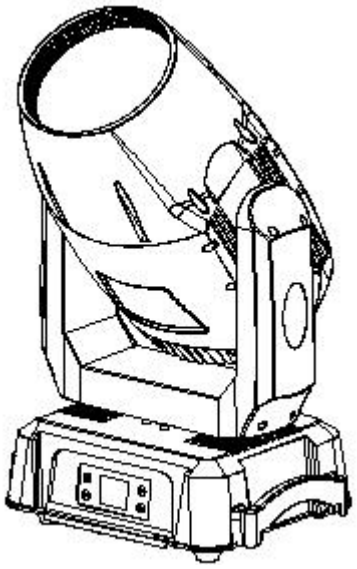
LB 240 Saphire
Laser Light Beam

(RDM, Color Display)



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User Manual

Please read the instructions carefully before use

Contents

I.Precautions and installation

1. Maintenance

- The lamp should be kept dry and avoid working in a humid environment.
- Intermittent use will effectively extend the life of the lamp.
- In order to obtain good ventilation and lighting effects, pay attention to cleaning the fan, fan net and lens regularly.
- Do not wipe the lamp housing with organic solvents such as alcohol to avoid damage.

2. statement

This product is in good condition and packed completely when it leaves the factory. All users should strictly follow the warnings and operating instructions stated above. Any damage caused by misuse is not covered by our company's warranty. Failures and problems caused by ignoring the operating manual are not the responsibility of the dealer.

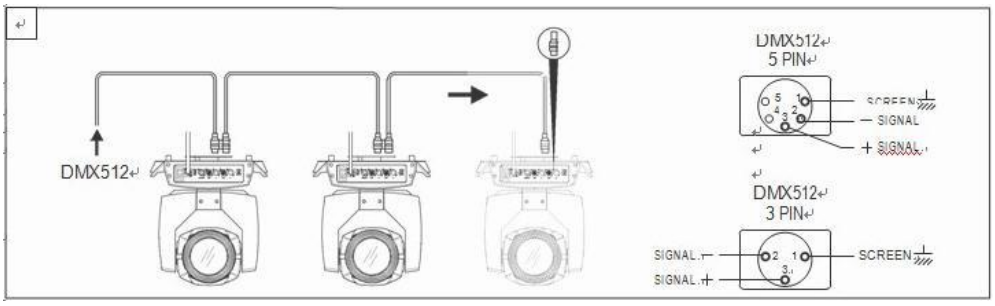
This manual is subject to technical changes without prior notice.

3. Product Notes

- To ensure the service life of the product, do not place the product in a humid or leaking place, and do not operate it in an environment with a temperature exceeding 60 degrees.
- Do not place the product in a loose or vibrating place.
- To avoid the risk of electric shock, please seek professional assistance when repairing this product.
- When the bulb is in use, the power supply voltage change should not exceed ±10%. If the voltage is too high, the life of the bulb will be shortened, and if the voltage is too low, the light color of the bulb will be affected.
- After a power outage, the lamp needs to be fully cooled down after 20 minutes before it can be powered on again.
- To ensure the normal use of this product, please read this instruction carefully.
- Signal cable connection (DMX)

Use RS-485 cables that meet the specifications: shielded, 120ohm characteristic impedance, 22-24 AWG, low capacitance. Do not use microphone cables or cables with different specified characteristics. Terminal connections must use 3 or 5-pin XLR type male/female connectors (minimum 1/4 W). Figure 1 shows a schematic diagram of signal line connection (the lamp in the figure is an example picture and does not represent the actual appearance of this product).

IMPORTANT: The wires must not touch each other or the metal housing.



picture1 DMX signal line connection diagram

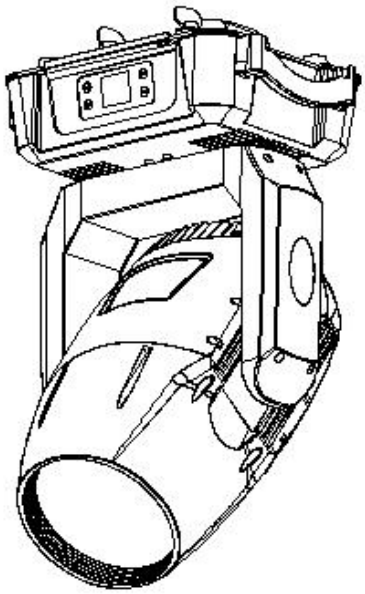
4. Lighting installation

The lamp can be placed horizontally, hung diagonally or upside down. When hanging diagonally or upside down, you must pay attention to the installation method.

likeFigure 2As shown in the figure, (the lamp in the picture is an example picture and does not represent the actual appearance of this product) before positioning the lamp, ensure the stability of the installation site. When reversing the hanging installation, make sure that the lamp does not fall off the support frame. A safety rope is required to pass through the support frame and the lamp handle for auxiliary hanging to ensure safety and prevent the lamp from falling and sliding.

When installing and debugging lamps, pedestrians are prohibited from passing below, and the safety rope should be checked regularly for wear and tear and the hook screws should be checked for looseness.

