JB LIGHTING

SPARX 10

Operating Instructions

Version 1.8
Software >= 1.23

Contains also French warnings!
Comprend les avertissements en langue français

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1. Dimensions & product overview

2. Introduction

2.1 Safety instruction

WARNING: This device is for professional use only! Protection rating IP 20 - only indoor use

WARNING: LED Radiation - do not look into the beam at a distance of less than 5 meters (197 inches) from the front surface of the product. Do not view the light output with optical instruments or any device that may concentrate the beam. LED class 3 according to EN 62471.

WARNING: JB-Lighting Lichtanlagentechnik GmbH does not authorize or warrant its products for use in life support systems. Life support systems are equipment intended to support or sustain life, and whose failure to perform, when properly used in accordance with instructions provided, can be reasonably expected to result in personal injury or death.
This product conforms to the European Community Directives:
- Low voltage directive 2014/35/EU
- Electromagnetic compatibility 2014/30/EU

ATTENTION: Cet appareil ne convient que pour un usage professionnel! Degré de protection: IP 20

ATTENTION: Rayonnement LED - Ne pas regarder le faisceau à moins de 5m ou à l'aide d'un instrument à optiques. LED classe 3 selon la norme DIN EN 62471

ATTENTION: JB-Lighting Lichtanlagentechnik GmbH n'autorise pas l'utilisation de leurs appareils dans des systèmes ou dispositifs permettant le maintient en vie. Sont considère systèmes ou dispositifs de maintient en vie tous systèmes qui ont pour but de maintenir la vie ou de la stabilisée et qu'un défaut ou défaillance éventuelle de celui-ci ne blesse ou entraine la mort d'autrui.
Le produit décrit dans ce manuel est conforme aux directives Européennes suivantes:
- Directive appliquée à la Basse Tension 2014/35/EU
- Directive CEM 2014/30/EU

2.2 Unpacking

This package contains the Sparx10, two omega brackets with 1/4 turn fasteners, this manual (one per shipment) as well as a power cable with PowerCon connector (no cable in US model). Open the top of the box and remove the inlay. Remove the unit from the box. For any damage occurring during transport, report to the transport company immediately.

3. Installation

3.1 Connection to Mains

WARNING: To ensure proper installation of the plug consult a qualified technician!

ATTENTION: Installation de la connexion au réseau doit être effectuée par un professionnel!

The Sparx10 is supplied with a power cable with a Neutrik PowerCon connector. Install a 3-prong grounding type plug that fits your supply. US model comes without power cable and connectors. Required cable type see 4.5. Connected load: voltage 100-240 V, frequency 50 - 60 Hz

Connection EU-model:

Color	**Function**	**Symbol**
brown	Live	„L“
blue	Neutral	„N“
green/yellow	Ground	⏚

Connection non EU-model:
The Sparx10 may only be connected to mains supply systems according to this drawing:

	mains		**Sparx10**
2 conductor 1 phase	L N	— —●— —	L N PE
3 conductor 1 phase	L N L	— — —	L PE N
4 conductor 3 phase	L_1 L_2 L_3 N	— — —	L N PE

WARNING: only can be used in Canadian mains supply system with 2 conductor, 1 phase with max. 120V!

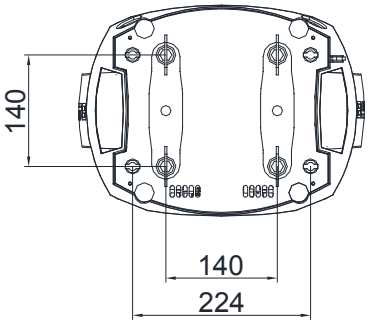
ATTENTION: Le A8 peut être utilisé au Canada avec 2 conducteurs, 1 phase et une tension maximal de 120V!

3.2 Rigging the fixture

WARNING: Keep fixtures at least 1,0 meter away from inflammable articles! Always use a safety cable attached to the base!

ATTENTION: Respecter une distance minimale de 1,0 m entre le projecteur est d‘éventuelles objets inflammables! Sécuriser toujours le Sparx10 avec une élingue de sécurité appropriée!

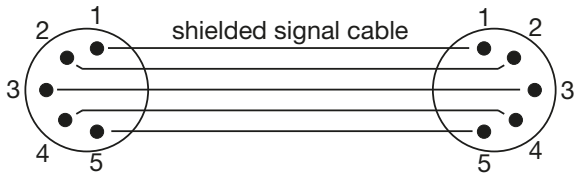
The Sparx10 can either be placed on the floor or hang on a trussing system in any position. When placing the unit on the floor make sure that it stands on rigid ground, because the air inlets in the base must not be covered with anything! To mount the unit on a trussing system use two of the original JB-Lighting omega brackets with Camloc-connectors. The Camlocs must snap in to be locked properly. Always attach a safety cable to secure the unit.



3.3 DMX wiring

Use a shielded twisted-pair cable with two pairs to connect the serial link. Connect all pins if you want to upgrade the software in cross-load. If a microphone cable (or any other cable with only one pair) is used the software can not be updated via DMX line because pin 4 and 5 are not connected.

Pin assignment:
Pin 1 = shield
Pin 2 = data -
Pin 3 = data +
Pin 4 = data out -
Pin 5 = data out +



The Sparx10 has 3pin and 5pin XLR connectors for DMX-in and DMX-out. Do not connect more than one data input and one data output on a fixture.
Connect the DMX-out of the control desk to the first Sparx10 in line. (lighting control desk DMX-Out -> Sparx10 DMX-in). Connect the second Sparx10 to the first in line, and so on (Sparx10 no. 2 DMX-In -> Sparx10 no. 1 DMX-Out). All 3-pin and 5-pin connectors are wired parallel. Do not use this fixture as a DMX splitter! The DMX-Out of the last unit in line is not occupied unless problems occur. Then use a termination plug with the last Sparx10 in line. (XLR-connector with a 120 Ohm resistor soldered between pin 2 and pin 3). Problems might occur when the line is overloaded, e.g.

3.4 Installing a plug on the power cord

Install a plug like described in chapter 3.1.

Connected load: Voltage 100-240 Volts, frequency 50 - 60 Hz, power max. 600 VA. Connect the fixture to a proper installed grounded system only. If any doubts on the electrical installations occur, consult a qualified electrician. In case of damages occurring due to a not proper installed electrical system, warranty claims will be invalidated. Don´t use fixtures when top cover is not fixed properly. Contact with electronic parts can result in risk for life. (Electrical shock 100-240 V)

Connect fixture only after assuring that the electrical installation fits your demands. If any doubts occur consult a qualified technician!

WARNING: Sparx10 might light up immediately if standalone mode is active or DMX signal is connected!

ATTENTION: Le projecteur Sparx10 peut s'illumine directement, lorsque le mode standalone et activé ou si un signal DMX est programmé!

3.5 Relaying power to other fixtures

WARNING: To ensure proper installation of the plug consult a qualified technician!

ATTENTION: Installation de la connexion au réseau doit être effectuée par un professionnel!

Power can be relayed to another device via the grey PowerCon throughput socket that accepts a grey PowerCon NAC3FCB cable connector. Note that blue input and grey throughput connectors have different design: one type cannot be connected to the other.

The value of Sparx10 in chain depends on the local power network. Never use more than five in one line. Power throughput cable must be rated 20A min., have three conductors 1,5mm² min. conductor size and a outer cable diameter of 5-15mm. Use only original PowerCon plug from Neutrik. See installation manual from manufacturer (www.neutrik.com).

