STARSHINE LIGHTS

STARSHINE LIGHTS PRODUCT MANUAL

J8 PROGRAMMABLE LASER PRODUCT MANUAL

1. INTRODUCTION

- Thank you for purchasing a Starshine Laser product. To optimize the performance of your Starshine J8 Laser Projector, please read these operating instructions carefully and familiarize yourself with the basic operations of this system.
- This manual contains important safety information regarding the use and maintenance of this system. Please keep this manual with the unit for future reference. If you sell or transfer this product to another user, be sure that they also receive this document.
- Notice
- Starshine Laser is constantly striving to improve product quality. As such, the content of this manual may be updated without prior notice.
- We have tried our best to ensure the accuracy of this manual. If you have any questions or find any errors, please contact Starshine Laser support or your local distributor for assistance.

2. PACKING LIST

In the Box

Name	Qty (pcs)
Starshine J8 Laser Projector	1
AC power cord	1
Safety keys	2
Power output connector	1
Remote interlock connector	2
Allen key	1

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3. UNPACKING INSTRUCTIONS

- Open the package and carefully unpack everything inside.
- Ensure all parts are present and in good condition.
- Do not use any equipment that appears to be damaged.
- If any parts are missing or damaged, please immediately notify your carrier or your Starshine Laser distributor.

4. GENERAL INFORMATION

The following chapters explain important information about lasers in general, basic laser safety, and tips on how to use this device correctly. Please read this information carefully as it contains critical safety requirements you must be aware of before using the Starshine J8 Laser Projector.

5. SAFETY NOTES

WARNING! This projector is a Class 4 laser product. It must never be used for audience-scanning applications. The output beam must always be at least 3 meters above the floor in audience areas. See the Operating Instructions section for further information.
Please read the following notes carefully. They include important safety information about the installation, usage, and maintenance of this Starshine Laser product.

- Keep this User Manual for future consultation. If you sell or transfer this product to another user, be sure that they also receive this document.
- Always make sure the outlet voltage is within the range stated on the product's rear panel label.
- This product is not designed for outdoor use in adverse weather conditions. To prevent risk of fire or shock, do not expose this product to rain or moisture.
- Always disconnect this product from the power source before cleaning it or replacing the fuse.
- Replace the fuse only with the same type and rating.
- If mounting overhead, always secure this product with a secondary safety device (safety chain/cable).
- If a serious operating problem occurs, stop using the projector immediately. Never attempt to repair the unit except in a controlled environment under trained supervision. Repairs by unskilled personnel may cause damage, malfunction, and/or hazardous laser exposure.
- Never connect this product to a dimmer pack.
- Make sure the power cord is not crimped or damaged.
- Never disconnect the power cord by pulling or tugging on the cord.
- Never carry the projector by the power cord or any moving part. Always use the hanging/mounting bracket or the handles.
- Always avoid eye or skin exposure to direct or scattered laser light.
- Lasers can be hazardous. Permanent eye injury and blindness are possible if lasers are used incorrectly. Read all instructions carefully BEFORE operating this device.
- Never intentionally expose yourself or others to direct laser light.
- This laser product can potentially cause instant eye injury or blindness if laser light directly strikes the eyes.
- It is illegal and dangerous to shine this laser into audience areas where personnel could be exposed to direct beams or bright reflections.
- It is a US Federal offense to shine any laser at aircraft.
- No customer-serviceable parts inside. Do not attempt repairs yourself.
- Service must be handled only by the factory or Starshine-authorized trained technicians.
- This product must not be modified by the customer.
- Caution: Use of controls/adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

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6. LASER AND SAFETY NOTES

STOP AND READ ALL LASER SAFETY NOTES BELOW

Laser light is different from other light sources. The light from this product can cause eye and skin injury if not set up and used properly. Laser light is thousands of times more concentrated than other light sources and can cause instant eye injuries, primarily by burning the retina.

Even if you cannot feel "heat" from a laser beam, it can still potentially injure or blind you or your audience. Laser eye injuries can happen quicker than you can blink. It is incorrect to assume scanned or moving laser beams are safe for eye exposure. This is not true.