Our company will not assume any responsibility for any consequences arising from the falling of the lamp due to unstable hanging installation.



picture2 Schematic diagram of upside down lamp

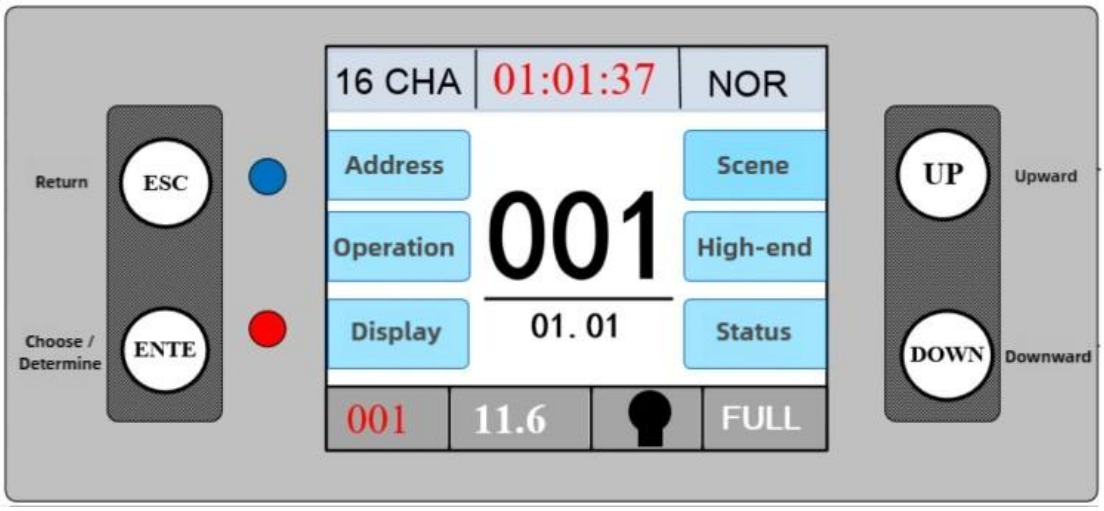
II.Panel Operation

1. Overview

Schematic diagram of the lamp panelError: Reference source not foundAs shown, the upper left corner of the title above is the number of lamp channels, the red font in the middle above is the lamp usage time, the upper right corner shows the lamp fault status (when there is fault information that has not been checked, it shows "ERR", otherwise it shows "NOR"), and the status bar below shows the current lamp signal, bulb status, communication status, etc.(The panel in the picture is a sample image and does not represent the actual appearance of the product panel. Please choose a panel of the same type as the product you have for reference).

This lamp supports DMX/RDM protocol. When the lamp is searched by the RDM host, the three letters "RDM" will appear on the panel, indicating that the lamp is enumerated normally.

Note: Do not use pointed or sharp objects to hit the display screen to avoid damage.



picture3-1 Schematic diagram of touch button display panel

2. operate

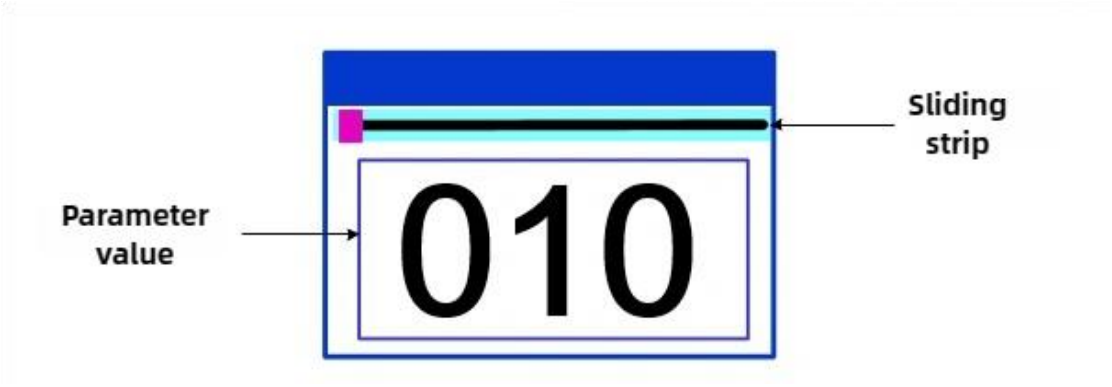
1. Use buttons or knobs to operate the lamp

- The left area is the display area, and the right area is the input area. You can use the buttons or knobs to manipulate the cursor to select the item you want to set or view, and press the OK button to complete the operation.
- For the knob shown in Figure 3-3, rotating in different directions can control the cursor to move up or down, and pressing the knob can confirm. If you want to go back, rotate the knob to move the cursor to the position of the return key on the display screen, and press the knob

to confirm to go back.