Color	Function	Symbol
brown	Live	„L“
blue	Neutral	„N“
green/yellow	Ground	⏚

4. Control panel

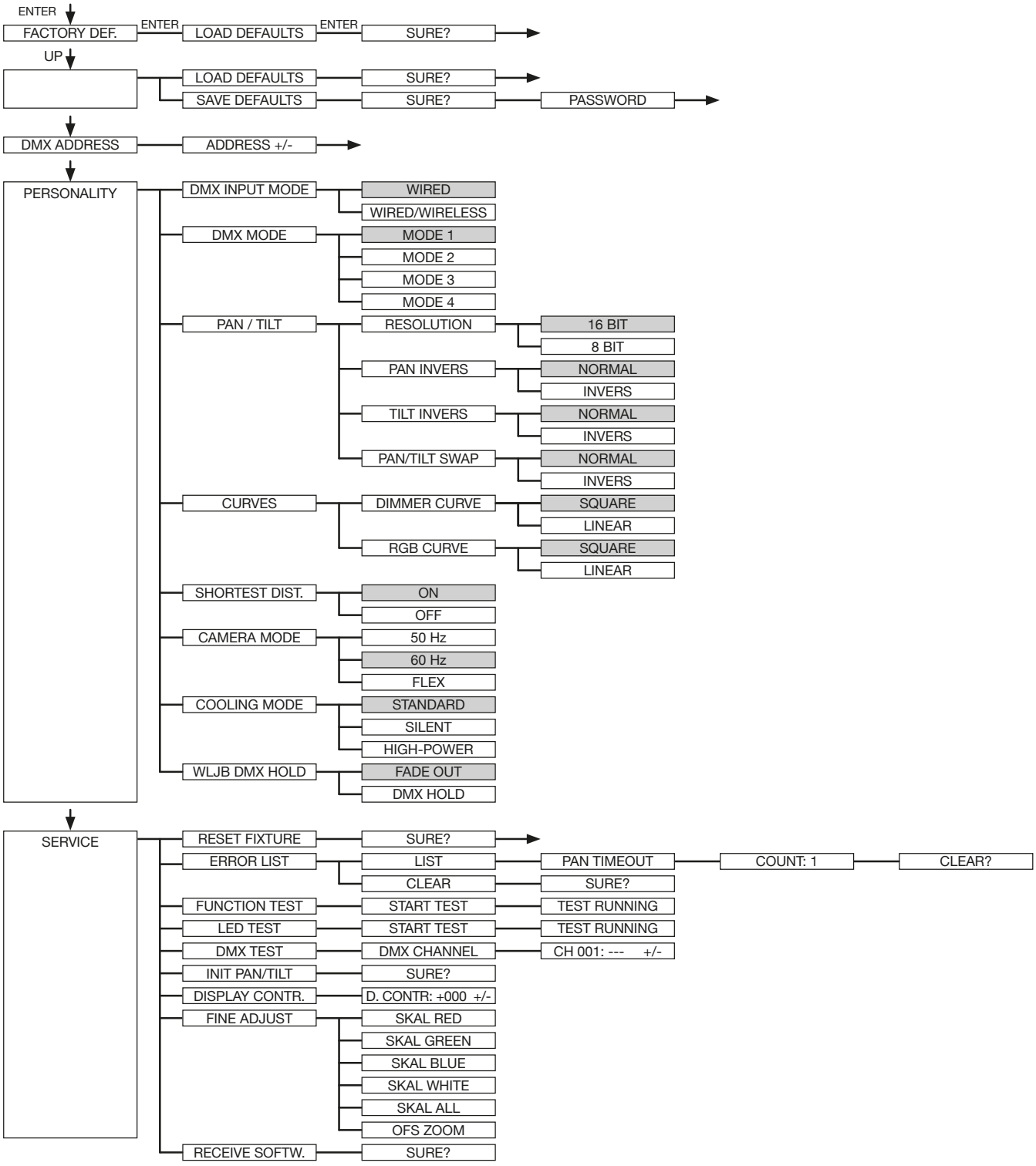
The Sparx10 is equipped with a backlit graphic display, which can be rotated through 180 deg. if the unit is installed upside down.

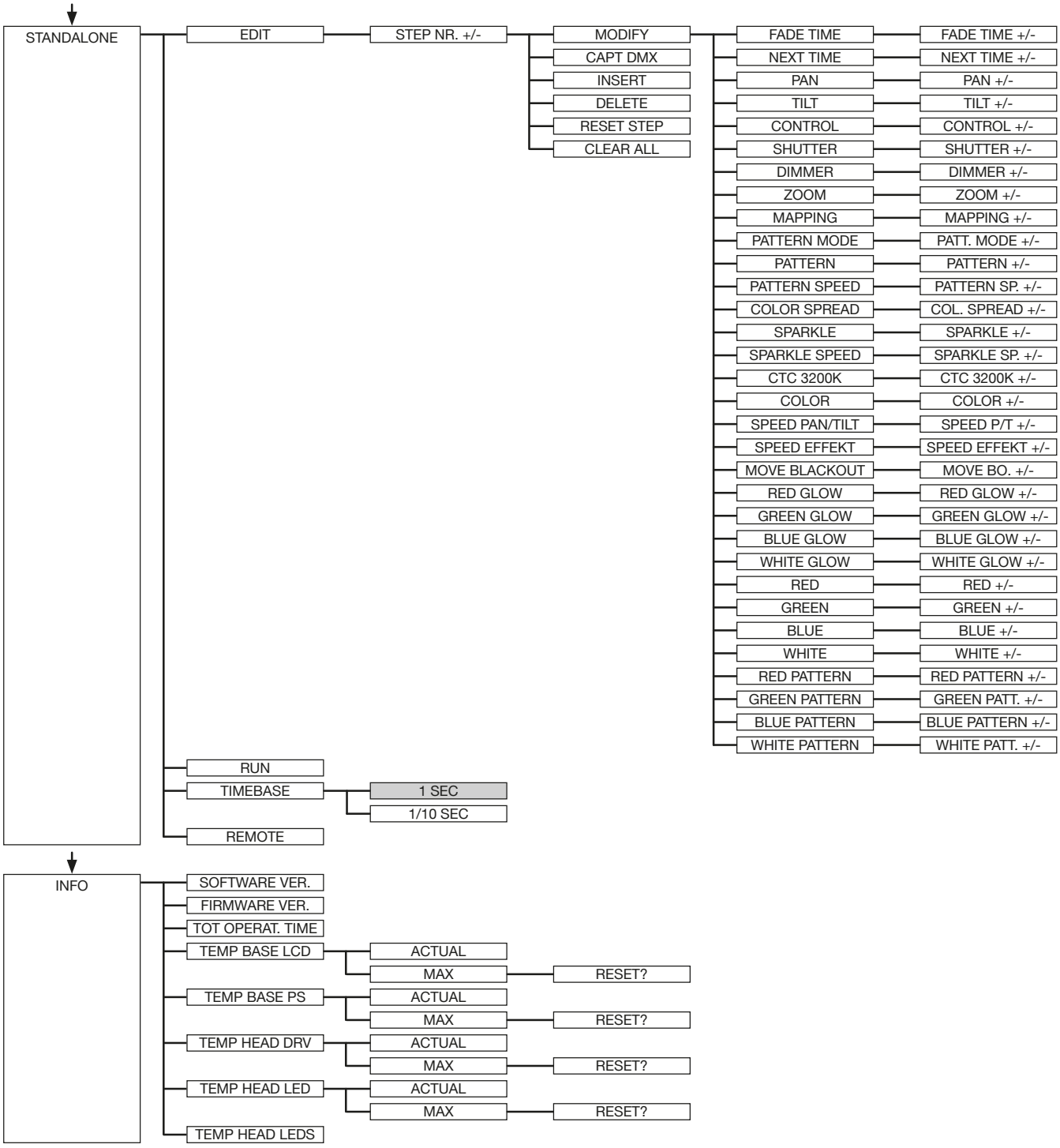
Rotating the display

Use the centred button to change the orientation of the display. To adjust the personal setting of the Sparx10 use keys located on the control panel. Functions see menu on the following page. The Sparx10 can be addressed in the main menu. For addressing in a case, the reset can be aborted by pressing the right base button during powering the fixture. The main menu also informs about the DMX-mode. If wireless DMX is used, the field intensity from the sender will be displayed. Press „ENTER“ to enter a menu, select a function or apply a selection. Press keys „DOWN“ and „UP“ to scroll within a menu or set values. To escape a function press key „ESC“. A few functions can be entered or recalled by means of a combination of two keys. For example FINE ADJUST at menu SERVICE and MODIFY, RUN and REMOTE at menu STANDALONE. To enter these functions press „ENTER”, keep it down and press “ESC” in addition. To leave the menu press „ESC“ hold it down and press „Enter“, MODIFY and FINE ADJUST you can leave only by pressing „ESC“.
The main menu can be locked to avoid an accidental change of the configuration. To lock press “ENTER” and keep it down and press “ESC” in addition. To unlock press „ESC“ (keep it down) and press „ENTER“ in addition.