Since eye injuries can occur instantly, it is critical to prevent any possibility of direct eye exposure. It is not legal to aim this laser projector into areas where people can be exposed, even if aimed below people's faces (such as onto a dance floor).

- Do not operate the laser without first reading and understanding all safety and technical data in this manual.
- Always install all laser effects so that all laser light is at least 3 meters (9.8 feet) above the floor where people can stand. See the "Proper Usage" section later in this manual.
- After setup and prior to public use, test the laser to ensure proper function. Do not use if any defect is detected.
- Laser Light — Avoid Eye or Skin Exposure to Direct or Scattered Light.
- Do not point lasers at people or animals.
- Never look into the laser aperture or laser beams.
- Do not point lasers into areas where people can be exposed, such as uncontrolled balconies, etc.
- Do not point lasers at highly reflective surfaces (windows, mirrors, shiny metal objects). Reflections can be hazardous.
- Never point a laser at aircraft (US Federal offense).
- Never point un-terminated laser beams into the sky.
- Do not expose the output optic (aperture) to cleaning chemicals.
- Do not use the laser if the housing is damaged/open, or if optics appear damaged.
- Never leave this device running unattended.
- In the United States, this product may not be purchased, sold, rented, leased, or loaned for use unless the recipient possesses a valid Class 4 laser light show variance from the US FDA CDRH.
- This product must always be operated by a skilled and well-trained operator familiar with this manual. Use in the United States also requires a valid Class 4 laser light show variance from the CDRH.
- Legal requirements for laser entertainment products vary by country/region. The user is responsible for meeting legal requirements at the location of use.
- Always use appropriate safety cables when hanging this Starshine J8 Laser Projector overhead.

7. BRAND / SUPPORT

For product support, documentation, or authorized service, please contact Starshine Laser or your local distributor.

Website: StarshineLights.com

Email: service@starshinelights.com

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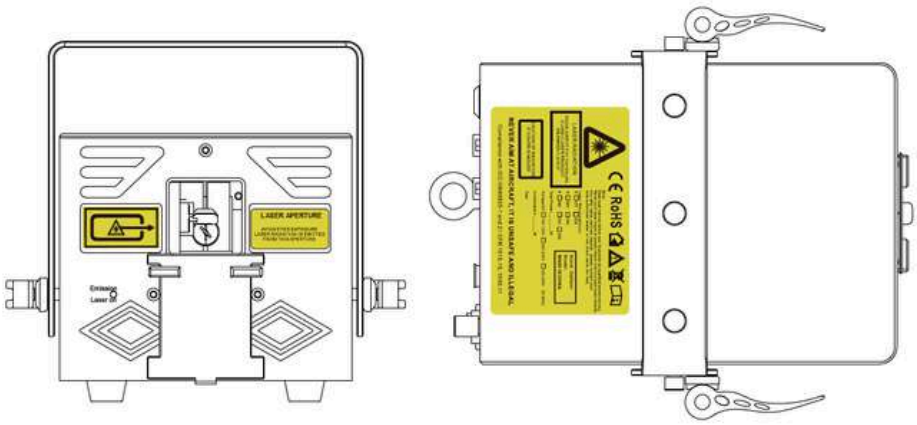
service@starshinelights.com

8. Labelling Reference



See the following reproductions of the product labels. All these labels must be intact and legibleprior to be used on the projector.

