

# A10 APP LASER LIGHT PRODUCT MANUAL



Thank you for buying Starshinelights products.  
This product has obtained the United States (CDRH) application for deviation from the laser Product performance standard in accordance with 21 CFR 1010.4(c)(1), and granted the company assembly and production of Class IIIb (3B) and Class IV (4) laser lamps clearance to enter the commercial market area. To ensure proper operation, please read this manual carefully before using the product. It can help you avoid dangerous and dangerous situations that may result in serious injury or property damage. After reading, keep it in a safe place for future reference

## 1. Must read before unpacking

Laser devices are extremely sensitive to static electricity, and direct contact during unboxing may result in component damage due to electrostatic discharge.

Please follow the steps below:

- 1.Touch the metal door handle/water pipe for 3 seconds to release body static electricity;
- 2.Wear an anti-static wristband before touching the device;
- 3.Prioritize contacting the outer metal part of the packaging box before removing the product;

Warm tip:

- 1.It is recommended to operate in an environment where anti-static table mats are placed;
2. During the dry season, you can wipe your hands with wet wipes first;
- 3.If you find any damage to the packaging, please contact customer service immediately;

## 2. Safety tips

### Attention!

**The laser entertainment system is rated as a Class 4 laser product and manufactured in accordance with IEC 60825-1:2014.**

**Avoid direct or scattered radiation from eyes or skin.**

**If necessary, wear safety goggles with appropriate optical density.**

How do international standards define laser products The International Electro technical Commission (IEC) classifies laser products into four main categories according to their potential level of danger:

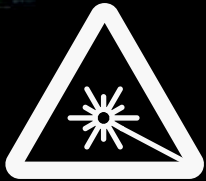
Class 1: No danger. Under normal use conditions, the output power of the laser is extremely low and does not cause damage to the eyes or skin

Class 2: Low risk. Laser light has a low output power and is usually visible light, which can cause limited damage to the eyes, but it is recommended to avoid looking directly at them for long periods of time.

Class 3: Moderate risk. It is classified into Class 3R and Class 3B, which may cause damage to the eyes and skin and requires proper protective measures.

Class 4: High risk. The output power of the laser is very high, which can cause serious injury to the eyes, skin and surrounding materials, and strict protective measures must be taken.

It is noted that some other optical devices such as cameras, camcorders, video projectors, etc. may be damaged if exposed to excessive laser radiation.



# STARSHINE LIGHTS PRODUCT MANUAL





# STARSHINE LIGHTS PRODUCT MANUAL



### 3. Operating Precautions

This laser system is a precision device containing sensitive optoelectronic components. Please handle it with care. Do not drop, shake, or subject the unit to strong physical impact.

The laser system is not waterproof or dust-proof unless otherwise specified. If the unit must be used in rain, snow, dusty environments, or other harsh conditions, it must be protected with a suitable waterproof cover or protective housing.

Do not place the laser system in overheated areas, such as inside a vehicle under direct sunlight. High temperatures may cause serious damage to the internal components.

The laser system contains precision electronic circuits. Do not attempt to disassemble, repair, or modify the unit by yourself. Any inspection, repair, or maintenance must be carried out by qualified technicians.

If the laser system is moved suddenly from a cold environment to a warm environment, condensation may form inside the unit. Do not power on the device immediately after drastic temperature changes, such as after transportation or storage in cold conditions. Allow the unit to reach room temperature before operation.

After use, turn off the laser fixture and allow it to cool down before handling, packing, cleaning, or servicing the unit.

Do not operate the equipment if the laser fixture is incomplete, damaged, or improperly installed.

Do not use excessive force when installing or operating the equipment. Never lift the laser fixture by the projector head, scanner section, lens area, or any movable part, as this may damage the mechanism. Always carry or secure the fixture using the transport handle or designated mounting points.

#### Attention

The manufacturer and its distributors are not responsible for any damage, injury, or loss caused by improper installation, incorrect operation, unauthorized modification, or misuse of this laser system.

The owner and user are fully responsible for operating this product in accordance with the laser safety regulations, electrical regulations, and local laws of the country or region where the system is used.

When choosing an installation location, make sure the equipment is not exposed to extreme heat, moisture, dust, or strong vibration. The minimum distance between the laser output and the illuminated surface must be greater than 8 meters.

When installing, removing, or servicing the laser fixture, make sure the area below the installation position is blocked and kept clear of people.

Always secure the laser fixture with a suitable safety rope. The safety rope must be attached only to the designated safety point.

The laser fixture may only be operated after confirming that the housing is firmly closed and all screws are properly tightened.

Do not operate the laser fixture if the lens cover, housing cover, or any protective cover is open or damaged. Exposed laser radiation may cause serious eye or skin injury.

The maximum ambient operating temperature must not exceed 45°C.

### 4. Laser Safety

This laser system is a professional laser display device and must be operated with care. It should only be used by trained adults who understand laser safety requirements and local regulations for laser display equipment.

The operator must be familiar with and comply with all applicable laws, rules, and safety requirements in the country or region where the laser system is used.

The manufacturer is not liable for any injury, damage, or accident caused by improper use of this laser display device.

Any laser system classified as Class 4 must be used with special caution. If you are not an experienced laser operator, it is strongly recommended that you complete a laser display safety training course before using this system in public areas. Even a short professional safety course can provide valuable knowledge for safe laser operation.