Special functions are assigned to the display lighting:
The display is not illuminated during reset. Slow flashing of the display illumination means no DMX signal is connected. Fast flashing of the display illumination showing „JB-Lighting“ means a failure was reported and stored in the ERROR LIST (To clear - see menu navigation on next page). Fast flashing of the display illumination showing an error message means an current failure is reported, e. g. *PAN TIMEOUT - please contact your dealer or our service department. If the Sparx10 receives a DMX-signal the display illumination dims out after 30 seconds in order not to irritated during standard operation.

4.1 Menu navigation




STANDALONE
EDIT
STEP NR. +/-
MODIFY
CAPT DMX
INSERT
DELETE
RESET STEP
CLEAR ALL
FADE TIME
NEXT TIME
PAN
TILT
CONTROL
SHUTTER
DIMMER
ZOOM
MAPPING
PATTERN MODE
PATTERN
PATTERN SPEED
COLOR SPREAD
SPARKLE
SPARKLE SPEED
CTC 3200K
COLOR
SPEED PAN/TILT
SPEED EFFEKT
MOVE BLACKOUT
RED GLOW
GREEN GLOW
BLUE GLOW
WHITE GLOW
RED
GREEN
BLUE
WHITE
RED PATTERN
GREEN PATTERN
BLUE PATTERN
WHITE PATTERN
FADE TIME +/-
NEXT TIME +/-
PAN +/-
TILT +/-
CONTROL +/-
SHUTTER +/-
DIMMER +/-
ZOOM +/-
MAPPING +/-
PATT. MODE +/-
PATTERN +/-
PATTERN SP. +/-
COL. SPREAD +/-
SPARKLE +/-
SPARKLE SP. +/-
CTC 3200K +/-
COLOR +/-
SPEED P/T +/-
SPEED EFFEKT +/-
MOVE BO. +/-
RED GLOW +/-
GREEN GLOW +/-
BLUE GLOW +/-
WHITE GLOW +/-
RED +/-
GREEN +/-
BLUE +/-
WHITE +/-
RED PATTERN +/-
GREEN PATT. +/-
BLUE PATTERN +/-
WHITE PATT. +/-
RUN
TIMEBASE
1 SEC
1/10 SEC
REMOTE
INFO
SOFTWARE VER.
FIRMWARE VER.
TOT OPERAT. TIME
TEMP BASE LCD
ACTUAL
MAX
RESET?
TEMP BASE PS
ACTUAL
MAX
RESET?
TEMP HEAD DRV
ACTUAL
MAX
RESET?
TEMP HEAD LED
ACTUAL
MAX
RESET?
TEMP HEAD LEDS

4.2 FACTORY DEFAULTS

To set back the Sparx10 to factory defaults choose in the menu FACTORY DEFAULT -> LOAD DEFAULTS. After confirming SURE? with ENTER, the personal settings of the Sparx10 will be set back to factory defaults.
If the white balance was adjusted before, it will be not affected by the set back to factory defaults.

4.3 USER DEFAULTS

If personal settings are done in the PERSONALITY menu, the user can save and reload it in the USER DEFAULTS menu. To make sure that the personal settings are not changed quickly on a stage, the save progress is locked with the password „JB-LIGHTING“.

4.4 DMX ADDRESS

Change the DMX address directly by pressing the keys „UP“ and „DOWN“. Confirm and store it by pressing key „ENTER“. The DMX address can also be changed in the menu DMX ADDRESS.

4.5 PERSONALITY

DMX INPUT MODE

The Sparx10 provides an embedded radio-DMX receiver. The receiver works with the JB-Lighting Wireless TRX transmitter. To enable the Sparx10 to receive radio-DMX change the menu from WIRED (factory default) to WIRED/WIRELESS. The fixture needs to be logged in to the Wireless TRX transmitter. To log-in press the „Start“ button (see also manual Wireless TRX). The radio channel is displayed when the Sparx10 is logged. The main display will show the intensity of the incoming signal. If the Sparx10 is connected either via DMX cable and radio-DMX, the cable signal has priority.

DMX MODE

The Sparx10 offers 3 different operating modes (see DMX protocol page 40). Mode 1 is an 8 bit mode with which you can control all features of your Sparx10. For using the full range of DMX channels use the mode 2 - 16 BIT. Use this mode for smoother operation with the RGBW channels. In order to operate the Sparx10 with less DMX channels the DMX mode can be set to mode 3. In this mode there are all channels in 8 bit mode without Pan/Tilt.

PAN / TILT

RESOLUTION sets pan and tilt to 8 bit or 16 bit control resolution. The default setting is 16 bit. If this fine resolution is not required, you can set to 8 bit for quicker operation of pan/tilt values. The PAN INVERS and TILT INVERS commands invert the direction of pan and tilt. The PAN/TILT SWAP command sets pan commands to tilt and vice versa.

CURVES

Dimming curves can be adjusted for the dimmer channel and the RGBW channels. There is a square-law curve for finer control at low intensity and coarser control at high intensity and a linear-law curve available.

SHORTEST DISTANCE

This setting is only for the color wheel channel. Switched to ON (default) it always take the shortest route from one colour to another in order to simulate a physical color wheel. Switched to OFF it routes only from white to turquoise and backwards.

CAMERA MODE

For flicker free recording in TV-studios the Sparx10 offers three different modes from 50 Hertz (PAL, Secam) to 60 Hertz (NTSC). Flex mode is designed, if cameras have a refresh frequency that makes the 50 or 60Hz settings ineffective. Factory default is 60Hz. Access the menu PERSONALITY -> CAMERA MODE and choose the required frequency. To confirm press “ENTER”. This can be also controlled with the control channel (channel 5) via lighting desk.

COOLING MODE

The Sparx10 offers three different modes for fan operation. The default setting STANDARD will suit most applications. Switch to SILENT to reduce the speed of the fans to a minimum. This mode is to be used only a well ventilated rooms with low ambient temperature, with reduced light output or if the fixture is only required occasionally. The HI POWER mode is designed to be used in areas with higher air temperature or for fixed installations. The fans start to run faster with more airflow which produces more noise.

There is in no mode danger for the lifetime of the Sparx10. If the temperature rise to much the fixture switches off automatically.

WLJB DMX HOLD

The behaviour of the Sparx10 in case the wireless DMX connection is interrupted can be set to:

1. DMX Hold - Sparx10 freezes on the last received DMX value.
2. Fade out - Sparx10 fades out after 5 seconds.

When DMX signal is back the Sparx10 first turn to its new position and fades in.

4.6 STANDALONE mode

A sequence, up to 20 steps, consisting of preprogrammed cues can be recalled by means of the STANDALONE MODE. The sequence will run as a loop. Cues can be entered in two different ways. The first way is to program every feature by means of the key of the units on-board control panel. The second way is to program the cues by means of a connected DMX control console and to store them in the fixture.

IMPORTANT! The functions MODIFY, RUN and REMOTE can be accessed only by pressing a combination of keys and not just by pressing „ENTER“. Before activating the functions make sure that there is just one DMX-transmitter in the DMX-line (e.g. one control console or one master fixture). A number of DMX-transmitters can damage the DMX driver of the fixtures. To enter the functions press “ENTER” (keep it down) and press „ESC“ in addition.

Programming the stand alone sequence:

Enter the menu STANDALONE -> EDIT. STEP NR 01/01 will be displayed. Enter the MODIFY menu to get access to the fixtures functions. Recall the functions and enter DMX values. Enter FADE TIME (during which the effects will move to the programmed position) Enter NEXT TIME which will be the duration of the step. Add a new step with INSERT. The DMX values of the last step will be automatically copied to the new step. With DELETE one step of the sequence can be deleted. Choose the step and confirm the function with ENTER. To reset the DMX values of a step use RESET STEP. Select the step and confirm with “ENTER”. All DMX values of the step will be set to zero. With CLEAR ALL the complete sequence will be deleted and the display will show STEP 01/01

Store cues from a DMX controller:

The DMX values can also be programmed by means of a DMX console. Enter the STANDALONE menu and navigate to CAPT DMX. Program the DMX values with an external DMX console. To capture the data press „ENTER“. The fixtures display will show START CAPTURE. To insert, delete or reset use the keys of the control panel of the fixture.