Hazard warning symbol

Aperture label

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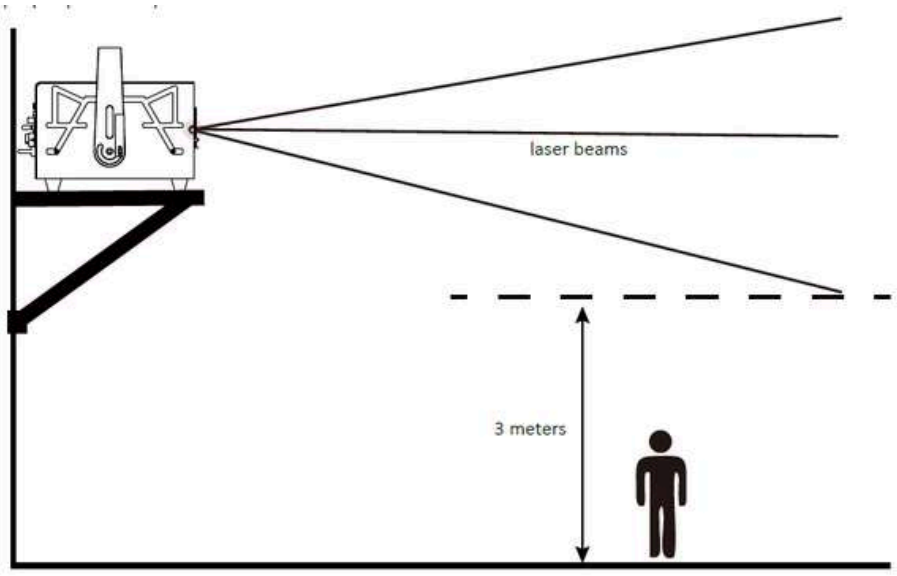
9. PROPER USAGE

The Starshine J8 Laser Projector is designed for overhead mounting only. For safety purposes, this projector must be mounted on stable elevated platforms or sturdy overhead supports using appropriate hanging clamps. In all cases, a safety cable must be used.
International laser safety regulations require that laser products be operated as illustrated below, with a minimum vertical separation of 3 meters (9.8 ft.) between the floor and the lowest laser light. In addition, a minimum horizontal separation of 2.5 meters is required between laser light and the audience or other public areas.
To provide passive protection for the audience area, the aperture cover plate can be slid upward and secured in the correct position using the two thumb screws.



10. PROPER USAGE

- Ensure that the structure used for mounting the Starshine J8 Laser Projector can safely support the projector's weight.
- Mount the projector securely using a screw, nut, and bolt. When rigging onto a truss, a suitable mounting clamp may also be used. The U-shaped support bracket includes three mounting holes for securing clamps to the projector.
- Always consider ease of access to the unit before choosing an installation location.
- When mounting the projector overhead, always use a safety cable and lock the projector through the safety ring(s) on the rear panel.

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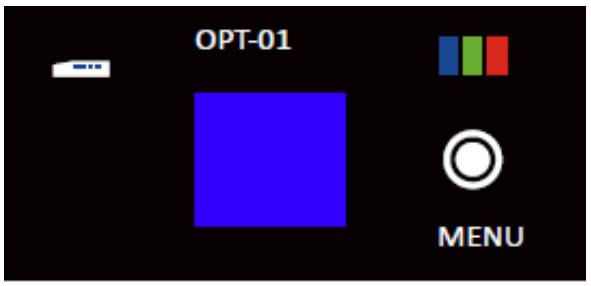
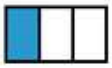
11. LCD Display Setting introductions



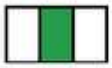
Indicators

a. Power supply and TF Card status indication:



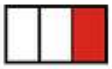
OFF	Not powered
Slow flash	NoTF Card
Always on	With TF Card

b. DMX status



OFF	Without DMX daughterboard|Abnormal
Slow flash	DMX daughterboard loaded , but no DMX Signal
Always on	Normal DMX communication

