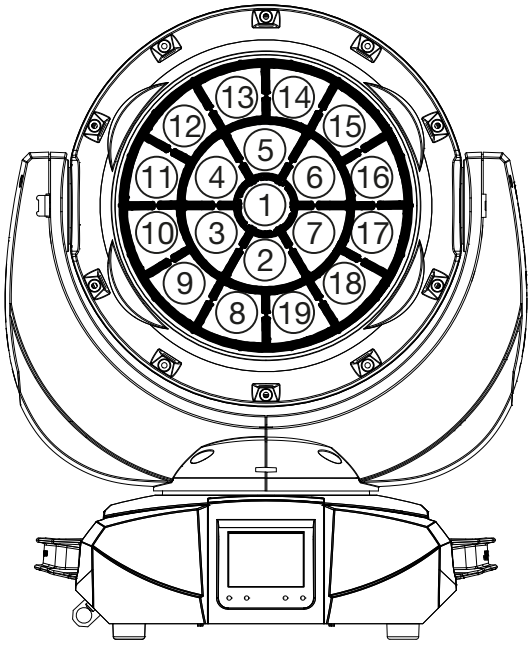
To enable uniform dimming manually via faders for all light mixing consoles, 5 different settings for the DMX smoothing are available. If the DMX signal is interrupted or too few packets are sent on some DMX consoles, this channel can be used to adjust the response of the headlamp. The Minimum DMX Smoothing setting should work on most popular consoles. The values for DMX smoothing must be permanent.
For the other values such as Cooling Mode, Color Temperature ..... the values must be present for 2 seconds, then the device is permanently switched over. The exception is the setting of the COOLING-MODE, here it depends on the switch SAFE MODE SWITCH, if it is on OFF the COOLING-MODES can be switched directly, if this is ON the DIMMER and SHUTTER must get the DMX-value 0. Only then can be switched.

5.1.7 Sparkle / sparkle speed

This channel gives the Sparx 12 its name. This can be used to create unique effects in conjunction with the zoom and dimmer. Depending on the intensity, the lighting field is split into its base colours, i.e. the individual LEDs for full colours are dimmed in/out, mixed colours split into their base colours or the effect is performed with neutral colour depending on the sparkle speed channel's setting. The sparkle speed channel can also be used to select where the sparkle effect occurs, in the inner area, outer area or complete spotlight.

5.1.8 Pixel mode cross-fading (transition)

The pixel mode cross-fading channel can be used to switch or cross-fade between the internal effect engine and base functions, and real LED control. If this channel sends DMX value 255, the spotlight works at 100 % in individual LED control. The following channels for LED group 1-19 Sparx 12 - 76 channels can be added to any operation mode -> PERSONALITY -> PIXEL MODE and are used to control the individual LEDs, always in the sequence red, green, blue, white. The following illustrations show the arrangement of the LED groups when the spotlight is controlled in a standing position with PAN/TILT values 127/60 and the display shows in the same direction as the LEDs.



Sparx 12

5.1.9 Special channels for Mode 4 with extended programming options

Mapping

This channel splits the circular pattern of the pattern channel into different LED segments.

Pattern mode

Across mapping, pattern and pattern speed, pattern mode controls whether an effect is to be faded, switched, static or runs via pixel flashes. Furthermore, a macro area helps you to program effects easily.

Pattern / pattern speed

The pattern channel generates increasing, decreasing and random patterns that are controlled via the speed channel. They are always circular if the mapping channel is not active. The pattern mode channel determines the way in which this occurs.

Colour spread

This channel generates an indexable or continuous colour spread using the effect's foreground colour.

5.2 Artnet

The spotlight can be controlled via Artnet - ArtNET 4. To do this, set the Artnet address via the menu item DMX / NET ADDR -> ARTNET ADDRESS and also select it via the menu item PERSONALITY -> DMX INPUT CONFIG -> NETWORK -> MODE -> ARTNET. In addition, define the IP address of the spotlight via PERSONALITY -> DMX INPUT CONFIG -> NETWORK -> IP ADDRESS. Further details and setting options can be found on page 17.