Activate the standalone mode:

The standalone mode is activated in the menu STANDALONE -> RUN. To enter the functions press “ENTER” (keep it down) and press “ESC” in addition. Sparx10 will execute sequence in a repeating loop. To leave press “ESC” and hold it down and press “ENTER” in addition.

Operation in Master-Slave mode:

To set a fixture to slave-mode navigate to REMOTE. To activate the slave function press “ENTER” (keep it down) and press “ESC” in addition. The display will show either REMOTE INACTIVE if no DMX-signal is being received or REMOTE ACTIVE if a DMX-signal is being received. To leave this function press “ESC” (keep it down) and press “ENTER” in addition. Connect the Sparx10 with DMX cables. Select STANDALONE -> RUN with the master fixture. Start function by pressing “ENTER” (keep it down) and pressing “ESC” in addition. All connected fixtures will repeat the steps synchronized to the master fixture. To leave the menu press “ESC” (keep it down) and press “ENTER” in addition. If you realize that a fixture reacts inaccurate check if the display shows REMOTE ACTIVE.

Pre-load Demo:

The Sparx10 provides 20 pre-programmed Effects in the Pre-load demo menu. The user can load it an change the values with MODIFY. A quick introducing in the effects of Sparx10 can be done.

4.7 INFO

The menu informs about the current software/firmware version. The non-resettable TOT OPERATE TIME counter displays total hours of use since the Sparx10 was manufactured.

Temperature readouts from the display panel (TEMP BASE LCD) and power supply unit (TEMP BASE PS) in the base as well as the driver (TEMP HEAD DRV) and LED PCB (TEMP HEAD LED) in the head are available. In each case, you can view the current temperature and the maximum temperature reached since the readout was last reset individually. The TEMP HEAD LEDs views the actual temperature of the single LEDs.

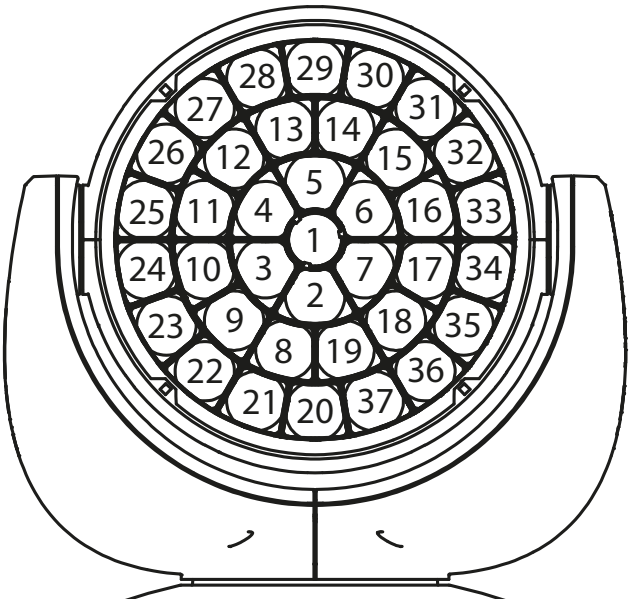
5. DMX protocol

The Sparx10 offers 4 different channel modes. The mode can be set in menu item PERSONALITY -> DMX MODE. The used mode will be displayed in the main menu.

	Mode 1 (M1)	Mode 2 (M2)	Mode 3 (M3)	Mode 4 (M4)
Channel 1	Pan	Pan	Pan	Pan
Channel 2	Pan fine	Pan fine	Pan fine	Pan fine
Channel 3	Tilt	Tilt	Tilt	Tilt
Channel 4	Tilt fine	Tilt fine	Tilt fine	Tilt fine
Channel 5	Control	Control	Control	Control
Channel 6	Shutter	Shutter	Shutter	Shutter
Channel 7	Dimmer	Dimmer	Dimmer	Dimmer
Channel 8	Zoom	Zoom	Zoom	Zoom
Channel 9	Mapping	Mapping	Mapping	Mapping
Channel 10	Pattern mode	Pattern mode	Pattern mode	Pattern mode
Channel 11	Pattern	Pattern	Pattern	Pattern
Channel 12	Pattern speed	Pattern speed	Pattern speed	Pattern speed
Channel 13	Color spread	Color spread	Color spread	Color spread
Channel 14	Sparkle	Sparkle	Sparkle	Sparkle
Channel 15	Sparkle speed	Sparkle speed	Sparkle speed	Sparkle speed
Channel 16	CTC 3200K	CTC 3200K	CTC 3200K	CTC 3200K
Channel 17	Fixed colors	Fixed colors	Fixed colors	Fixed colors
Channel 18	Pan/Tilt speed	Pan/Tilt speed	Pan/Tilt speed	Pan/Tilt speed
Channel 19	Effect speed	Effect speed	Effect speed	Effect speed
Channel 20	Blackout move	Blackout move	Blackout move	Blackout move
Channel 21	Red (Glow RGBW)	Red (Glow RGBW)	Red (Glow RGBW)	Red (Glow RGBW)
Channel 22	Green (Glow RGBW)	Red fine (Glow RGBW)	Green (Glow RGBW)	Green (Glow RGBW)
Channel 23	Blue (Glow RGBW)	Green (Glow RGBW)	Blue (Glow RGBW)	Blue (Glow RGBW)
Channel 24	White (Glow RGBW)	Green fine (Glow RGBW)	White (Glow RGBW)	White (Glow RGBW)
Channel 25	Red (Main RGBW)	Blue (Glow RGBW)		Red (Main RGBW)
Channel 26	Green (Main RGBW)	Blue fine (Glow RGBW)		Green (Main RGBW)
Channel 27	Blue (Main RGBW)	White (Glow RGBW)		Blue (Main RGBW)
Channel 28	White (Main RGBW)	White fine (Glow RGBW)		White (Main RGBW)
Channel 29	Red (Pattern RGBW)	Red (Main RGBW)		Red (Pattern RGBW)
Channel 30	Green (Pattern RGBW)	Red fine (Main RGBW)		Green (Pattern RGBW)
Channel 31	Blue (Pattern RGBW)	Green (Main RGBW)		Blue (Pattern RGBW)
Channel 32	White (Pattern RGBW)	Green fine (Main RGBW)		White (Pattern RGBW)
Channel 33		Blue (Main RGBW)		Transition / crossfade
Channel 34		Blue fine (Main RGBW)		Red (LED group 1)
Channel 35		White (Main RGBW)		Green (LED group 1)
Channel 36		White fine (Main RGBW)		Blue (LED group 1)
Channel 37		Red (Pattern RGBW)		White (LED group 1)
Channel 38		Red fine (Pattern RGBW)		Red (LED group 2)
Channel 39		Green (Pattern RGBW)		Green (LED group 2)
Channel 40		Green fine (Pattern RGBW)		Blue (LED group 2)
Channel 41		Blue (Pattern RGBW)		White (LED group 2)
Channel 42		Blue fine (Pattern RGBW)		Red (LED group 3)
Channel 43		White (Pattern RGBW)		Green (LED group 3)
Channel 44		White fine (Pattern RGBW)		Blue (LED group 3)
Channel 45				White (LED group 3)