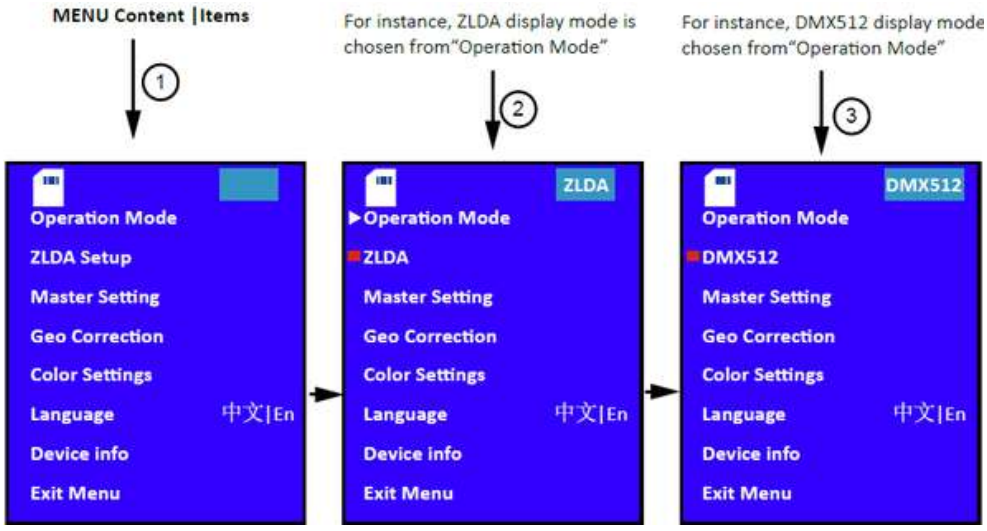
c. Laser Output status



OFF	No output
Always on	Normal output

Note:

All the contents listed on the LCD display can be freely changed to the preferable status. The most importantstep is to"double-click" the menu knob to SAVE the preferred status when all selections/settings get done.(The other settings should be operated step by step as DMX setting reference as the guidance following)



Remark area(the actual screen is without this colored background)The real-time display mode status will be shown in this area, it can be any mode under thecontent Operation Mode such as ZlLDA or DMX512, etc.

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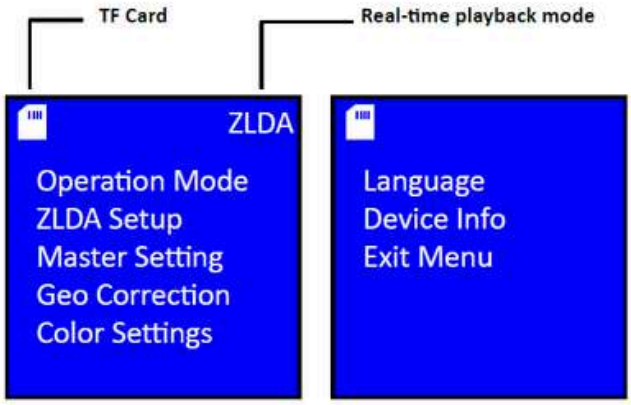
MENU Descripons



The Overall menu's content

Menu Item	Description
Operation Mode	Select the playback method, including [DMX512], [ILDA], [ZLDA], [TEST] and [DAC] and other playback mode
ZLAD Setup	Settings corresponding to the selected playback mode
Master Setting	Basic settings of the system
Geo Correction	Orientation parameter settings | Geo correction
Color settings	Color parameter settings
Language	Chinese| Simplified Chinese En| English
Device Info	Device version and other information
Exit menu	Save settings and turn off backlight

Master Setting

Menu Item	Description	default value
Scan Rate	The number of points of laser output per second, range 5~40K	20
Color Shift	The number of points of the color lag coordinate, range 0~15 points	0
Rescan	After the playback source is disconnected, the duration before the program is turned off, unit millisecond, range 100~999ms	999
Each Play	The minimum playing time of each program, in seconds, range 1~20s	2
Turn Off Time	After there is no operation on the interface, the screen-off time, in seconds, ranges from 5 to 60s , 60s means the screen is always on	30
Animate Mode	1 —display as per points 2 —display as per frames	1
Animate Rate	This parameter is valid when display as per points is selected. 1 is full speed, 2 is 1/2 speed, 3 is 1/3 speed	1
Target FPS	If you choose to play by frame, this parameter is valid. The number of frames of the program played per second, frame range 1~40	10
Exit	Exit the current menu and return to the previous menu	

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Selections of Operation Mode

Menu Item	Description	default value
DMX512	DMX512 Control mode, program data comes from TF card, corresponding to the dmx\ directory ZLDA format file.	×
ILDA Play	ILDA Play, program data comes from TF ILDA under the ilda\ directory in the card format file.	×
ZLDA Play	ZLDA Play, program data comes from TF ZLDA under the zlda\ directory in the card format file.	×
TEST Play	TEST Play, program data comes from TF ZLDA in the test\ directory in the card format file.	×
Exit	Exit the current menu and return to the previous menu.	