2. Parameter value input

When the selected parameter item requires a value to be entered, the followingFigure 4The window shown:

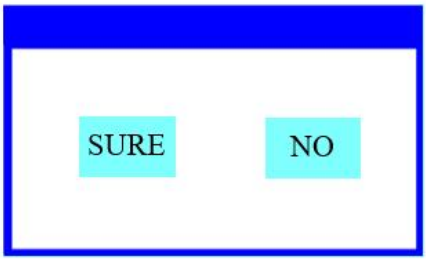


picture4 Value Setting Page

- **Set the value:**You can set the desired value by pressing the "Up" or "Down" buttons or turning the knob.
- **Save the value:**After setting the data by pressing the buttons, press the "ENTE" key and the value will be saved to the internal memory immediately. The saved value will be applied to the lamp the next time the lamp is turned on.

3. Set option on/off

- When the parameter is set to on/off, just click the corresponding item to switch the parameter value. The parameter will be saved to the internal storage after modification. Press the parameter option on the right and the corresponding option will turn gray. When you let go, the corresponding parameter will be changed and saved.
- The important parameters are set through the confirmation window, as follows Figure 5As shown:



picture5 Confirm input window

4. Subpage (parameters)

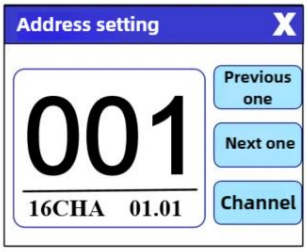


Figure 6-1 address setting

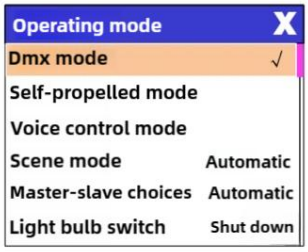


Figure 6-2 running settings

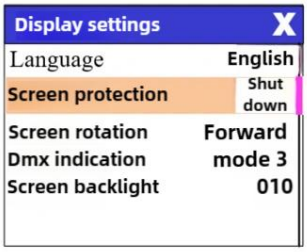


Figure 6-3 display settings

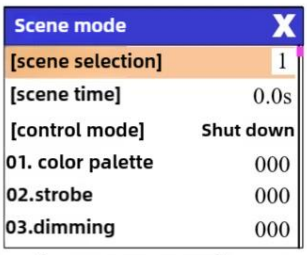


Figure 6-4 scene settings

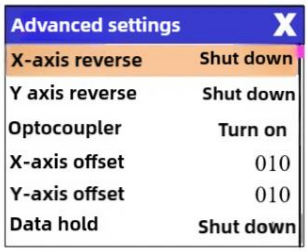


Figure 6-5 advanced settings

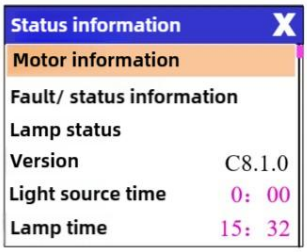
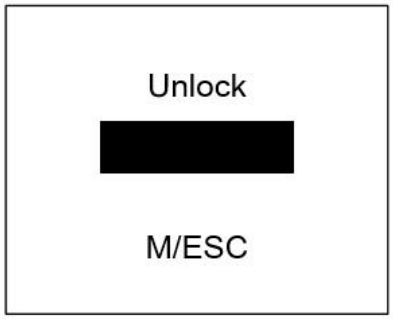


Figure 6-6 status setting

5. Keypad anti-mis-touch operation

- After a while, the display screen will enter the button anti-mistouch lock interface. There are two interfaces in total (please select the interface that matches the product you own for reference), as shown in Figure 7 below.



picture7-1

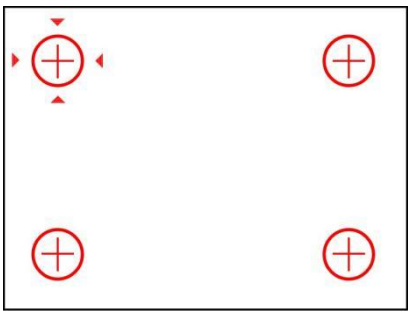


Figure 7-2

- For the interface shown in Figure 7-1, you can unlock it only after pressing the corresponding "ESC", "ENTER", "UP" and "DOWN" keys according to the prompts at the bottom of the interface.
- For the interface shown in Figure 7-2, when the corresponding button is pressed, the red icon of the corresponding button will turn black, and then the red mark will point to the next button position. Press the four corresponding buttons in sequence to exit the anti-mis-touch interface. If the button icon at the corresponding position is still red after pressing the button, it means that the button at the wrong position is pressed.
- After power-on, editing the lamp parameters will trigger the anti-mistouch interface, but simply browsing the parameters will not trigger the anti-mistouch interface. When the "lock screen" function is on, the anti-mistouch interface will be entered when the lamp parameters are edited after a period of time without operating the lamp display panel. When the "lock screen" function is off, the anti-mistouch interface will be entered when the lamp parameters are edited only after power-on again. After unlocking and exiting the anti-mistouch interface,

the anti-mistouch interface will no longer be entered during the current power-on cycle.