Unless you are fully trained in laser use and laser safety, always follow these basic laser safety rules:

1. Never look directly into the laser beam.
2. Never look directly into the laser aperture while the system is powered on.
3. Improper laser use may cause retinal injury, skin burns, or fire hazards.
4. When using lasers outdoors, never aim the laser beam toward aircraft, vehicles, roads, railways, or public traffic areas.
5. Never leave the laser system unattended while it is powered on.
6. Always check for reflective surfaces within the laser projection area. Mirrors, glass, polished metal, and other smooth reflective surfaces can reflect laser beams into unintended directions and may create serious hazards.
7. Use the emergency stop immediately if the laser system malfunctions or if the laser output may create a potential risk to people, animals, vehicles, aircraft, or objects.
8. Always follow the laser safety regulations of the country or region where the system is used.



# STARSHINE LIGHTS PRODUCT MANUAL



## 5. Maintenance

The manufacturer is not responsible for any damage caused by failure to follow this manual or by unauthorized modification of the equipment.

Damage caused by manual modification, incorrect operation, improper installation, or unauthorized repair is not covered by the warranty.

During operation, the housing may become hot. Allow the laser fixture to cool for at least 20 minutes before handling, cleaning, packing, or servicing.

Before connecting the unit to power, make sure the available voltage matches the voltage indicated on the rear panel of the device.

Always disconnect the power supply before cleaning, servicing, repairing, or moving the laser fixture.

Make sure the power cable is not bent, crushed, cut, or damaged by sharp edges. Check the equipment and power cable regularly. Do not use the device if the cable or plug is damaged.

When disconnecting the power cable, always pull from the plug. Never unplug the device by pulling the power cable.

Electrical connection, repair, and maintenance must be performed only by qualified personnel.

Do not connect this device to a dimmer pack or dimmer-controlled power source.

Do not switch the laser fixture on and off repeatedly within a short period of time, as this may shorten the service life of the laser system.

During the first startup, a slight smell or small amount of smoke may appear. This can be normal for new equipment and does not necessarily indicate a defect. If abnormal smoke, burning smell, overheating, or malfunction continues, turn off the device immediately and contact qualified service personnel.

Do not touch the housing with bare hands while the device is operating, as the housing may become hot.

## 6. Installation and Mounting

The structure used to mount the laser fixture must be strong enough to safely support the full weight of the equipment. The mounting structure must be stable, secure, and properly certified where required.

The laser fixture must be installed in accordance with all applicable national and local electrical, building, and laser safety regulations.

For overhead installation, the laser fixture must always be secured with a safety cable. The safety cable must be able to support at least 10 times the weight of the laser fixture.

### Installation Requirements

1. Do not connect the device to power during installation. The unit may only be connected to power after installation and assembly are fully completed.
2. Install the system only on strong, secure mounting points that cannot be accessed by unauthorized persons.
3. Always make sure the system is firmly tightened and will not loosen due to sound vibration, cable tension, movement, or external disturbance.
4. Always connect a safety chain or safety cable between the projector and the mounting structure, such as a truss or fixed bracket.
5. Make sure all cables are long enough and properly routed to avoid tension, pulling, or entanglement.
6. Keep the system at least 20 cm away from walls, curtains, decorations, and other objects.
7. Keep the system away from heat sources, including spotlights, moving heads, heaters, radiators, and other high-temperature equipment.
8. Make sure there is sufficient airflow around the laser system.
9. Do not cover the fan opening or ventilation outlet during operation.
10. Always comply with the laser safety regulations of the country or region where the laser is used.

### Electrical Safety Warning

Be careful when working with electrical equipment. High voltage may cause serious electric shock or injury if live wires or electrical parts are touched.

### Fire Safety Warning

When installing the equipment, make sure there are no highly flammable materials, such as decorations, fabrics, paper, or similar materials, within at least 4 meters of the fixture.

A minimum distance of 8 meters must be maintained between the laser output and the illuminated surface or object.

The fixture may be placed directly on a stable stage floor or mounted on a truss in a suitable orientation, provided that ventilation, safety distance, and mounting safety requirements are met.

For truss installation, use suitable clamps and safety cables. The safety cable must be rated to support at least 10 times the weight of the fixture. Use only approved safety cables with locking hooks or screw-lock connectors.

The manufacturer is not liable for damage, injury, or loss caused by improper installation of the system.

Installation should be carried out only by qualified installers who understand electrical safety, rigging safety, and laser safety requirements.

The cooling outlet of the device is not waterproof. Install the fixture correctly with the top side facing upward unless otherwise specified by the manufacturer.

**7. DMX-512 Connect**

The device is equipped with 3-pin sockets for DMX input and output. The sockets are connected in parallel. Only shielded twisted pair cables designed for 3-pin XLR plugs and connectors are used in order to connect the controller to the laser fixture or one laser fixture to another.