Geo Correction

Menu Item	Description	default value
Master Size	0~100%	50
X Scale	0~100%	100
Y Scale	0~100%	100
X Shear	- 100~100%	0
Y Shear	- 100~100%	0
Z Angle	0~359	0
X Position	- 100~100%	0
Y Position	- 100~100%	0
X Invert	0|1 0-Positive, 1-Reverse	×
Y Invert	0|1 0-Positive, 1-Reverse	×
XY Swap	0|1	×
Exit	Exit the current menu and return to the previous menu	

Geo Correction

Sub-menu

Menu Item	Description	default value
Play mode	[Cue] Means only one laser cue will be displayed in loop, corresponding to ZLDA in the ilda\cue\ directory format file . [List] Presents the playlist file, corresponding to ZLDA in the ilda\list\001~999\ directory grid format file. [None] No output	single
File Index	The number of files currently being played, from 001 to 999 . Select [Single] for playback mode, which means 001.zld~999.zld in the zlda\cue\ directory Select [List] for the playback mode, which means the files in the 001\~999\ directory under the zlda\list\ directory.	001
End Action	[Loop] After the program reaches the end, it will start playing from the beginning. [Stop] After the program reaches the end, turn off the laser output.	cycle
Exit	Exit the current menu and return to the previous menu	

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Selections of Operation Mode

Menu Item	Description	default value
DMX512	DMX512 Control mode, program data comes from TF card, corresponding to the dmx\ directory ZLDA format file.	×
ILDA Play	ILDA Play, program data comes from TF ILDA under the ilda\ directory in the card format file.	×
ZLDA Play	ZLDA Play, program data comes from TF ZLDA under the zlda\ directory in the card format file.	×
TEST Play	TEST Play, program data comes from TF ZLDA in the test\ directory in the card format file.	×
Exit	Exit the current menu and return to the previous menu.	

Geo Correction

Menu Item	Description	default value
Master Size	0~100%	50
X Scale	0~100%	100
Y Scale	0~100%	100
X Shear	- 100~100%	0
Y Shear	- 100~100%	0
Z Angle	0~359	0
X Position	- 100~100%	0
Y Position	- 100~100%	0
X Invert	0|1 0-Positive, 1-Reverse	×
Y Invert	0|1 0-Positive, 1-Reverse	×
XY Swap	0|1	×
Exit	Exit the current menu and return to the previous menu	

Geo Correction

Sub-menu

Menu Item	Description	default value
Play mode	[Cue] Means only one laser cue will be displayed in loop, corresponding to ZLDA in the ilda\cue\ directory format file . [List] Presents the playlist file, corresponding to ZLDA in the ilda\list\001~999\ directory grid format file. [None] No output	single
File Index	The number of files currently being played, from 001 to 999 . Select [Single] for playback mode, which means 001.zld~999.zld in the zlda\cue\ directory Select [List] for the playback mode, which means the files in the 001\~999\ directory under the zlda\list\ directory.	001
End Action	[Loop] After the program reaches the end, it will start playing from the beginning. [Stop] After the program reaches the end, turn off the laser output.	cycle
Exit	Exit the current menu and return to the previous menu	

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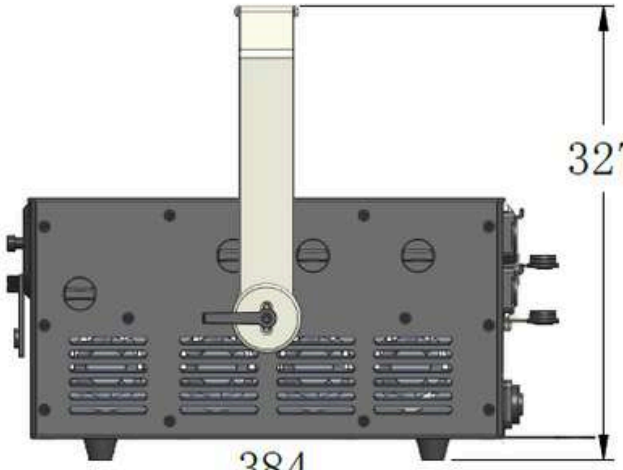