- "Lock screen" function switch. To prevent the "lock screen" function from being turned off due to accidental touch, when the "lock screen" function is turned on, pressing the confirmation button for the "lock screen" option will enter the anti-accidental touch interface, which will prompt you to turn off the "lock screen function"; when the "lock screen" function is turned off, you can directly turn it on.

3. Function operation and parameter setting

Enter the settings interface, as shown in Figure 6-1:

- In the main interface, you can enter the corresponding parameter setting interface by selecting six buttons.

1. Set DMX address code

The DMX address, channel mode, etc. of the lamp can be set through the page shown in Figure 6-1.

Figure 6-1

The menu setting of the lamp optimizes the address setting. The operations of setting the address code are as follows:

- Select "Previous" or "Next", the lamp will automatically calculate the address code of the next or previous lamp based on the current address code and channel data, which can be set quickly;
- Click the address code value to enter the value editing window, where you can set any valid address code. The lamp automatically obtains the current channel number of the lamp and automatically filters out unusable address codes (512-current channel number).
- The lamp supports RDM protocol, and the lamp address code can be set remotely through RDM.
- Channel mode: different channel modes can be selected cyclically;

2. Set the lamp working mode

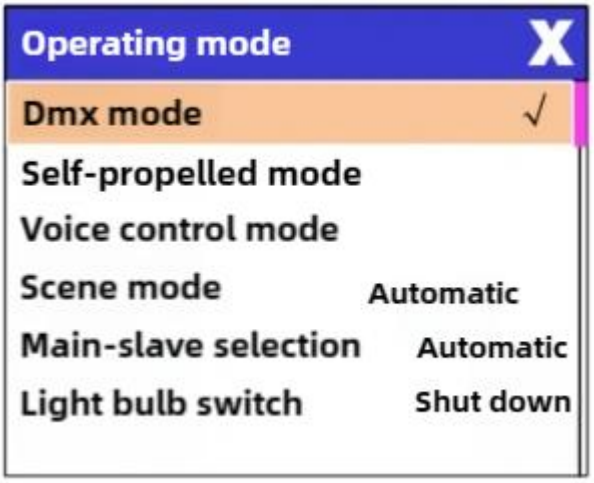


Figure 6-2

The operation mode of the lamp can be set and the light bulb can be controlled through the page shown in Figure 6-2 above. The lamp supports four operation modes (DMX mode, self-propelled mode, voice control mode and scene mode). Please refer to the previous section for detailed parameter value settings. The specific parameter description is shown in the following table:

Operation Mode

DMX Mode	Controller mode, receiving DMX signal, RDM signal	
Self-propelled mode	The lamp runs automatically according to the built-in program	
Voice control mode	When the lamp detects a strong sound, it will automatically run a scene according to the built-in program, otherwise it will keep the last scene	
Scene Mode 01	Runs in the set scene mode, supports custom editing of up to 10 scenes	
	1~10	Output the specified scene
	automatic	Automatically output scenes in a loop according to the set scene time (non-0) sequence. Scenes with a time of 0 are automatically skipped and ignored.
Master-slave selection	It takes effect in non-DMX mode. Select the data output mode. The lamp automatically detects the DMX status and automatically switches the output to prevent data conflicts.	
	Host	The lamp operates as built-in. If there is no DMX signal, it will output data (synchronous), otherwise it will not output data.
	Slave	The lamp operates as built-in and does not output data (not synchronized with other lamps)
	automatic	If there is no DMX signal, the lamp will operate according to the built-in operation, otherwise, the lamp will work according to the DMX signal.
Light bulb switch	(Light bulb source) A confirmation dialog box pops up. Select "SURE" to confirm the current operation. Turn the light bulb on or off. The on/off time interval is limited to 30 seconds.	
	closure	The current lamp output is off
	Open	The current light output is already turned on

The scene mode is suitable for a single or a small number of lamps. When you only need to output a fixed scene or run a simple program, you can edit it in the scene page without connecting to the console.

If the light source of the lamp is a bulb, please wait 10 minutes before turning it on again after turning it off.

3. Panel Display Settings

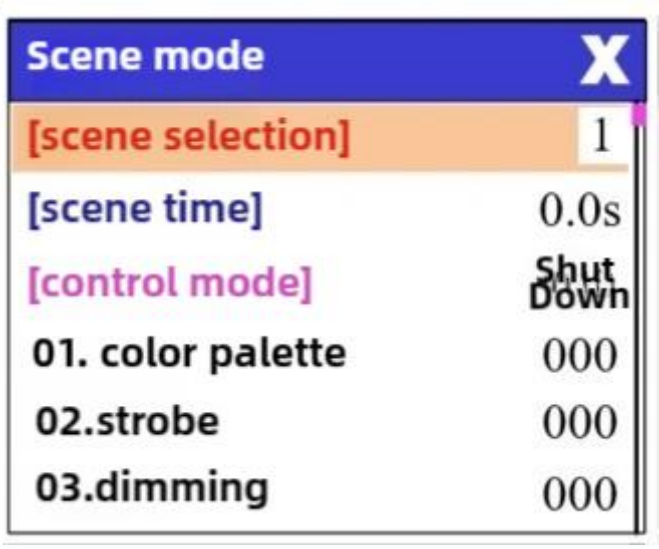


Figure 6-3

The lamp supports Chinese and English bilingual, inverted display, etc. Enter the corresponding parameter settings as shown in Figure 6-3. The specific menu contents are shown in the following table:

Display Settings

language	Set the displayed language	
	English	English display
	Chinese	Chinese display
Screensaver	Set the screen display content or mode after no operation for 30 seconds	
	closure	Keep the last operation page and light up the screen
	Mode 1	Screen off
	Mode 2	Black screen, the address code of the current lamp is displayed in the lower left corner
	Mode 3	Display brand information, address code and operation mode
	Mode 4	Displays trademark information, address code and operation mode, and turns off after 30 seconds
Screen rotation	Set the screen orientation	
	closure	Do not invert display
	Open	Invert display
DMX Indicator	Set the indication mode of the DMX signal indicator	
	Mode 1	Lights up when there is a signal, turns off when there is no signal
	Mode 2	Off when there is a signal, on when there is no signal
	Mode 3	Flashes when there is a signal, turns off when there is no signal
Screen backlight	Set the screen backlight brightness after 10 seconds of inactivity, and fully bright during operation	
	1~10	10 levels

4. Scene Mode

Enter the page shown in Figure 6-4 below (the channels shown in the picture are just examples to introduce the functions. For the specific channel table of this product, please refer to the channel table description in the next chapter). The fixture enters the scene editing mode. On

this page, if the [Controller Mode] option is turned off, the fixture does not receive DMX console data, and the edited data is immediately reflected on the fixture. When it is turned on, it receives the console signal and reads the console data to reflect it on the corresponding channel display.

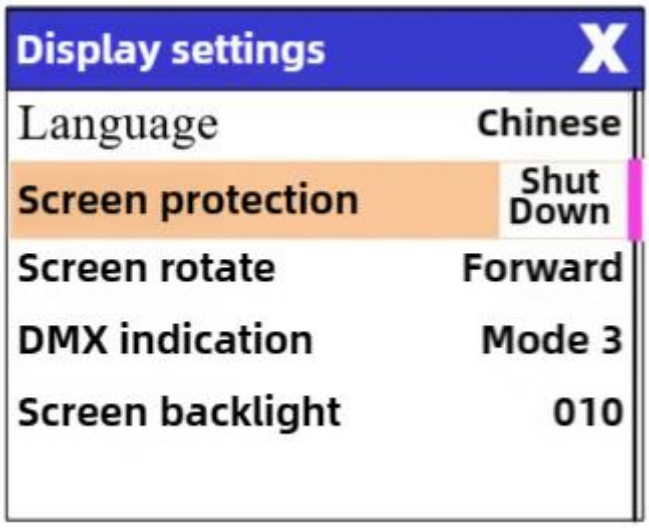


Figure 6-4

The content of the page depends on the currently selected channel, and the displayed channel content and order are consistent with the fixture channel table. Through this page, 10 scenes can be edited, as shown in the following table:

Scene Mode

Scene Selection	Select the current operation scenario	
	1~10	10 scene setting formats
Scene Time	Set the retention time of the current scene in automatic mode. The final time is determined by the scene time multiple, in units of 0.1 seconds	
	0	The current scene does not participate in automatic scene output
	1-255	0..1 seconds to 25.5 seconds
1. X-axis	0-255	Set the data of each channel. The display content and order correspond to the channel table of the lamp one by one.
…	0-255	
…	0-255	
N. Function	0-255	

If you edit valid reset data in the reset channel in the scene, the lamp will reset, but after the reset, the value of the corresponding reset channel will be automatically cleared to zero to prevent multiple consecutive resets.

View this page to obtain the current channel table order of the fixture. For specific channel data, please refer to the detailed channel description.

5. Set the working parameters of the lamp

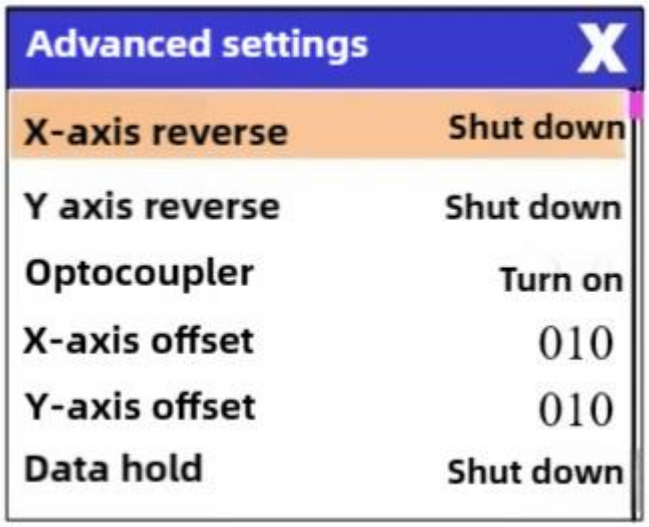


Figure 6-5

Enter the page shown in Figure 6-5 above, adjust the on-site parameters of the lamps to facilitate on-site installation of the lamps, etc.:

Advanced Settings

X-axis reverse	Set the X-axis rotation direction	
	closure	No reverse
	Open	Reverse
Y-axis reverse	Set the Y-axis rotation direction	
	closure	No reverse
	Open	Reverse
Optocoupler calibration	Set whether the fixture detects XY desynchronization and corrects it	
	closure	No position correction after loss of step
	Open	Automatically correct the position after losing step and record the losing step fault
X-axis offset	Set the position of the X-axis zero point of the lamp	
	4-150	
Y-axis offset	Set the Y-axis zero point of the lamp	
	4-48	
Data Retention	Set the output status of the lamp when there is no DMX signal	
	closure	No signal, so the motor and light source return to the position and state when reset is completed
	Open	No signal, keep the last frame of DMX data output
Scene time multiplier	Coordinate with the scene time to determine the scene retention time	
	1-255	Retention time = scene time * multiple
Light on mode	Set the way the lamp turns on for the first time after power-on	
	Power on and open the bubble	When powered on, turn on the light bulb first, and reset the light fixture after 30 seconds
	Blister after resetting	Reset the lamp 3 seconds after power on, and turn on the lamp after reset is completed
	Manual foaming	After the reset is completed, turn on the lamp manually through the menu or console.
Lamp reset	A confirmation box pops up. After selecting "SURE", the lamp position returns to the initial position.	

Factory settings	A confirmation box pops up. After selecting "SURE", the lighting parameters return to factory settings.

When the power-on bulb mode is selected, the lamp will wait for 30 seconds after power-on to allow the bulb to fully start. After the internal voltage is stable enough, the reset procedure will be started. If the on-site power consumption capacity is stable, the power-on bulb mode is recommended.

When the lamp cannot be corrected, please first check whether the "optical coupler correction" is turned off.

When the signal is unplugged, if the position of the lamp is not output as expected, please check the "Data Hold" setting first.

When setting the XY offset, after completing the setting, please control the XY at the maximum stroke first to check that after setting, the XY will not hit the positioning rod or the housing.

6. View the current status of the lamp

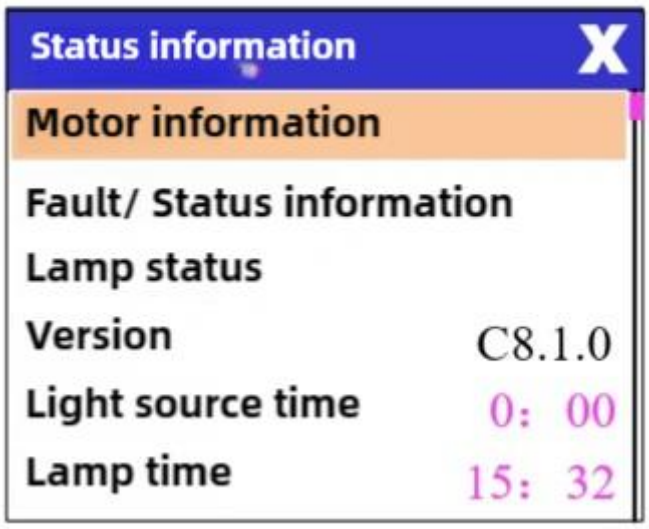


Figure 6-6

Enter the page shown in Figure 6-6 to view the information and real-time status of the lamp to learn about the lamp's usage status. If the lamp requires after-sales service, please provide the status information displayed on this page as a basis for judgment, as shown in the following table:

Status Information

Motor information	Displays the status information of all motors and signals in the luminaire	
	Hall	No display means the motor has no Hall calibration, 0 means the motor has left the calibration position, 1 means the motor is at the calibration position
	state	Displays the motor reset completion status
	X-axis	Display the real-time position value of the X-axis optocoupler feedback
	Y-axis	Display the real-time position value of the Y-axis optocoupler feedback
	Optocoupler	Display the level status of the two signals of the X and Y axis optocoupler, binary
Fault/status logging	Display the latest 8 fault records when the lamp is reset and running. The fault records are not saved after power failure and are valid during the next power-on cycle.	

	Fault data	Total number of faults detected after power-on
	12: :03	Power-on time when the fault occurs, in minutes
	Hall Fault	The motor does not detect a valid Hall signal when the motor is reset
	Hall short circuit	The Hall signal detected when the corresponding motor is reset is always valid
	Optocoupler failure	No valid optocoupler signal is detected when the corresponding motor is reset
	Loss of Step	The corresponding motor loses step during operation
	Ram	The corresponding motor hits the positioning rod when resetting
	Light bulb failure	Accidental bulb failure
	Sensor failure	Temperature sensor signal is abnormal
	Fan failure	The main fan is not working properly
Lighting status	Display the key status data of the current lamp for reference	
	Communications	0~100%, the communication quality of the data link inside the lamp
	Error Count	The total number of error frames detected after power-on, cumulative
	Light source temperature	Displays the temperature of the current light source. "---" means no detection
	Display board temperature	Displays the current display panel temperature or the surrounding environment temperature
	Sensor 1 Temperature	Displays the current motherboard temperature or the ambient temperature where the motherboard is installed
Version Information	Display the information and version of the current lamp, an important reference for after-sales maintenance	
	equipment	The name of the lamp, the same as the device information of RDM
	model	Model of the lamp, same as the model information of RDM
	Display Board	Displays the board's firmware version and serial number
	Motherboard 1	Firmware version and serial number of motherboard 1
Light source time	Record the total accumulated time of the light source on, in minutes, which can be cleared manually by the user as a time reference for regular maintenance of the light source	
Lighting time	Record the total accumulated time of the lamp on, in minutes, and cannot be cleared	