**DMX - output**

XLR mounting-sockets (rear view):

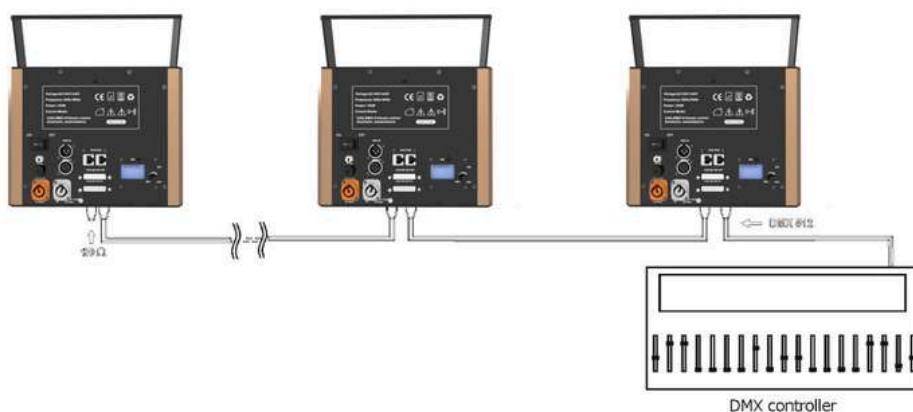


**DMX-input**

XLR mounting-plugs (rear view):



Building a serial DMX-chain:



**7. DMX-512 Connect**

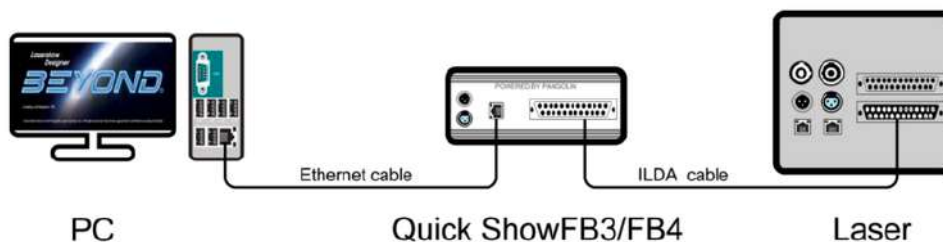
The device is equipped with 3-pin sockets for DMX input and output. The sockets are connected in parallel. Only shielded twisted pair cables designed for 3-pin XLR plugs and connectors are used in order to connect the controller to the laser fixture or one laser fixture to another.

Connect the DMX output of the first device in the DMX chain with the MX input of the next device. Always connect an output to the input of the next laser fixture until all laser fixtures are connected. Up to 32 lamps can be connected. Note: In the last laser fixture, the DMX cable must be terminated with a terminator. Solder the 120Ω resistor between signal (-) and signal (+) into the 3-pin XLR plug and insert it into the DMX output of the last laser fixture.

**8. QuickShow FB3/FB4 Connection diagram**

Some of our laser devices with ILDA or RJ45 signal interface support Quick Show FB3 or FB4 software control, but the device itself does not include software and control box!

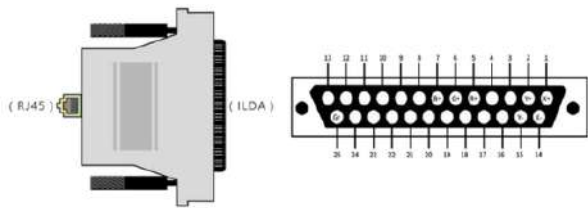
If you wish to use Quick Show FB3 or FB4 software to control your laser device, you will need to purchase these separately. You can contact the laser equipment supplier or purchase these control software through the official channel of the software. Typically, these programs give you a license or key that you can use to activate the software and start using it. Here is a diagram of a Quick Show FB3 or FB4 connecting a PC to a laser device:



### 9. RJ45 to ILDA Connection diagram

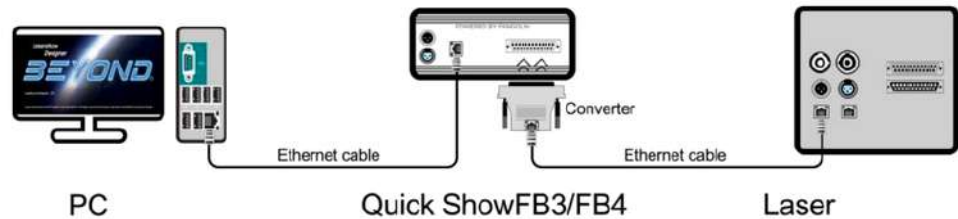
The laser device supports RJ45 to ILDA signal input. Please connect to the laser software using our supplied RJ45 to ILDA converter. The specific sequence of ILDA DB25 cables is as follows:

- Pin 1: X-axis scanner
- Pin 2: Y-axis scanner
- Pin 5: Red intensity
- Pin 6: Green intensity
- Pin 7: Blue intensity
- Pin 14: X-axis scanner
- Pin 15: Y-axis scanner
- Pin 25: Ground



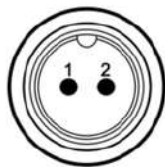
(RJ45 to ILDA converter)

Here is a diagram of connecting PC and laser device using converter for Quick Show FB3 or FB4:



### 10. Remote interlock connector (Remote Interlock Bypass)

The laser equipment produced by our company follows the standards of IEC 60825-1 and USAFDA to ensure that this product meets international safety standards! Ensure the safety of laser products for human body and eyes during use, and prevent laser radiation from harming the environment.



Remote Interlock Bypass



Remote Interlock Bypass must be inserted in the E-STOP Remote as well in order to disable the interlock.

Both E-STOP Remote safety key and laser system safety key must be inserted and switched to ON position in order to disable the interlock.