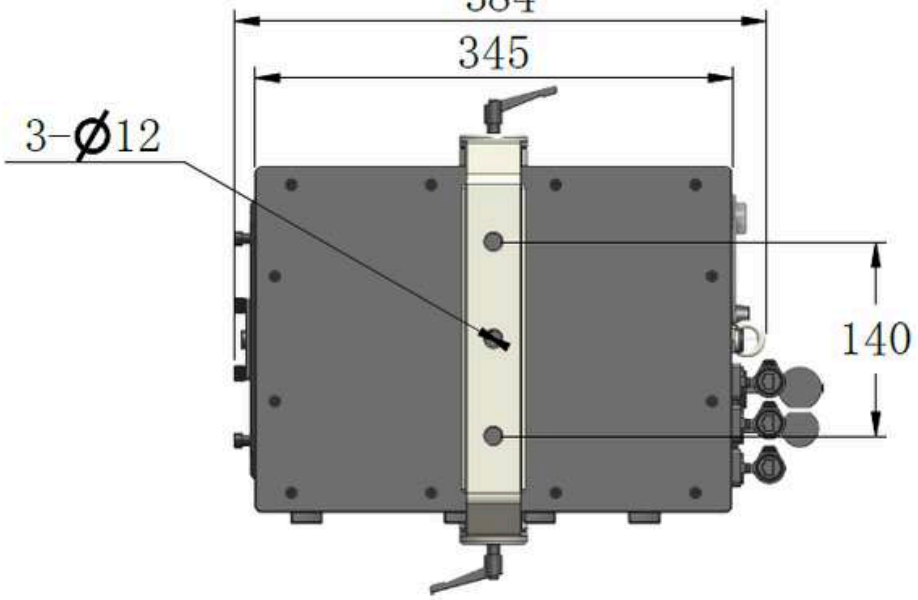

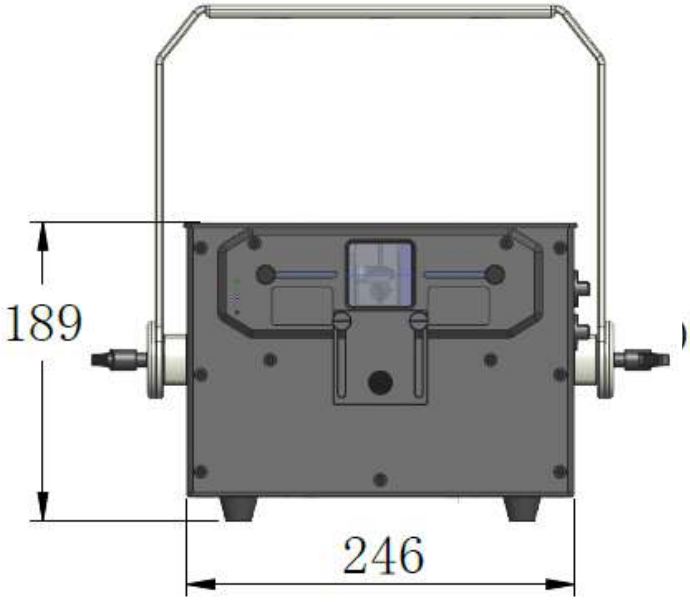

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1	**Laser aperture**	(covered by masking plate) DO NOT look directly into this aperture once the masking plate gets loosen
2	**Laser Emission indicators**	When the red indicator is lit up the laser system is ready to emit the laser radiation as soon as it receives instructions from control board or software.
3	**LCD Display**	Integrated with multi settings on the projector, please refer to detailed settings (on Page 11.) for the LCD
4	**Keyhole**	Safety key, laser output is available when the key is moved to position "on"
5	**Power Switch**	Power On/Off
6	**PowerCON Input & Output**	True 1 Power connectors input and output
7	**ILDA-RJ45 Jacks**	The RJ45 adapter that signal is convernted from standard ILDA board, for the purpose of flexible cabling on gigs if ILDA cables are not preferred.
8	**INTERLOCK (RJ45 jack)**	Laser output is available only when the interlock is connected. It could be used to connect a laser emergency switch(E-stop box).
9	**ILDA Input & Output**	DB25 connectors input and output for ILDA mode display
10	**DMX Input & Output**	3-pin xlr DMX connections input and thru for DMX512 mode display
11	**FUSE**	Safety element; current rating 8Amps
12	**Menu knob for LCD Setting**	The knob for the main settings on LCD, click it to wake the LCD and rotate it for corresponding status setting
13	**SD-Card Slot**	Slot for SD-Card which you may have your own laser files to export on
14	**Safety Ring**	The ring for enwinding a safety rope when the laser device will be installed on out-of-reach locations.
15	**SFS**	Scan-fail safety switch