5.3 Streaming ACN

The headlight can be controlled via sACN - Streaming ACN. To do this, set the sACN address via the menu item DMX / NET ADDR -> SACN ADDRESS and also select it via the menu item PERSONALITY -> DMX INPUT CONFIG -> NETWORK -> MODE -> SACN. In addition, define the IP address of the spotlight via PERSONALITY -> DMX INPUT CONFIG -> NETWORK -> IP ADDRESS. Further details and setting options can be found on page 17.

5.4 Wireless-DMX

The Sparx 12 Profile is equipped with a Lumen Radio CRMX receiver for wireless DMX. The receiver can process both DMX and RDM. If there is a cable and wireless connection to the Sparx 12, the cable connection has priority! The received signal can be output via the DMX connection. To do this, set the DMX OUTPUT CONFIG setting to ON in the PERSONALITY menu. After confirming with ENTER, the spotlight will output the entire universe received via wireless DMX.

5.5 RDM

The Sparx 12 Profile can communicate via RDM (Remote Device Management) in accordance with ESTA American National Standard E1.20-2006. RDM is a bidirectional communication protocol for use in DMX512 control systems. It is the open standard for the configuration and status monitoring of DMX-512 devices. The RDM protocol enables data packets to be inserted into a DMX-512 data stream without affecting existing non-RDM devices. It enables a console or dedicated RDM controller to send commands to specific devices and receive messages. The Sparx 12 Profile can send and receive RDM via DMX and Artnet 4. The spotlight is also designed to send RDM via sACN and receive it via Artnet. The RDM functionality depends on the lighting control desk used, the operating instructions of the respective desk manufacturer must also be observed.

5.5.1 RDM-UID

Every Sparx 12 Profile has a factory-set RDM-UID (unique identification number), which makes it addressable and identifiable in RDM systems.

5.5.2 RDM-PIDs

The Sparx 12 Profile supports the RDM PIDs (parameter IDs) required by ESTA as well as manufacturer-specific PIDs.

5.5.3 Standard RDM parameter IDs

RDM parameter ID	GET	SET	DISCOVERY	Note
RDM identification				
DISC_UNIQUE_BRANCH			✔	is used for fixture identification
DISC_MUTE			✔	is used for fixture identification
DISC_UN_MUTE			✔	is used for fixture identification
RDM status determination				
QUEUED_MESSAGE	✔			
STATUS_MESSAGES	✔			
STATUS_ID_DESCRIPTION	✔			
CLEAR_STATUS_ID		✔		
RDM information				
SUPPORTED_PARAMETERS	✔			
RDM configuration				
DEVICE_MODEL_DESCRIPTION	✔			
MANUFACTURER_LABEL	✔			
FACTORY_DEFAULTS		✔		

SOFTWARE_VERSION_LABEL	✔			
DMX_PERSONALITY		✔		
DMX_PERSONALITY_DESCRIPTION	✔			
DMX_START_ADDRESS		✔		
SENSOR_DEFINITION	✔			
DEVICE_HOURS	✔			
LAMP_HOURS	✔			
IDENTIFY_DEVICE		✔		
RESET_DEVICE		✔		
PERFORM_SELFTEST		✔		
SELFTEST_DESCRIPTION	✔			