# STARSHINE LIGHTS PRODUCT MANUAL



## 11. Technical Specifications

### Light Source Parameters

Item	Specification
Laser Wavelength	Red 638 nm / Green 520 nm / Blue 450 nm
Laser Power	Red 1W / Green 2W / Blue 3W
Laser Spot Size	9.5 mm
Beam Divergence	< 1.2 mrad
Modulation Mode	0-5V Analog / TTL, up to 25 kHz
Laser Class	Class IV

### Imaging System

Item	Specification
Laser Color	RGB Mixed Colors
Color Uniformity	> 98%
Horizontal Image Offset	-30% to +30%
Vertical Image Offset	-30% to +30%
Imaging Mode	3D / 2D Patterns and Animations with Software
Projection Distance	< 100 m
Recommended Projection Distance	10-25 m
Galvanometer Speed	25 KPPS
Maximum Scan Angle	60°

### Safety and Protection

Item	Specification
Safety Standard	Complies with IEC 60825 Standard
Safety Protection	Over-current and Over-voltage Protection
Protection Rating	IP20
Operating Temperature	-15°C to 45°C



# STARSHINE LIGHTS PRODUCT MANUAL



## Interface and Control System

Item	Specification
Control Interfaces	DMX In/Out, RJ45 In/Out, ILDA In/Out
DMX Channels	16CH / 20CH
Power Interface	PowerCon

## Cooling System

Item	Specification
Cooling Method	Air Cooling
Cooling Structure	60 mm Plug-in Heat Dissipation Layer
Cooling Fan	60 mm Exhaust Fan × 1

## Power Supply

Item	Specification
Operating Voltage	AC 100–240V, 50/60Hz
Maximum Power Consumption	60W

## Physical Parameters

Item	Specification
Product Dimensions	12.99 × 11.81 × 8.66 in / 33 × 30 × 22 cm
Product Weight	5.16 kg
Package Dimensions	14.57 × 13 × 9.45 in / 37 × 33 × 24 cm
Package Weight	7 kg

### 12. Maintenance and Cleaning

The equipment must be kept clean at all times. Dust, dirt, and smoke fluid residue must not be allowed to accumulate on the laser fixture. Otherwise, the light output may be significantly reduced.

Regular cleaning helps maintain maximum light output and ensures reliable operation throughout the service life of the equipment.

Use a soft, lint-free cloth with a suitable glass cleaning solution for cleaning optical surfaces. Never use alcohol, solvents, or aggressive cleaning agents, as they may damage the lens, coating, housing, or internal components.

#### Danger

Always disconnect the power supply before starting any maintenance, cleaning, inspection, or service work.



# STARSHINE LIGHTS PRODUCT MANUAL



## Cleaning Schedule

Part	Recommended Cleaning Frequency	Cleaning Method
Front Objective Lens	Once per week	Clean with a lint-free cloth and suitable glass cleaning solution
Cooling Fans	Once per month	Remove dust using a soft brush, vacuum cleaner, or compressed air
Cooling Vents	Once per month	Remove dust and dirt to ensure proper airflow
Internal Components	At least once per year	Clean carefully using a vacuum cleaner or air blower
Air Filters	Check regularly	Clean before the filters become clogged

### Lens Cleaning

The front objective lens should be cleaned once a week. Smoke fluid residue can easily build up on the lens surface, which may reduce the brightness and clarity of the laser output.

Clean the lens gently with a lint-free cloth. Do not apply excessive pressure to the lens surface.

### Fan and Vent Cleaning

Cooling fans and ventilation openings should be cleaned once a month. Use a soft brush and vacuum cleaner to remove dust and dirt from the fans and cooling vents.

Make sure the ventilation openings are not blocked during operation, as poor airflow may cause overheating and damage to the equipment.

### Internal Cleaning

The interior of the laser fixture should be cleaned at least once a year. Use a vacuum cleaner, compressed air, or an air blower to remove dust from internal components.

Internal cleaning should be carried out carefully. If you are not qualified to open or service the fixture, contact a qualified technician.

### Air Filter Maintenance

Important: Check the air filters regularly and clean them before they become clogged.

Clean the air filters installed in the laser fixture cover and the air filters installed in the laser fixture base. The filters may be cleaned using a vacuum cleaner or compressed air.

If the filters are washed with water, they must be completely dry before being reinstalled. Never reinstall wet or damp filters into the laser fixture.

## 13. Laser label

Warning label - Hazard symbol	
Alternative label for laser aperture	
Warning label - Hazard symbol	
Alternative label for Class 4	
Certification label and identification label	



## 14. Menu Interface

The laser fixture is equipped with a control knob for menu operation. Use the knob to access, navigate, and confirm settings on the display menu.

### Menu Operation

Operation	Description
Enter Menu	Press the knob button to enter the control menu.
Navigate Menu	Rotate the knob to scroll through the menu options.
Select / Confirm	Press the knob button to select a menu item or confirm a setting.
Return / Exit	Select the return or exit option to go back to the previous menu level.

## 15. Laser Safety Devices

This laser system is equipped with multiple safety protection functions to help reduce operational risks and prevent accidental laser emission.

### 1. Manual Reset Mechanism

To avoid accidents caused by unattended laser operation, the laser system is equipped with a manual reset function.

If laser emission is interrupted by the remote interlock, emergency stop, or accidental loss of the main power supply, manual intervention is required before the laser system can emit again. After the interruption is resolved, the operator must manually reset or restart the system according to the correct operating procedure. This helps ensure that the laser cannot restart unexpectedly without operator confirmation.

### 2. Laser Emission Indicator

The LED indicator on the menu panel shows the laser emission status.

When the LED indicator is flashing, it means the laser is operating, ready to emit, or preparing to emit. Once the laser system receives instructions from the control software, it may be ready for laser output.

Do not face, inspect, or look directly into the laser aperture when the indicator shows that the system is active or ready to emit. Direct exposure to laser radiation may cause serious eye injury.