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12.DMX Charts
16 CHs

CH	Value	Descriptions	Width
1	0-255 _ DMX model	0-31 _ Close the light 33-95 _ Top 4 channels 97-159 _ Top 8 channels 161-232 _ Top 12 channels 225-255 _ Top 16 channels	8 Bit
2	0-255 _ Page index (9 in total Page)	0-15 _ Page 1 17-31 _ Page 2 33-47 _ Page 3 49-63 _ Page 4 65-79 _ Page 5 81-95 _ Page 6 97-111 _ Page 7 113-127 _ Page 8 129-255 _ Page 9	8 Bit
3	0-255 _ program index (48 in total programme)	0-32 _ Close the light 33-35 _ Program 1 37-39 _ Program 2 .. - .. 221-223 _ Program 48 225-255 _ — —	8 Bit
4	0-255 _ speed	0-15 _ Default speed 17-31 _ pause 33-255 _ 25% ~ 200%	8 Bit
5	0-255 _ brightness	0% ~ 100%	8 Bit
6	0-255 _ size	0%~ 100%	8 Bit
7	0-255 _ X size	-100% ~ 100%	8 Bit
8	0-255 _ Y size	-100% ~ 100%	8 Bit
9	0-255 _ Z angle	0~360 deg	8 Bit
10	0-255 _ X position	0 = left , 128 = center , 255 = right	8 Bit
11	0-255 _ Y position	0 = top , 128 = mid , 255 = bottom	8 Bit
12	0-255 _ Visible point	0 ~ 100%	8 Bit
13	0-255 _ scan rate	0-31 _ Default scan rate 33-223 _ 6K ~ 29K 225-255 _ 30K	8 Bit
14	0-255 _ reserve		8 Bit
15	0-255 color table	0-31 original color 33- 223 color table 225- 255 white	8 Bit
16	0-255 Reserved	Reserved	8 Bit

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DMX Charts
26 CHs

CH	Value	Description	Width
1	0-255 page index	page index , 0~3 light off 4~7 No. 1 Page 8~ 11 2nd Page 12~15 No. 3 Page ... 252~255 No. 63 Page	8 Bit
2	0-255 program index	program index 0~3 light off 4~7 No. 1 programme 8~ 11 2nd programme 12~15 No. 3 programme ... 252~255 No. 63 programme	8 Bit
3	0-255 playback speed	(0 = original speed , 1 – 255 = 1% ~ 255%)	8 Bit
4	0-255 brightness _	(0 ~ 100%)	8 Bit
5,6	0-65535 size	(0 ~ 100%)	16 Bit
7,8	0-65535X _ size	(-100 ~ 100%, 0 = 32768)	16 Bit
9,10	0-65535 Y size	(-100 ~ 100%, 0 = 32768)	16 Bit
11,12	0-65535 Z angle	Rotation angle (0~ 360 °)	16 Bit
13,14	0-65535Z _ rotate	Rotation speed -60 ~ 60 Rpm (0 = original position , 1 ~ 32767 = -100% ~ -1 % Rotation speed , 32768 = Save stationary and not rotating , 32769 ~ 65535 = 1% ~ 100% Rotating speed)	
15,16	0-65535X _ Location	(-100 ~ 100%, 0 = 32768)	16 Bit
17,18	0-65535 Y Location	(-100 ~ 100%, 0 = 32768)	16 Bit
19	0-255 scan rate	(5k ~ 30K)	8 Bit
20	0-255 red light brightness	(0 ~ 100%)	8 Bit
21	0-255 green light brightness	(0 ~ 100%)	8 Bit
22	0-255 blue light brightness	(0 ~ 100%)	8 Bit
23	0-255 RGB _ Change color	(0 = original color , 1-255 = 0 ~ 100% color change)	8 Bit
24	0-255 start display points	(0 ~ 100%)	8 Bit
25	0-255 end display point	(0 ~ 100%)	8 Bit
26	0-255 strobe _	0 = Turn off strobe 1-255 = 1 to 20 Hz	8 Bit