5.5.4 Manufacturer specific RDM parameter IDs

RDM parameter ID	GET	SET	DISCO-VERY	Note
RDM-Konfiguration				
Battery Charge Hours	✔			
Error Number	✔			
Error	✔			
Select Next Error		✔		
Remove Error		✔		
Remove New Error Flag		✔		
User Defaults		✔		
User Fixture ID		✔		
Fixture Lock On/Off	✔	✔		
Dimmer Curve	✔	✔		
RGB Curve	✔	✔		
Camera Mode	✔	✔		
Cooling Mode	✔	✔		
Pan Tilt Speed	✔	✔		
Effect Speed	✔	✔		
Backlight Mode	✔	✔		
Disp Orientation	✔	✔		
Main Screen Mode	✔	✔		
Safe Mode Switch	✔	✔		
Beamshape	✔	✔		
Color Mix Power Limit	✔	✔		
Color Temperature Mode	✔	✔		
Constant Brightness Limit	✔	✔		
Constant Brightness Mode	✔	✔		
Constant Color Mode	✔	✔		
Pixel Mode	✔	✔		
Zoom Mode	✔	✔		
User White Point	✔	✔		
Black Body Shift	✔	✔		
Black Body Shift DMX	✔	✔		
Fan Mode	✔	✔		
Fan White Opt Mode	✔	✔		

5.5.5 RDM sensoren IDs

RDM sensor ID	GET	SET	DISCO-VERY	Note
RDM-Sensoren				
Temp Sens Base LCD	✔	✔		
Temp Sens Base PS	✔	✔		
Temp Sens Base AIR	✔	✔		
Temp Sens Head PCB	✔	✔		
Temp Sens Head DRV	✔	✔		
Temp Sens Head LED	✔	✔		

6. Service

6.1 Service menu

RESET FIXTURE
Upon the “Reset” command, the Sparx 12 will initialise to its initial values. It is the same procedure as after switching on the Sparx 12. If an error message appears in the display, this could be the first step to correct it.

ERROR LIST
The Sparx 12 stores all occurring errors internally. An error message can have a harmless cause. If you experience frequent error messages, please contact our authorised dealer or our JB-Lighting service department. All error messages are displayed with the respective frequency and can be deleted.

FUNCTION TEST
This function allows you to test all functions of the Sparx 12 without using a light mixer. The pan/tilt reset is deactivated in the process.

LED TEST
The Sparx 12 checks all LEDs individually to establish whether they are functioning. If an LED is faulty, this is indicated by an error message.

DMX TEST
This menu item is used to test the DMX input. Use the function keys to select the DMX channel to be tested. The display shows the incoming value and the Sparx 12 reacts accordingly at the same time.

INIT PAN TILT
The Sparx 12 is calibrated in the pan/tilt position at the factory. If it loses this calibration, i.e. the spotlight hits the stop or no longer finds its position or the pan/tilt boards had to be replaced, it can be re-initialised using this function. This process takes about 10 minutes and ends with a reset.

DISPLAY CONTRAST
The contrast of the LCD display may change when the temperature is too high. In this menu item the contrast can be adjusted.

FINE ADJUST
The FINE ADJUST area is protected by a key combination. Focus, shapers, shaper rotation, pan and tilt are calibrated at the factory. If there are large deviations in the calibration between the individual headlights, this can be corrected in the FINE ADJUST menu. For more information please contact our service.

IDENTIFY DEVICE
The RDM command IDENTIFY DEVICE can be called up or deactivated via this menu item.

6.2 Cleaning the device

ATTENTION:
Disconnect the device from the mains and allow to cool for at least 10 minutes!
When looking directly into the light source, use welder's goggles with weakening 4-5!

You should check the function of the fans in the head and foot at regular intervals. Above all, make sure that the air intakes and the interior of the Sparx 12 are free of fluff and dust. Also make sure that the dust filters in the covers are clean.
To do this, open the fan cover on the head (6x Phillips head screws with bayonet fastener) and the base plate on the foot. You can now clean the Sparx 12 with a brush and a vacuum cleaner. Also vacuum the dust protection mats in the lids. If the dust protection mats are no longer clean, they must be replaced.

6.3 Software update

The Sparx 12 can be updated via a USB stick with micro-USB connection. To do this, copy the file directly into the root directory of the USB stick. Then press and hold the right key below the display and switch on the power. As soon as the message "Insert USB stick" appears on the display you can release the key. Now plug in the USB stick on the back of the device below the signal connections and follow the instructions on the display. The Sparx 12 completes the software update with a reset. You will find the latest software on our homepage.