### 3. Safe Operation Protection

To help prevent accidental injury during operation, the laser system includes a safe operation protection function.

When the laser is in emission status, pressing any key or operating the control panel will cause the laser to enter a temporary emission stop state.

If no further key operation is detected for 30 seconds, the laser system may automatically resume the emission state.

Operators must remain alert during this process and must not look into the laser aperture at any time.

### 4. Scan Safety Protection

The laser system includes scan safety protection to monitor the galvanometer scanning status.

If the scanning speed, scanning amplitude, or galvanometer operation becomes abnormal due to a fault, the laser system will automatically stop laser emission.

The laser will not resume emission until the galvanometer returns to normal scanning operation.

This protection helps reduce the risk of a static or unsafe laser beam caused by scanning failure.



# STARSHINE LIGHTS PRODUCT MANUAL

## 15. Main Functions Menu Function Table

Menu Item	Value / Option	Function Description
DMX Address	1-512	Set the DMX start address.
Channel	16CH	Select 16-channel DMX control mode.
	20CH	Select 20-channel DMX control mode.

### Mode Setting

Menu Item	Value / Option	Function Description
Mode Set	DMX	Set the laser to DMX input control mode.
	ILDA	Set the laser to ILDA input control mode.
	RANDOM	Randomly play all built-in animation effects.
	LINE	Play line effects.
	ANIME	Play animal pattern effects.
	TEXT	Play text effects.
	PROGRM	Play built-in program effects.
	DRAW	Play mobile app drawing effects.
	MARK	Play beam effects.
	BREAK	Set the device to standby mode.

### Mode Setting

Menu Item	Value / Option	Function Description
Play Speed	0-100	Adjust the playback speed of the selected mode.
Size	0-100	Adjust the size of the laser effect.





# STARSHINE LIGHTS PRODUCT MANUAL



## Laser Position / Phase Setting

Menu Item	Value / Option	Function Description
Phase	X+Y+	Set laser position to X+Y+.
	X+Y-	Set laser position to X+Y-.
	X-Y-	Set laser position to X-Y-.
	X-Y+	Set laser position to X-Y+.
	*Y+X+	Set laser position to *Y+X+.
	*Y+X-	Set laser position to *Y+X-.
	*Y-X-	Set laser position to *Y-X-.
	*Y-X+	Set laser position to *Y-X+.

## Brightness / Dimmer Setting

Menu Item	Value / Option	Function Description
Dimmer Red	0-100	Adjust the brightness of the red laser.
Dimmer Green	0-100	Adjust the brightness of the green laser.
Dimmer Blue	0-100	Adjust the brightness of the blue laser.
Dimmer All	0-100	Adjust the overall laser brightness.

## Language and Software Information

Menu Item	Value / Option	Function Description
Language	EN	Set the menu language to English.
Language	CH	Set the menu language to Chinese.
Software	V2.3	Display the current software version.

## 16. Home Position Adjustment

To access the offset setting menu, long press the [ENTER] button.

Category	Menu Item	Value / Option	Function Description
Scanner Setting	Scanner Set	15–30K	Set the scanner speed range.
Color Setting	Color Set	RGB	Enable red, green, and blue laser output.
Color Setting	Color Set	R	Enable red laser output only.
Dot Protection	Dot Protect	ON	Turn off the laser output when the laser beam is focused into a fixed point.
Dot Protection	Dot Protect	OFF	Keep the laser output active when the laser beam is focused into a fixed point.
Sound Control	Sound Sense	0–100	Adjust the sensitivity in sound-activated mode.
Display Setting	Backlight	ON	Keep the menu display screen always on.
Display Setting	Backlight	OFF	Turn off the menu display screen after 20 seconds of inactivity.
Factory Reset	RST Setting	YES	Restore the device to factory default settings.

## 17. DMX Mode Setting

DMX mode allows the laser fixture to be controlled by an external DMX controller or DMX lighting console.

### Operation Steps

1. Enter the main menu.
2. Select Mode Set.
3. Press [ENTER] to confirm.
4. Select DMX.
5. Press [ENTER] again to save the setting.
6. Press the return button to go back to the previous menu, or wait for 30 seconds for the menu to exit automatically.

After DMX mode is selected, make sure the DMX address and DMX channel mode are set correctly according to your lighting control system.

## 18. ILDA Mode Setting

ILDA mode allows the laser fixture to receive signal input from ILDA-compatible laser control software or hardware.

### Operation Steps

1. Enter the main menu.
2. Select Mode Set.
3. Press [ENTER] to confirm.
4. Select ILDA.
5. Press [ENTER] again to save the setting.
6. Press the return button to go back to the previous menu, or wait for 30 seconds for the menu to exit automatically.

After ILDA mode is selected, connect the ILDA signal cable properly and make sure the laser control software is configured correctly before operation.

## 19. Mobile App Download and Connection

This laser product is equipped with a built-in NFC chip. By gently tapping the NFC sensing area with a compatible mobile device, users can quickly access the download page for the dedicated mobile app and enjoy more convenient operation.

The mobile app may be used for functions such as effect selection, drawing effects, parameter adjustment, and other supported control features, depending on the product configuration.



3. Scan the QR code to download and install the app:



Android



ISO

2. Connect to APP Settings

Access the Bluetooth Settings and press [Click Me To Connect] to search for the current laser device!