III.Channel Description

1. Channel Table

Note: The channel tables of different lamps are different. The following channel table is for reference only.

The order of the channels of this lighting fixture can be viewed in scene mode. The channel mode is set in the "Address Setting" page. The specific detailed data is shown in the following table:

Channel Table

Channel 1	Channel 2	Name	DMX Value	Details
[CH1]	[CH1]	X	0-255	0-540 degrees
	[CH2]	X Fine turn	0-255	0-2 degrees
[CH2]	[CH3]	Y	0-255	0-270 degrees
	[CH4]	Y Fine turn	0-255	0-1 degrees
[CH3]	[CH5]	XY Speed	0-255	From fast to slow
[CH4]	[CH6]	Dimming	0-255	0-100% dimming
[CH5]	[CH7]	null	0-255	
[CH6]	[CH8]	Strobe		
			0-3	Shut down
			4-127	Slow to fast pulse strobe
			128-191	Slow to fast gradual strobe
			192-251	Random strobe from slow to fast
			252-255	switch
[CH7]	[CH9]	Gobo		
			0-4	White light
			5-9	Pattern 1
			10-14	Pattern 2
			15-19	Pattern 3
			20-24	Pattern 4
			25-29	Pattern 5
			30-34	Pattern 6
			35-39	Pattern 7
			40-44	Pattern 8
			45-49	Pattern 9
			50-54	Pattern 10
			55-59	Pattern 11
			60-64	Pattern 12

			65-69	Pattern 13
			70-74	Pattern 14
			75-79	Pattern 15
			80-84	Pattern 16
			85-89	Pattern 17
			90-128	Reverse flow from fast to slow
			129-131	stop
			132-170	Positive flow from slow to fast
			171-175	Slow to fast jitter pattern 1
			176-180	Slow to fast jitter pattern 2
			181-185	From slow to fast jitter pattern 3
			186-190	From slow to fast jitter pattern 4
			191-195	From slow to fast jitter pattern 5
			196-200	Slow to fast jitter pattern 6
			201-205	Slow to fast jitter pattern 7
			206-210	From slow to fast jitter pattern 8
			211-215	From slow to fast jitter pattern 9
			216-220	From slow to fast jitter pattern 10
			221-225	From slow to fast jitter pattern 11
			226-230	From slow to fast jitter pattern 12
			231-235	From slow to fast jitter pattern 13
			236-240	From slow to fast jitter pattern 14
			241-245	From slow to fast jitter pattern 15
			246-250	From slow to fast jitter pattern 16
			251-255	From slow to fast

				jitter pattern 17
[CH8]	[CH10]	CMY1		
			0-10	none
			11-255	Linear CMY1
[CH9]	[CH11]	CMY2	0-255	
			0-10	none
			11-255	Linear CMY2
[CH10]	[CH12]	CMY3	0-255	
			0-10	none
			11-255	Linear CMY3
[CH11]	[CH13]	CTO	0-255	Linear CTO
[CH12]	[CH14]	Color wheel1		
			0-4	White light
			5-9	White light + Color 1
			10-14	Color 1
			15-19	Color 1 + Color 2
			20-24	Color 2
			25-29	Color 2 + Color 3
			30-34	Color 3
			35-39	Color 3 + Color 4
			40-44	Color 4
			45-49	Color 4 + Color 5
			50-54	Color 5
			55-59	Color 5 + Color 6
			60-64	Color 6
			65-69	Color 6 + Color 7
			70-74	Color 7
			75-79	Color 7 + Color 8
			80-84	Color 8
			95-175	Reverse flow from fast to slow
			176-255	Positive flow from slow to fast
[CH13]	[CH15]	Color wheel 2		
			0-4	White light
			5-9	White light + Color 1
			10-14	Color 1
			15-19	Color 1 + Color 2
			20-24	Color 2

			25-29	Color 2 + Color 3
			30-34	Color 3
			35-39	Color 3 + Color 4
			40-44	Color 4
			45-49	Color 4 + Color 5
			50-54	Color 5
			55-59	Color 5 + Color 6
			60-64	Color 6
			65-69	Color 6 + Color 7
			70-74	Color 7
			75-79	Color 7 + Color 8
			80-84	Color 8
			95-175	Reverse flow from fast to slow
			176-255	Positive flow from slow to fast
[CH14]	[CH16]	Focus	0-255	From far to near
[CH15]	[CH17]	Frost		
			0-127	Colorful
			128-255	Linear Frost
[CH16]	[CH18]	Prism 1		
			0-127	none
			128-255	Insert Prism 1
	[CH19]	Effect	0-255	
	[CH20]	Reset/ Function		
			0-239	No function
			240-255	Reset the whole light after 3 seconds

IV.Common faults and usage precautions

1. Common troubleshooting

The lamp contains professional components such as microcomputer circuit boards and high-voltage power supplies. For your safety and product life, non-professionals should not disassemble the lamp and related accessories without authorization.