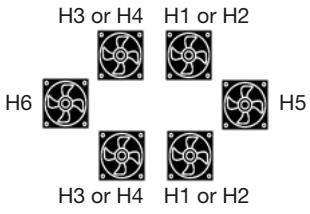
6.4 Testing of electrical equipment

According to the German Social Accident Insurance (DGUV) Regulation 3 / Regulation 4, electrical systems and equipment must be subjected to regular inspections. The fixing screw of the DMX 5-pin socket can be used as measuring point for insulation and residual current measurement. The screw is connected to all sheet metal parts via a contact washer.

PE measuring point

7. Overview of error codes for all fixtures

PAN TIMEOUT	Pan	
TILT TIMEOUT	Tilt	
GOBO1 TIMEOUT	Gobo wheel 1 position	
GROT1 TIMEOUT	Gobo wheel 1 rotation	
GOBO2 TIMEOUT	Gobo wheel 2 position	
GROT2 TIMEOUT	Gobo wheel 2 rotation	
COLOR TIMEOUT	Color wheel	
CYAN TIMEOUT	Cyan	
MAGENT TIMEOUT	Magenta	
YELLOW TIMEOUT	Yellow	
CTC TIMEOUT	CTB / CTO	
IRIS TIMEOUT	Iris	
BLADEROT TIMEOUT	Blades Rotation	
BLADE1A TIMEOUT	Blade1A	
BLADE1B TIMEOUT	Blade1B	
BLADE2A TIMEOUT	Blade2A	
BLADE2B TIMEOUT	Blade2B	
BLADE3A TIMEOUT	Blade3A	
BLADE3B TIMEOUT	Blade3B	
BLADE4A TIMEOUT	Blade4A	
BLADE4B TIMEOUT	Blade4B	
ZOOM TIMEOUT	Zoom	
FOCUS TIMEOUT	Focus	
PRISM1 TIMEOUT	Prism 1 (linear)	
PRISM1ROT TIMEOUT	Prism 1 rotation	
PRISM2 TIMEOUT	Prism 2 (circular)	
PRISM2ROT TIMEOUT	Prism 2 rotation	
ANI TIMEOUT	Animation wheel	
ANIROT TIMEOUT	Animation wheel rotation	
FAN B1 ER	Error Fan Base 1	
FAN B2 ER	Error Fan Base 2	
FAN B3 ER	Error Fan Base Transformer	SPARX ONLY
FAN H1 ER	Error Fan Head 1	
FAN H2 ER	Error Fan Head 2	
FAN H3 ER	Error Fan Head 3	
FAN H4 ER	Error Fan Head 4	
FAN H5 ER	Error Fan Head 5	
FAN H6 ER	Error Fan Head 6	
FAN H7 ER	Fan Blades (P18) / CMY P12	



TSENS BPS ER	Sensor Error Base Power Supply AC/DC	
TSENS BLCD ER	Sensor Error Base LCD	
TSENS BAIR ER	Sensor Erroe Base Air	SPARX ONLY
TSENS HMAIN ER	Sensor Error Head Main PCB	
TSENS HDRV ER	Sensor Error Head LED Driver PCB	
TSENS HLED ER	Sensor Error Head LED	
TSENS HAIR ER	Sensor Error Head Air (Ambient)	
HIGH TEMP BLCD	High Temperature Base LCD PCB	
HIGH TEMP BAIR	High Temperatur Base Air (SPARX ONLY)	
HIGH TEMP BPS	High Temperature Base PSU AC/DC	
HIGH TEMP HMAIN	High Temperature Head Main PCB	
HIGH TMP HDRV	High Temperature Head LED Driver PCB	
HIGH TMP H LED	High Tempperature Head LED Module	
HIGH TEMP HEAD AIR	High Temperature Head Air (Ambient)	
CPU1 NOT RESPONDING	CPU Display PCB	
CPU2 NOT RESPONDING	CPU Pan/Tilt PCB	
CPU3 NOT RESPONDING	CPU Main Head PCB	
CPU4 NOT RESPONDING	CPU Main Head PCB: MK2 MAIN HEAD, P12 CMY, MK1 BLADES	
CPU5 NOT RESPONDING	CPU Blades PCB: MK1 LED DRIVER PCB	
CPU6 NOT RESPONDING	CPU LED Driver PCB: MK1 N.A.	