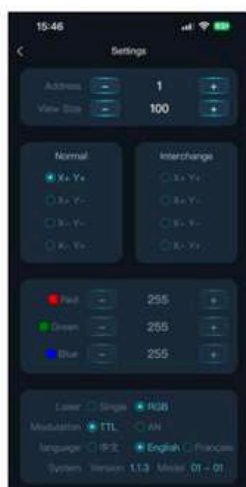


A-Click Me To Connect]



B-Search for devices that can be connected

3: APP function Introduction



- 1: Support to modify the DMA address of the device through the APP;
- 2: support hand-drawn and played laser pattern;
- 3: Support text input and text laser pattern playback;
- 4: Support custom programming schemes;
- 5: Play built-in custom laser effects;
- 6: Set the size range of laser scanning;
- 7: Set the initial position of the laser
- 8: Set the RGB light source output of the laser
- 9: Set the laser mode TTL or analog modulation mode

**DMX Channel Summary – 16CH Mode**

Channel	Function	Value Range	Description
CH1	On / Off	0-35	Laser off
		36-255	Laser source on
CH2	Strobe	0-9	Strobe off
		10-255	Strobe effect, from slow to fast
CH3	Color	0-4	Full color
		5-9	Red
		10-14	Blue
		15-19	Red + Blue
		20-24	Green + Blue





# STARSHINE LIGHTS PRODUCT MANUAL



CH3	Color	25-29	Red + Green
		30-34	Green
		35-255	Color effect
CH4	Color Mode	0-9	Stop color effect
		10-127	Forward color movement
		128-255	Reverse color movement
CH5	CUE Groups	0-255	Select CUE group
CH6	CUE	0-255	Select CUE pattern
CH7	Zoom	0-255	Linear CUE zoom, from large to small
CH8	Auto Zoom	0-15	Zoom in
		16-55	Auto zoom in, from slow to fast
		56-95	Auto zoom out, from slow to fast
		96-135	Auto zoom out and zoom in, from slow to fast
		136-175	Irregular zoom in and zoom out, from slow to fast
		176-215	X/Y irregular zoom in and out mode 1, from slow to fast
		216-255	X/Y irregular zoom in and out mode 2, from slow to fast
CH9	Rotate	0-127	360° rotation
		128-191	Clockwise rotation
		192-255	Counterclockwise rotation
CH10	X Rotate	0-127	Clockwise X-axis rotation
		128-255	Counterclockwise X-axis rotation
CH11	Y Rotate	0-127	Clockwise Y-axis rotation
		128-255	Counterclockwise Y-axis rotation
CH12	X Move	0-255	X-axis movement
CH13	Y Move	0-255	Y-axis movement
CH14	Twist Effect	0-255	Twist effect, from slow to fast
CH15	Macro CUE	0-255	Macro CUE show
CH16	CUE Speed	0-1	Normal speed
		2-255	CUE speed, from slow to fast

## DMX Channel Summary – 16CH Mode

Channel	Function	Value Range	Description
CH1	On / Off	0-29	Laser off
		30-255	Laser source on
CH2	Red	0-255	Adjust red laser output brightness
CH3	Green	0-255	Adjust green laser output brightness
CH4	Blue	0-255	Adjust blue laser output brightness
CH5	Strobe	0-9	Strobe off
		10-255	Strobe effect, from slow to fast
CH6	Color	0-4	Full color
		5-9	Red
		10-14	Blue
		15-19	Red + Blue
		20-24	Green + Blue
		25-29	Red + Green
		30-34	Green
		35-255	Color effect
CH7	Color Mode	0-9	Stop color effect
		10-127	Forward color movement
		128-255	Reverse color movement
CH8	CUE Groups	0-255	Select CUE group
CH9	CUE	0-255	Select CUE pattern
CH10	Zoom	0-255	Linear CUE zoom, from large to small
CH11	Auto Zoom	0-15	Zoom in
		16-55	Auto zoom in, from slow to fast
		56-95	Auto zoom out, from slow to fast
		96-135	Auto zoom out and zoom in, from slow to fast
		136-175	Irregular zoom in and zoom out, from slow to fast
		176-215	X/Y irregular zoom in and out mode 1, from slow to fast
		216-255	X/Y irregular zoom in and out mode 2, from slow to fast



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CH12	Rotate	0-127	360° rotation
CH12	Rotate	128-191	Clockwise rotation
CH12	Rotate	192-255	Counterclockwise rotation
CH13	X Rotate	0-127	Clockwise X-axis rotation
CH13	X Rotate	128-255	Counterclockwise X-axis rotation
CH14	Y Rotate	0-127	Clockwise Y-axis rotation
CH14	Y Rotate	128-255	Counterclockwise Y-axis rotation
CH15	X Move	0-255	X-axis movement
CH16	Y Move	0-255	Y-axis movement
CH17	Twist Effect	0-255	Twist effect, from slow to fast
CH18	Draw Mode	0-2	No draw effect
CH18	Draw Mode	3-63	Draw mode 1, manual control
CH18	Draw Mode	64-127	Draw mode 2, manual control
CH18	Draw Mode	128-153	Draw add mode
CH18	Draw Mode	154-179	Draw subtraction mode
CH18	Draw Mode	180-205	Automatic gradient, increase first then decrease, reverse direction
CH18	Draw Mode	206-255	Automatic gradient, increase first then decrease, same direction
CH19	Macro CUE	0-1	No macro CUE
CH19	Macro CUE	2-253	Macro CUE show; speed and color are controlled by CH20
CH19	Macro CUE	254-255	Random mode
CH20	CUE Speed	0-1	Normal speed
CH20	CUE Speed	2-255	CUE speed, from slow to fast



## 20. Safety criteria for equipment and installations

1. If the laser display or show is under the continuous control of an operator who can immediately terminate laser beams in the event of a problem, a minimum separation distance of 3 m in height and 2.5 m laterally should be maintained between beams that exceed the spectator MPE and any surface upon which spectators can reasonably be expected to stand. This condition is shown in Figure 1 and Figure 2.