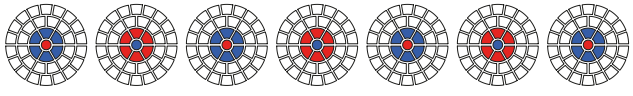
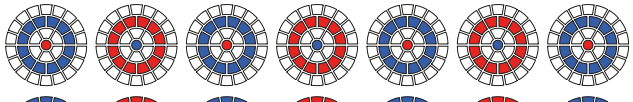
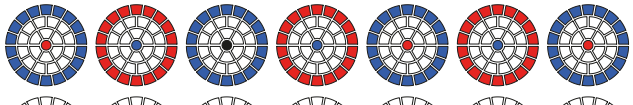
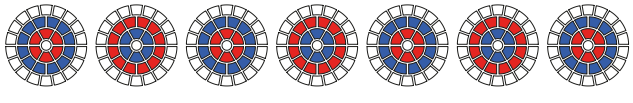
Mode 1 (M1)	Mode 2 (M2)	Mode 3 (M3)	Mode 4 (M4)
Channel 46			Red (LED group 4)
Channel 47			Green (LED group 4)
Channel 48			Blue (LED group 4)
Channel 49			White (LED group 4)
Channel 50			Red (LED group 5)
Channel 51			Green (LED group 5)
Channel 52			Blue (LED group 5)
Channel 53			White (LED group 5)
Channel 54			Red (LED group 6)
Channel 55			Green (LED group 6)
Channel 56			Blue (LED group 6)
Channel 57			White (LED group 6)
Channel 58			Red (LED group 7)
Channel 59			Green (LED group 7)
Channel 60			Blue (LED group 7)
Channel 61			White (LED group 7)
Channel 62			Red (LED group 8)
Channel 63			Green (LED group 8)
Channel 64			Blue (LED group 8)
Channel 65			White (LED group 8)
•			•
•			•
•			•
•			•
•			•
•			•
•			•
•			•
Channel 134			Red (LED group 26)
Channel 135			Green (LED group 26)
Channel 136			Blue (LED group 26)
Channel 137			White (LED group 26)
Channel 138			Red (LED group 27)
Channel 139			Green (LED group 27)
Channel 140			Blue (LED group 27)
Channel 141			White (LED group 27)
Channel 142			Red (LED group 28)
Channel 143			Green (LED group 28)
Channel 144			Blue (LED group 28)
Channel 145			White (LED group 28)
Channel 146			Red (LED group 29)
Channel 147			Green (LED group 29)
Channel 148			Blue (LED group 29)
Channel 149			White (LED group 29)
Channel 150			Red (LED group 30)
Channel 151			Green (LED group 30)
Channel 152			Blue (LED group 30)
Channel 153			White (LED group 30)

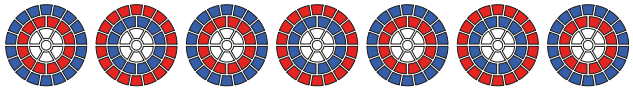
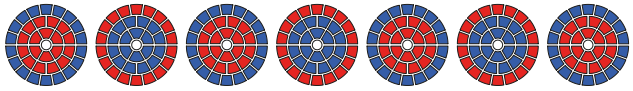
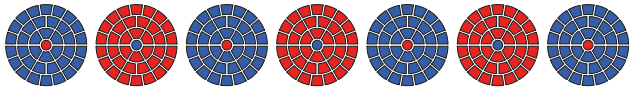
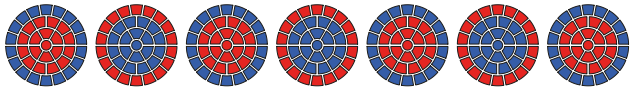
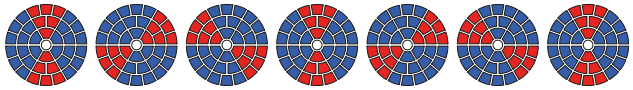
Mode 1 (M1)	Mode 2 (M2)	Mode 3 (M3)	Mode 4 (M4)
Channel 154			Red (LED group 31)
Channel 155			Green (LED group 31)
Channel 156			Blue (LED group 31)
Channel 157			White (LED group 31)
Channel 158			Red (LED group 32)
Channel 159			Green (LED group 32)
Channel 160			Blue (LED group 32)
Channel 161			White (LED group 32)
Channel 162			Red (LED group 33)
Channel 163			Green (LED group 33)
Channel 164			Blue (LED group 33)
Channel 165			White (LED group 33)
Channel 166			Red (LED group 34)
Channel 167			Green (LED group 34)
Channel 168			Blue (LED group 34)
Channel 169			White (LED group 34)
Channel 170			Red (LED group 35)
Channel 171			Green (LED group 35)
Channel 172			Blue (LED group 35)
Channel 173			White (LED group 35)
Channel 174			Red (LED group 36)
Channel 175			Green (LED group 36)
Channel 176			Blue (LED group 36)
Channel 177			White (LED group 36)
Channel 178			Red (LED group 37)
Channel 179			Green (LED group 37)
Channel 180			Blue (LED group 37)
Channel 181			White (LED group 37)

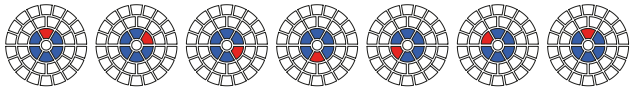
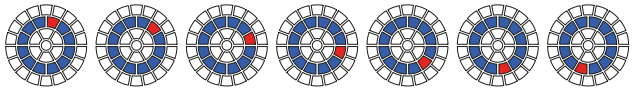
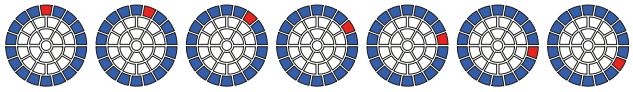
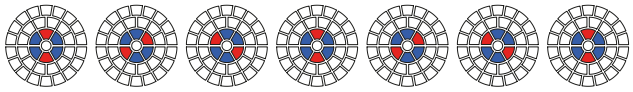
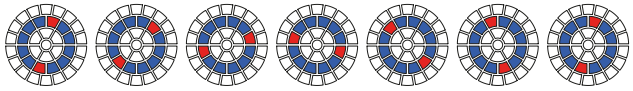
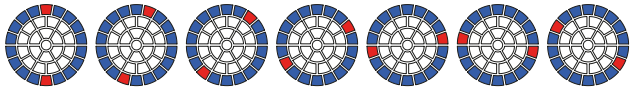
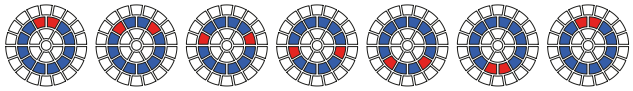
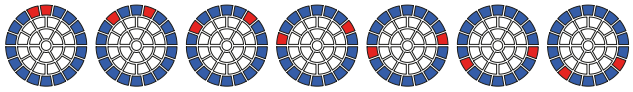
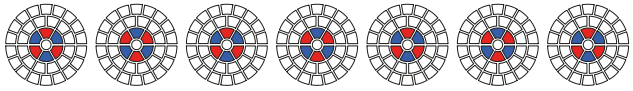
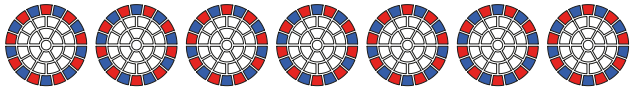
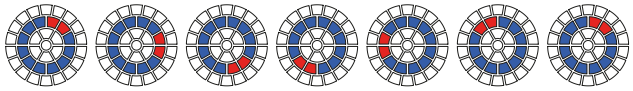
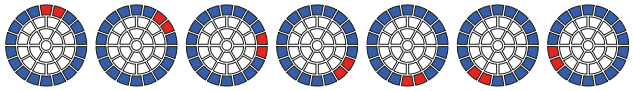
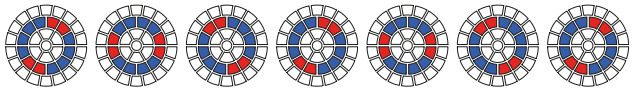
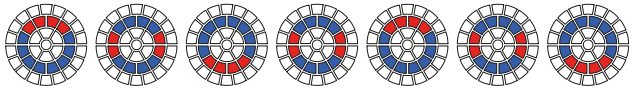
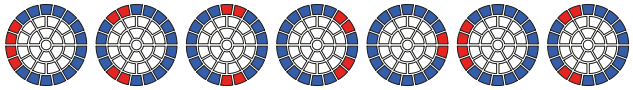
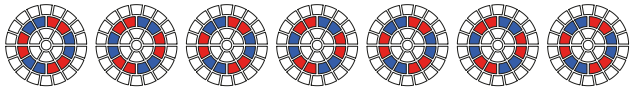
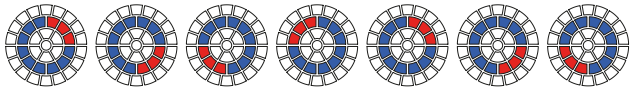