8. Specifications

Dimensions and weight

Width	403,6mm
Depth	265,3mm
Height	490,9mm
Weight	15,5 kg

Electronic system

Mains connection	100-240 V AC, 50-60Hz
Maximum power consumption	max 750 VA
Power consumption in standby	40 VA

Temperature

Maximum ambient temperature	45 °C
Minimum ambient temperature	5 °C

Optics, Photometric Data

Light source	19 RGBW LEDs (40W class)

Effects

Pan	540.73°
Tilt	323.79°
Zoom	2,2° - 60°
Colour temperature	CTO, variable 20000K-2000K

Construction

Colour	black
Housing	PC ABS
Protection class	IP 20

Installation

Installation site	indoors
Holder	2x Omega brackets
Position	any
Minimum fixture distance to flammable objects	0,5 m
Minimum distance between the light emission and the surface to be illuminated	2,0 m

Connections

Power input	Neutrik powerCON TRUE1 IN
Power feed-through	Neutrik powerCON TRUE1 OUT
DMX in / out USITT DMX512	5-pin XLR
Ethernet	2x Neutrik etherCON
Micro-USB	Software update

9. Declaration of Conformity

CE

Declaration of Conformity

as defined by Directive: 2014/35/EU Low Voltage Directive,
(Directive 2014/35/EU of the European Parliament and of the Council of 26/02/2014 to approximate the laws of the Member States relating to electrical equipment designed for use within certain voltage limits)

as defined by Directive: 2014/30/EU Electromagnetic compatibility,
(Directive 2014/30/EU of the European Parliament and of the Council of 26/02/2014 to approximate the laws of the Member States relating to electromagnetic compatibility)

The manufacturer, **JB-Lighting Lichtanlagentechnik GmbH**
Sallersteigweg 15
89134 Blaustein-Wippingen

declares that the product: **Sparx 12**

complies with the essential protection requirements of the directives. The following standards were used for conformity assessment:

Emissions requirements in accordance with EN 55022:2010	**Information technology equipment, radio interference characteristics - Limit values and measuring methods - Limit value class A**
Conducted interference emission EN 55022:2010	Information technology equipment, radio interference characteristics - Limit values and measuring methods - Limit value class A
Radiation EN 55022:2010	Information technology equipment, radio interference characteristics - Limit values and measuring methods - Limit value class A
Harmonic currents EN 61000-3-2:2015	Electromagnetic compatibility Part 3-2: Limits, testing of harmonic currents (for devices with an input current < 16A per phase)
Flicker EN 61000-3-3:2013	Electromagnetic compatibility (EMC) Part 3-3: Limits, limitation of voltage changes, voltage fluctuations and flicker in low-voltage networks (for devices with an input current < 16A per phase)
Immunity - requirements in accordance with EN 61000-6-2:2005	**Electromagnetic compatibility (EMC) - Part 6-2: Generic standard - Immunity in industrial areas**
EN 61000-4-2:2009	Part 4-2: Immunity to static electricity discharge
EN 61000-4-3:2006 +A1:2008 +A2:2010	Part 4-3: Immunity to high-frequency electromagnetic fields
EN 61000-4-4:2012	Part 4-4: Immunity against fast transient electrical disturbances (burst)
EN 61000-4-5:2006	Part 4-5: Interference voltages against surge voltages
EN 61000-4-6:2014	Part 4-6: Immunity to conducted disturbances, induced by HF
EN 61000-4-8:2010	Part 4-8: Immunity to magnetic fields with power technology frequencies
EN 61000-4-11:2004	Part 4-11: Immunity against voltage dips, short-term interruptions and voltage fluctuations

Blaustein, 01/06/2022

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CEO

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