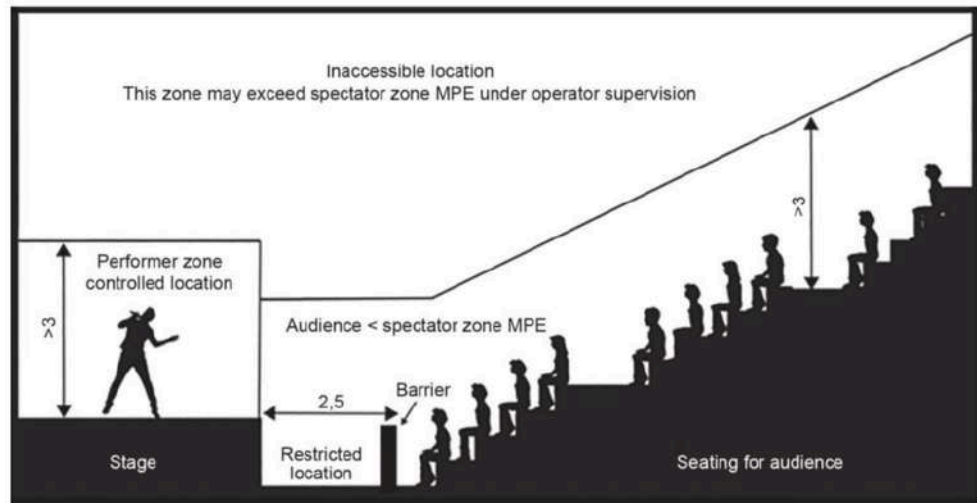
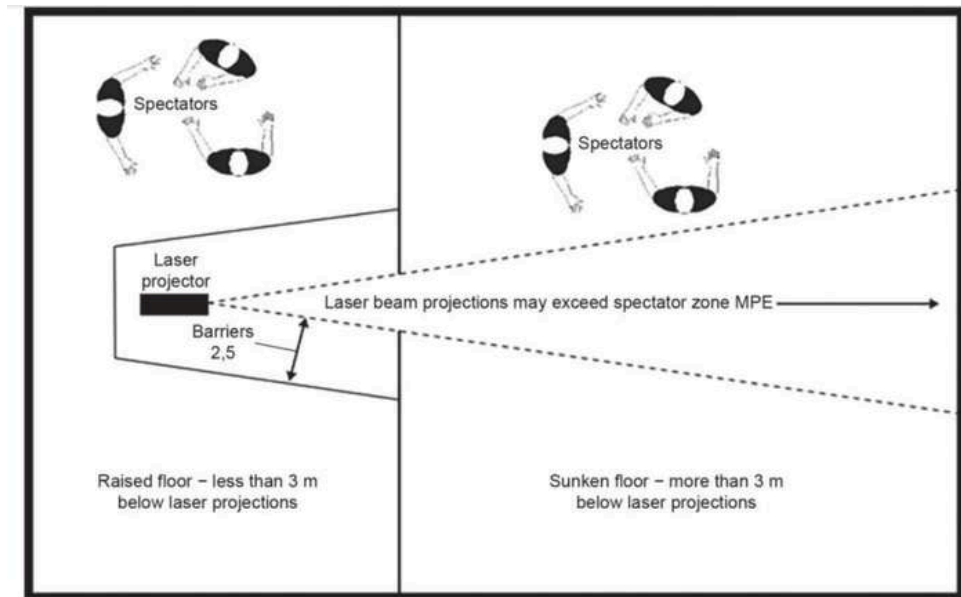
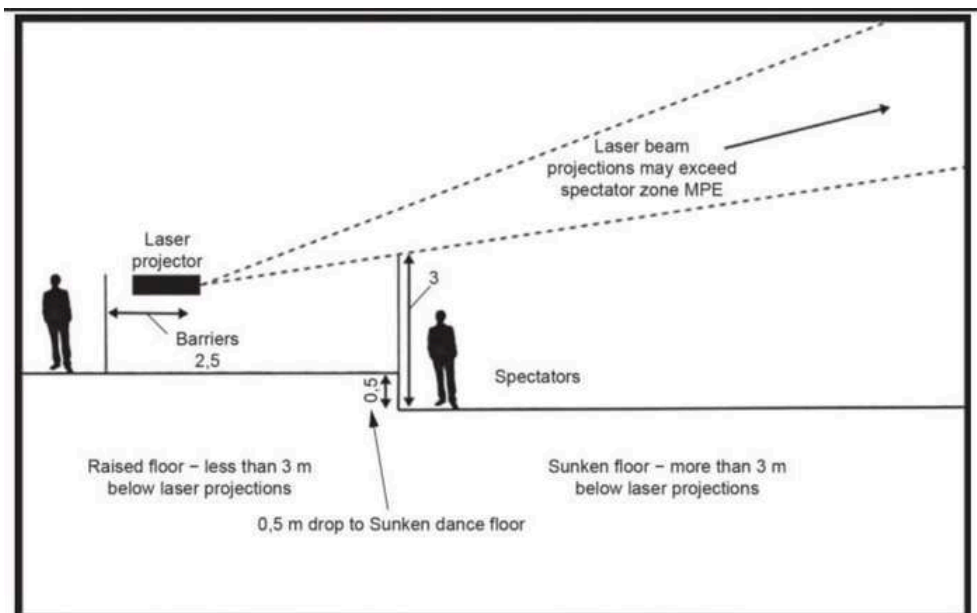