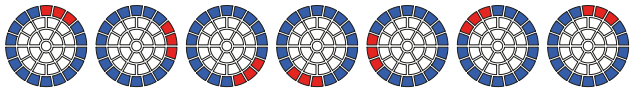
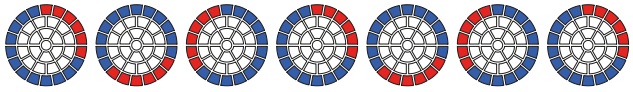
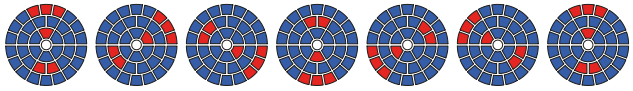
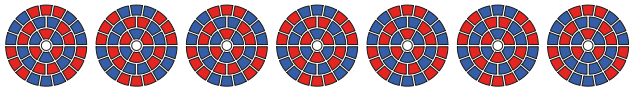
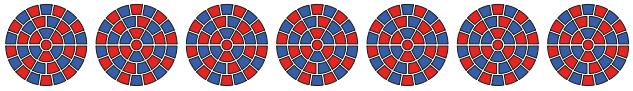
The Pan/Tilt values are at 127/60. The display of the fixture is looking in the same direction like the LED's

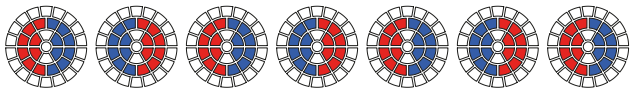
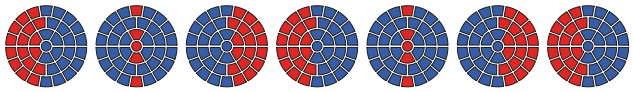
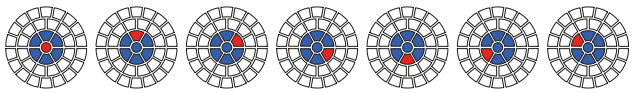
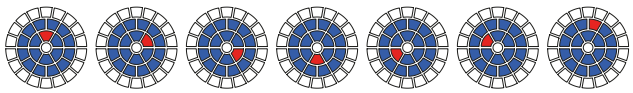
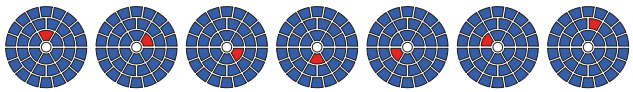
M1	M2	M3	M4	Function	DMX
1	1	1	1	**Pan** (X) movement 433,6°	000-255
2	2	2	2	**Pan** (X) fine	000-255
3	3	3	3	**Tilt** (Y) movement 333,3°	000-255
4	4	4	4	**Tilt** (Y) fine	000-255
5	5	5	5	**Control**	
				Full output power on LEDs	000-007
				Fade out with fader (slow - fast)	
				Basic adjustment RGB	008-015
				Fade out with fader (slow - fast)	
				White balance RGB (same white as fixed colors color 0)	016-023
				Fade out with fader (slow - fast)	
				Color balance for color picker function	024-031
				Fade out with fader (slow - fast) — Lighting desk mode1 (reaction time fast)	
				Full output power on LEDs	032-039
				Fade out with fader (slow - fast)	
				Basic adjustment RGB	040-047
				Fade out with fader (slow - fast)	
				White balance RGB (same white as fixed colors color 0)	048-055
				Fade out with fader (slow - fast)	
				Color balance for color picker function	056-063
				Fade out with fader (slow - fast) — Lighting desk mode 2	
				Full output power on LEDs	064-071
				Fade out with fader (slow - fast)	
				Basic adjustment RGB	072-079
				Fade out with fader (slow - fast)	
				White balance RGB (same white as fixed colors color 0)	080-087
				Fade out with fader (slow - fast)	
				Color balance for color picker function	088-095
				Fade out with fader (slow - fast) — Lighting desk mode 3	
				Full output power on LEDs	096-103
				Fade out with fader (slow - fast)	
				Basic adjustment RGB	104-111
				Fade out with fader (slow - fast)	
				White balance RGB (same white as fixed colors color 0)	112-119
				Fade out with fader (slow - fast)	
				Color balance for color picker function	120-127
				Fade out with fader (slow - fast) — Lighting desk mode 4	
				Full output power on LEDs	128-135
				Fade out with fader (slow - fast)	
				Basic adjustment RGB	136-143
				Fade out with fader (slow - fast)	
				White balance RGB (same white as fixed colors color 0)	144-151
				Fade out with fader (slow - fast)	
				Color balance for color picker function	152-159
				Fade out with fader (slow - fast) — Lighting desk mode 5 (reaction time slow)	

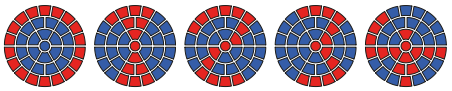
				Safe Camera mode, 50Hz (after 2 seconds) Camera mode, 60Hz (after 2 seconds) Camera mode, FLEX (after 2 seconds) Safe Reset (after 2 seconds) Safe	160-207 208-215 216-223 224-231 232-239 240-247 248-255
6	6	6	6	**Shutter** Shutter closed Shutter open Shutter pulse opening >10Hz (0,6 sec - 4,8 sec) Shutter 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	 000-015 016-095 096-110 111-111 112-125 126-126 127-126 128-142 143-143 144-158 159-159 160-174 175-175 176-190 191-191 192-206 207-207 208-222 223-223 224-238 239-239 240-254 255-255
7	7	7	7	**Dimmer** 0 - 100%	000-255
8	8	8	8	**Zoom** 0-100% (narrow 4° - wide 40°)	000-255
9	9	9	9	**Mapping - segment selection**  Background color (blue) - RGBW Main Foreground color (red) - RGBW Pattern Not active (white) - resp. RGBW Glow No mapping, pattern circular Segment 01  Segment 02  Segment 03  Segment 04  Segment 05  Segment 06 	 000-000 001-001 002-002 003-003 004-004 005-005 006-006

				Segment 07		007-007
				Segment 08		008-008
				Segment 09		009-009
				Segment 10		010-010
				Segment 11		011-011
				Segment 12		012-012
				Segment 13		013-013
				Segment 14		014-014
				Segment 15		015-015
				Segment 16		016-016
				Segment 17		017-017
				Segment 18		018-018
				Segment 19		019-019
				Segment 20		020-020
				Segment 21		021-021
				Segment 22		022-022
				Segment 23		023-023
				Segment 24		024-024
				Segment 25		025-025
				Segment 26		026-026