1. The bulb does not light up (except LED light source)

Possible reasons: The lamp has not cooled down completely or the lamp has reached the end of its life. Please handle as follows:

- Due to abnormal operation, the lamp has not completely cooled down. You should let the lamp body cool down for more than 10 minutes to restore its internal state to normal state, and then restart the power supply.
- Check if the bulb has reached its service life and replace it with a new one;
- Check whether the bulb and the lighting circuit are leaking, falling off or in poor contact;
- Replace the lamp with a new one.

2. The beam appears dim

Possible cause: The lamp has been used for a long time or the light path is not clean. The solution is as follows:

- Check if the bulb has reached its service life and replace it with a new one;
- Check whether the optical components or bulbs are clean, and whether there is dust accumulated on the bulbs and other optical devices. The bulbs and components in the lamps need to be cleaned and maintained regularly.

3. Pattern projection blur

- Check whether the electronic focus channel value is appropriate for the current projection distance.

4. The lamp works intermittently

Possible cause: The internal line enters the protection state. The solution is as follows:

- Check whether the fan is operating normally or is dirty, causing the internal temperature of the lamp to rise;
- Check whether the internal temperature control switch is in the closed state;
- Check if the bulb has reached the end of its life and replace it with a new one.

5. The lamp does not accept the control of the console after normal reset

Possible reasons: signal line failure or abnormal lamp parameter settings, the solution is as follows:

- Check the starting address code and the connection of the DMX signal line (whether the signal line is intact and the DMX head connection is loose);
- Add signal amplifier and 120 ohm terminal resistor;

6. The lamp cannot be turned on

Possible cause: The power line is bad, the solution is as follows:

- Check whether the fuse on the power input socket is blown and replace it;
- The lamps vibrate during long-distance transportation, resulting in poor line contact
- Check the input power supply, computer board and other connectors.

2. Precautions for use

- Check whether the local power supply meets the rated voltage requirements of the product, and whether the leakage protector, overcurrent protector, etc. meet the load requirements;
- Do not use a power cord with damaged insulation, and do not connect the power cord to other wires;
- The lamps use strong air cooling, which is easy to accumulate dust. They must be cleaned once a month, especially the heat dissipation vents, otherwise they will be blocked by dust, resulting in poor heat dissipation and causing abnormalities in the lamps.
- When installing lamps, the fixing screws must be tightened, and safety ropes must be added, and they must be checked regularly;
- When installing and positioning the lamp, keep a minimum distance of 10 meters between any point on the lamp surface and any flammable or explosive material, and 2.5 meters from the irradiated object. Please do not install the lamp directly on the surface of flammable materials;
- It is recommended that the continuous working time of the lamp should not exceed 10 hours, and the interval between continuous starting of the lamp should not be less than 10 minutes, otherwise the lamp will not be triggered normally due to overheat protection;
- The closing time of the switch valve should not exceed 5 minutes. If the light needs to be turned off for a longer time, the control console (light control channel) should be used to turn off the light.
- In order to ensure that multiple lamps better follow the scene effect, the lamps should not be in the state of not completing the current scene, that is, starting the next scene action. It is best not to exceed 3 minutes in this state to ensure that multiple lamps can run synchronously;
- During use, if any abnormality occurs in the lamp, stop using the lamp in time to prevent other faults from being caused.

3. Notes on using RDM

RDM is an extended version of the DMX512-A protocol and a remote device management protocol. The traditional DMX512 protocol communication is one-way communication. The protocol is based on the RS-485 bus. RS-485 is a time-division multi-point, half-duplex protocol. Only one port is allowed to output to the host at the same time. Therefore, pay attention to the following points when using RDM:

- To use a console or host device that supports the RDM protocol host;
- To use a bidirectional signal amplifier, the traditional unidirectional signal amplifier is not applicable to the RDM protocol, because the RDM protocol requires feedback data, and the

use of a unidirectional amplifier will block the returned data, resulting in the inability to search for lamps;

- All lamps must be set to DMX mode to ensure there is only one host on the signal line;
- A 120ohm impedance matching resistor must be inserted between terminals 2 and 3 of the terminal plug. When the signal line is long, reducing signal reflection will make the differential signal more stable and beneficial to the quality of communication.
- When the lamps accept DMX control but cannot be searched by RDM, first check the signal amplifier, and then check whether the 2nd and 3rd wires of the signal line have poor contact.