Figure 1 Audience/spectator separation auditorium scenario with operator in control

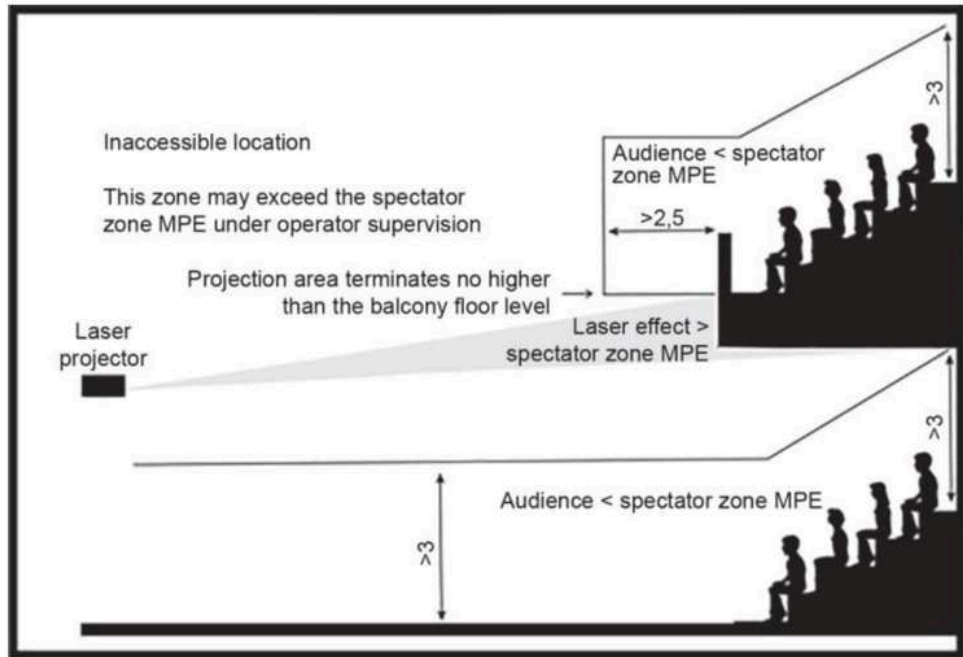


Plan view



**b) Side elevation**

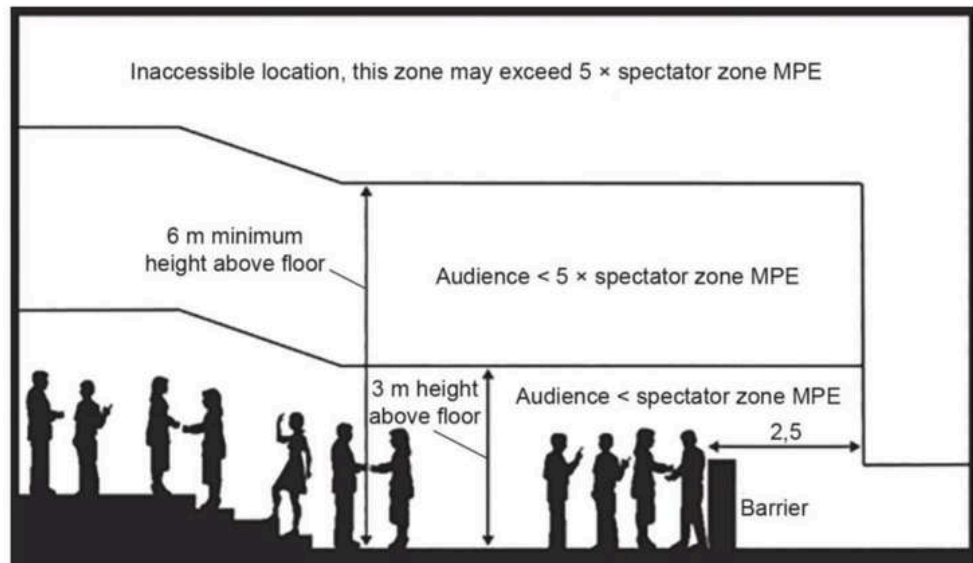
Figure 2 Audience/spectator separation nightclub scenario with operator in control  
 4. If a projection area terminates onto a balcony or near a window, where spectators can view the laser effect, and the exposure level at the termination point is likely to be in 24 excess of the spectator MPE, the beams should terminate no higher than the floor level of the balcony if it has an opaque solid barrier. This condition is shown in Figure 3.



**Figure 3 Audience/spectator separation near a balcony with operator in control**

5. If the laser display or show is not under the continuous control of an operator who can immediately terminate laser beams in the event of a problem, a minimum separation distance of 3m in height and 2.5m laterally should be maintained between beams that exceed the spectator MPE exceeded by more than a factor of 5 in the space between 3m and 6m above any surface upon which spectators can reasonably be expected to stand.

This condition is shown in Figure 4.



**Figure 4 Audience/spectator separation from unattended beams**