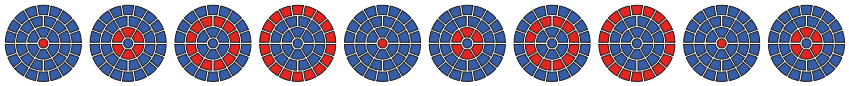
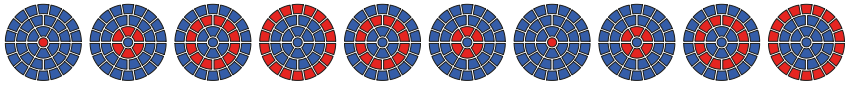
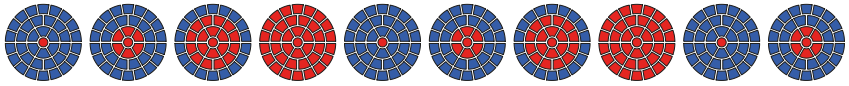
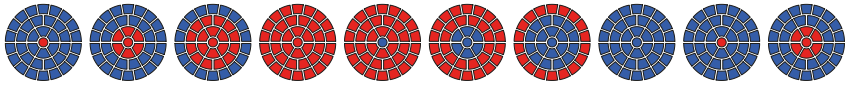
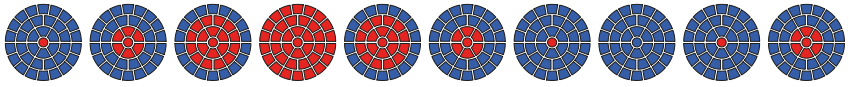
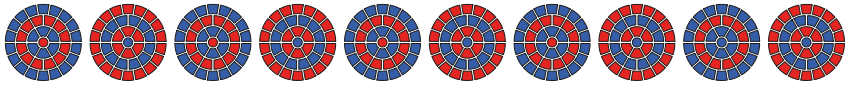
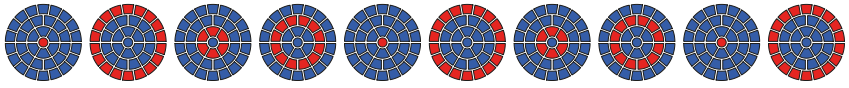
				Segment 27		027-027
				Segment 28		028-028
				Segment 29		029-029
				Segment 30		030-030
				Segment 31		031-031
				Segment 32		032-032
				Segment 33		033-033
				Segment 34		034-034
				Segment 35		035-035
				Segment 36		036-036
				Segment 37		037-037
				Segment 38		038-038
				Segment 39		039-039
				Segment 40		040-040
				Segment 41		041-041
				Segment 42		042-042
				Segment 43		043-043
				Segment 44		044-044
				Segment 45		045-045
				Segment 46		046-046

				Segment 47		047-047
				Segment 48		048-048
				Segment 49		049-049
				Segment 50		050-050
				Segment 51		051-051
				Segment 52		052-052
				Segment 53		053-053
				Segment 54		054-054
				Segment 55		055-055
				Segment 56		056-056
				Segment 57		057-057
				Segment 58		058-058
				Segment 59		059-059
				Segment 60		060-060
				Segment 61		061-061
				Segment 62		062-062
				Segment 63		063-063
				Segment 64		064-064
				Segment 65		065-065
				Segment 66		066-066

				Segment 67		067-067
				Segment 68		068-068
				Segment 69		069-069
				Segment 70		070-070
				Segment 71		071-071
				Segment 72		072-072
				Segment 73		073-073
				Segment 74		074-074
				Segment 75		075-075
				Segment 76		076-076
				Segment 77		077-077
				Segment 78		078-078
				Segment 79		079-079
				Segment 80		080-080
				Segment 81		081-081
				Segment 82		082-082
				Segment 83		083-083
				Segment 84		084-084
				Segment 85		085-085
				Segment 86		086-086
				Not used		087-099

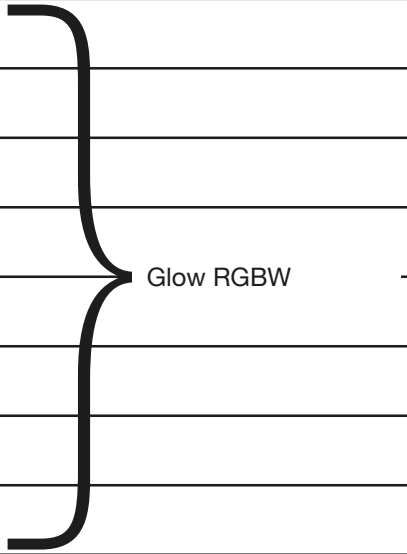
				Numerary 0-4 	100-104
				Numerary 5-9 	105-109
				Smiley small 	110-110
				Smiley big 	111-111
				Not used	112-219
				Static segment 1 	220-220
				Static segment 2 	221-221
				Static segment 3 	222-222
				Static segment 4 	223-223
				Static segment 5 	224-224
				Static segment 6 	225-225
				Static segment 7 	226-226
				Static segment 8 	227-227
				Static segment 8 	228-228
				Static segment 10 	229-229
				Static segment 11 	230-230
				Not used	231-255
10	10	10	10	**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

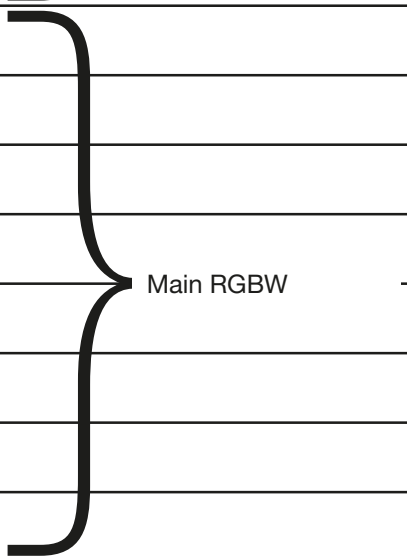
				Pixel random flash fast	random interval	008-008
				Pixel random snap open / ramp close		009-009
				Pixel random flash slow		010-010
				Pixel random ramp open / snap close		011-011
				Static effects		012-031
				Block 32-63: RGBW LED's of the inactive segment illuminate in foreground (pattern) color		
				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	regular interval	036-036
				Pixel random snap open / ramp close		037-037
				Pixel random flash slow		038-038
				Pixel random ramp open / snap close		039-039
				Pixel random flash fast	random interval	040-040
				Pixel random snap open / ramp close		041-041
				Pixel random flash slow		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	regular interval	068-068
				Pixel random snap open / ramp close		069-069
				Pixel random flash slow		070-070
				Pixel random ramp open / snap close		071-071
				Pixel random flash fast	random interval	072-072
				Pixel random snap open / ramp close		073-073
				Pixel random flash slow		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	regular interval	100-100
				Pixel random snap open / ramp close		101-101
				Pixel random flash slow		102-102
				Pixel random ramp open / snap close		103-103
				Pixel random flash fast	random interval	104-104
				Pixel random snap open / ramp close		105-105
				Pixel random flash slow		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
				Pixel random flash fast	regular interval	132-132
				Pixel random snap open / ramp close		133-133
				Pixel random flash slow		134-134
				Pixel random ramp open / snap close		135-135

				Pixel random flash fast Pixel random snap open / ramp close Pixel random flash slow Pixel random ramp open / snap close (random interval) Static effects **Block 160-191: same as block 0-31 without glow RGBW. (use together with color spread channel - working with foreground color.** 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) Pixel random flash fast Pixel random snap open / ramp close Pixel random flash slow Pixel random ramp open / snap close (random interval) Static effects Macro area, combined effects included mappings, pattern mode and patterns Not used	136-136 137-137 138-138 139-139 140-159 160-160 161-161 162-162 163-163 164-164 165-165 166-166 167-167 168-168 169-169 170-170 171-171 172-191 192-235 236-255
11	11	11	11	**Pattern** Pattern off Pattern 01  Pattern 02  Pattern 03  Pattern 04  Pattern 05  Pattern 06  Pattern 07  Not used Random Pattern Not used	 000-000 001-001 002-002 003-003 004-004 005-005 006-006 007-007 008-127 128-135 136-255

12	12	12	12	**Pattern speed**	
				Clockwise (fast -> slow)	000-126
				Stop	127-128
				Anti clockwise (slow -> fast)	129-255
13	13	13	13	**Color spread**	
				Color spread off	000-000
				Color spread snap increasing indexable clockwise	001-063
				Color spread snap increasing clockwise (fast - slow)	064-094
				Stop	095-096
				Color spread snap decreasing anti clockwise (slow - fast)	097-127
				Color spread fade decreasing indexable anti clockwise	128-191
				Color spread fade decreasing anti clockwise (fast - slow)	192-222
				Stop	223-224
				Color spread fade decreasing anti clockwise (slow - fast)	225-255
14	14	14	14	**Sparkle**	
				Sparkle effect off	000-000
				Sparkle effect intensity (minimum - maximum)	001-255
15	15	15	15	**Sparkle speed**	
				Sparkle effect faded (slow - fast)	000-031
				Sparkle effect switched (slow - fast)	032-063
				Repeat of fade and switch block	064-255
16	16	16	16	**CTC** 0 - 100%	000-255
17	17	17	17	**Fixed colors**	
				Inactive: RGB color mixing active	000-001
				White	002-003
				White / red	004-007
				Red	008-011
				Red / yellow	012-015
				Yellow	016-019
				Yellow / magenta	020-023
				Magenta	024-027
				Magenta / green	028-031
				Green	032-035
				Green / orange	036-039
				Orange	040-043
				Orange / blue	044-047
				Blue	048-051
				Blue / turquoise	052-055
				Turquoise	056-059
				Turquoise / white	060-063
				White 2700 kelvin	064-064
				White 2700 kelvin, tungsten fade out	065-065
				White 3200 kelvin	066-066
				White 3200 kelvin, tungsten fade out	067-067
				White 4200 kelvin	068-068
				White 5600 kelvin	069-069
				White 6500 kelvin	070-070
				White 8000 kelvin	071-191
				Color change effect (fast to slow)	192-222
				Color change effect (stop)	223-224
				Color change effect (slow to fast)	225-255

18	18	18	18	**Pan/tilt speed** Movement in real time Movement delayed (fast to slow)	 000-003 004-255
19	19	19	19	**Effect speed** Effects in real time Effects delayed (fast to slow)	 000-003 004-255
20	20	20	20	**Blackout move** Not used Shutter working on selected mapping Not used Blackout at PAN/TILT movement Blackout at color change Not used Blackout at color change and PAN/TILT movement dimmer fade time can be adjusted from slow (5sec) to fast	 000-000 001-070 071-095 096-127 128-159 160-223 224-255
21	21		21	**Red** (8 Bit) 0-100%	000-255
	22			**Red fine** (16 Bit) 0-100%	000-255
22	23		22	**Green** (8 Bit) 0-100%	000-255
	24			**Green fine** (16 Bit) 0-100%	000-255
23	25		23	**Blue** (8 Bit) 0-100%	000-255
	26			**Blue fine** (16 Bit) 0-100%	000-255
24	27		24	**White** (8 Bit) 0-100%	000-255
	28			**White fine** (16 Bit) 0-100%	000-255
25	29	21	25	**Red** (8 Bit) 0-100%	000-255
	30			**Red fine** (16 Bit) 0-100%	000-255
26	31	22	26	**Green** (8 Bit) 0-100%	000-255
	32			**Green fine** (16 Bit) 0-100%	000-255
27	33	23	27	**Blue** (8 Bit) 0-100%	000-255
	34			**Blue fine** (16 Bit) 0-100%	000-255
28	35	24	28	**White** (8 Bit) 0-100%	000-255
	36			**White fine** (16 Bit) 0-100%	000-255





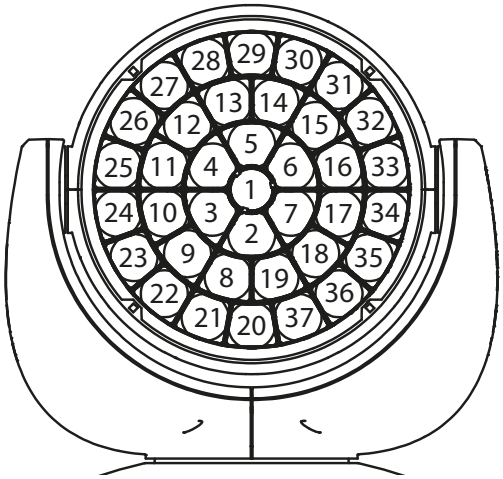
29	37		29	**Red** (8 Bit) 0-100%	000-255
	38			**Red fine** (16 Bit) 0-100%	000-255
30	39		30	**Green** (8 Bit) 0-100%	000-255
	40			**Green fine** (16 Bit) 0-100%	000-255
31	41		31	**Blue** (8 Bit) 0-100%	000-255
	42			**Blue fine** (16 Bit) 0-100%	000-255
32	43		32	**White** (8 Bit) 0-100%	000-255
	44			**White fine** (16 Bit) 0-100%	000-255
			33	**Transition/crossfade** effect engine - single LED control 0-100%	000-255
			34	**Red (LED group 1)** 0-100%	000-255
			35	**Green (LED group 1)** 0-100%	000-255
			36	**Blue (LED group 1)** 0-100%	000-255
			37	**White (LED group 1)** 0-100%	000-255
			38	**Red (LED group 2)** 0-100%	000-255
			39	**Green (LED group 2)** 0-100%	000-255
			40	**Blue (LED group 2)** 0-100%	000-255
			41	**White (LED group 2)** 0-100%	000-255
			42	**Red (LED group 3)** 0-100%	000-255
			43	**Green (LED group 3)** 0-100%	000-255
			44	**Blue (LED group 3)** 0-100%	000-255
			45	**White (LED group 3)** 0-100%	000-255
			46	**Red (LED group 4)** 0-100%	000-255
			47	**Green (LED group 4)** 0-100%	000-255
			48	**Blue (LED group 4)** 0-100%	000-255
			49	**White (LED group 4)** 0-100%	000-255

Pattern RGBW

			50	**Red (LED group 5)** 0-100%	000-255
			51	**Green (LED group 5)** 0-100%	000-255
			52	**Blue (LED group 5)** 0-100%	000-255
			53	**White (LED group 5)** 0-100%	000-255
			• • • • • • • •		• • • • • • • •
			162	**Red (LED group 33)** 0-100%	000-255
			163	**Green (LED group 33)** 0-100%	000-255
			164	**Blue (LED group 33)** 0-100%	000-255
			165	**White (LED group 33)** 0-100%	000-255
			166	**Red (LED group 34)** 0-100%	000-255
			167	**Green (LED group 34)** 0-100%	000-255
			168	**Blue (LED group 34)** 0-100%	000-255
			169	**White (LED group 34)** 0-100%	000-255
			170	**Red (LED group 35)** 0-100%	000-255
			171	**Green (LED group 35)** 0-100%	000-255
			172	**Blue (LED group 35)** 0-100%	000-255
			173	**White (LED group 35)** 0-100%	000-255
			174	**Red (LED group 36)** 0-100%	000-255
			175	**Green (LED group 36)** 0-100%	000-255
			176	**Blue (LED group 36)** 0-100%	000-255
			177	**White (LED group 37)** 0-100%	000-255
			178	**Red (LED group 37)** 0-100%	000-255
			179	**Green (LED group 37)** 0-100%	000-255
			180	**Blue (LED group 37)** 0-100%	000-255
			181	**White (LED group 34)** 0-100%	000-255

Arrangement of the LED groups 1-37

The Pan/Tilt values are at 127/60. The display of the fixture is looking in the same direction like the LED's



5.1 Color mixing

The Sparx10 features a color wheel emulation, main RGBW, pattern RGBW, glow RGBW and CTC channel. The color wheel emulation has priority. Only if the color wheel emulation is set to DMX value 000-001 it is possible to operate the RGBW channels. The glow RGBW is used for glow effects and can overlay the other colors. The CTC channel can be combined with both the RGBW channels and the color wheel emulation. If the effect channels 9-13 are in use, the main RGBW is used as background color and the pattern RGBW is used as foreground color (pattern color). If color wheel emulation is active (DMX value > 001) the main RGBW is still used as background color but the the effects (foreground - pattern) are working with the color wheel emulation. Pattern RGBW has no function in this juncture.

5.2 Control channel

The control channel (channel 5) offers additional control over the RGB-channels.
DMX 000-007: no white balance active.
DMX 008-015: basic adjustment on the RGB channels. So it's possible to have always the same white from different production series (factory adjustment). Marginal reduced intensity of the RGBW strings.
DMX 016-023: White balance, reduced intensity in blue, possible reduction in intensity of green and red. If fixtures are set to this DMX value the white of color wheel emulation (color 0) and RGB color mixing is the same.
DMX 024-031: White balance same to DMX 016-023, plus the RGBW curves are working in linear mode so it is possible to use the color picker function of various lighting control desks.

These areas are repeated 5 times to adapt the response of the Sparx10 to lighting controls from different manufacturers. The response runs from fast (mode 1) to slow (mode 5).

5.3 User notes

Control channel 5

Some lighting desks have a delay during DMX refreshing and DMX values get missed during a fade out or using the fader. That means the Sparx10 with his fast reaction time rate this happen as a shutter and shows flickering in the beam. To avoid this you can select 5 different operating modes. Depending on the mode, the reaction time of the Sparx10 gets lower.