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DMX Charts
39 CHs

Channels	Value		Description	Width
1	0-255	Fixture Modes	0-150 Blackout / Safe 150-190 Setup Mode 200-240 Playback mode 240-255 Laser Off	8 Bit
2	0-255	Max Intensity	Defines the max intensity that can be used during playback mode (Range 0 till 100)	8 Bit
3	0--255	Test frames	Allows enabling test frames during setup mode (1= test frame 1, 255 = test frame 255)	8 Bit
4,5	0-65535	Size X	Defines the maximum width that can be used during playback mode (Range -100 till 100%, 0 = 32768)	16 Bit
6,7	0-65535	Size Y	Defines the maximum height that can be used during playback mode (Range -100 till 100%, 0 = 32768)	16 Bit
8,9	0-65535	Position X	Defines the horizontal position that can be used during playback mode (Range -100 till 100%, 0 = 32768)	16 Bit
10,11	0-65535	Position Y	Defines the vertical position that can be used during playback mode (Range -100 till 100%, 0 = 32768)	16 Bit
12,13	0-65535	Rotation Z	Defines the rotation angle that can be used during playback mode (Range 0 till 360 degrees)	16 Bit
14	0-255	Pages	Page Index, 255 pages in total 1 = page 1, 255 = page 255	8 Bit
15	0-255	Cues	Cue Index, 255 Cues in total (1 = cue 1, 255 = cue 255)	8 Bit
16	0-255	Cue speed	Cue speed (0 = Original, 1 – 255 = 1% till 255%)	8 Bit
17	0-255	Dimmer	Defines the maximum brightness limited by setup mode (Range 0 till 100%)	8 Bit
18,19	0-65535	Zoom	Allows to zoom the cue limited by setup mode (Range 0 till 100%)	16 Bit
20,21	0-65535	X Size	Defines the maximum width limited by setup mode (Range -100 till 100%, 0 = 32768)	16 Bit
22,23	0-65535	Y Size	Defines the maximum height limited by setup mode (Range -100 till 100%, 0 = 32768)	16 Bit
24,25	0-65535	Z Angle	Defines the rotation angle limited by setup mode (Range 0 till 359 degrees)	16 Bit
26,27	0-65535	Z Rotation	Continues rotation from -60 till 60 Rpm	

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28,29	0-65535	X Position	Allows for changing the horizontal position of the cue limited by setup mode (Range -100 till 100%, center = 32768)	16 Bit
30,31	0-65535	Y Position	Allows for changing the vertical position of the cue limited by setup mode (Range -100 till 100%, center = 32768)	16 Bit
32	0-255	Scan Rate	Defines the painting speed of the laser beam. (5k till original 30K)	8 Bit
33	0-255	Red	Intensity range from 0 till 100%	8 Bit
34	0-255	Green	Intensity range from 0 till 100%	8 Bit
35	0-255	Blue	Intensity range from 0 till 100%	8 Bit
36	0-255	Alpha	Allows you to shift between original cue color or RGB control. (Range, 0 = original, 1-255 = 0 till 100% alpha blending)	8 Bit
37	0-255	Points start	Allows you to remove points from the start point of a cue (Range from 100 till 0% visibility)	8 Bit
38	0-255	Points end	Allows you to remove points from the end point of a cue (Range from 1000 till 0% visibility)	8 Bit
39	0-255	Strobe	0 = Strobe disabled 1-255 = Strobe from 1 to 20 Hz	8 Bit

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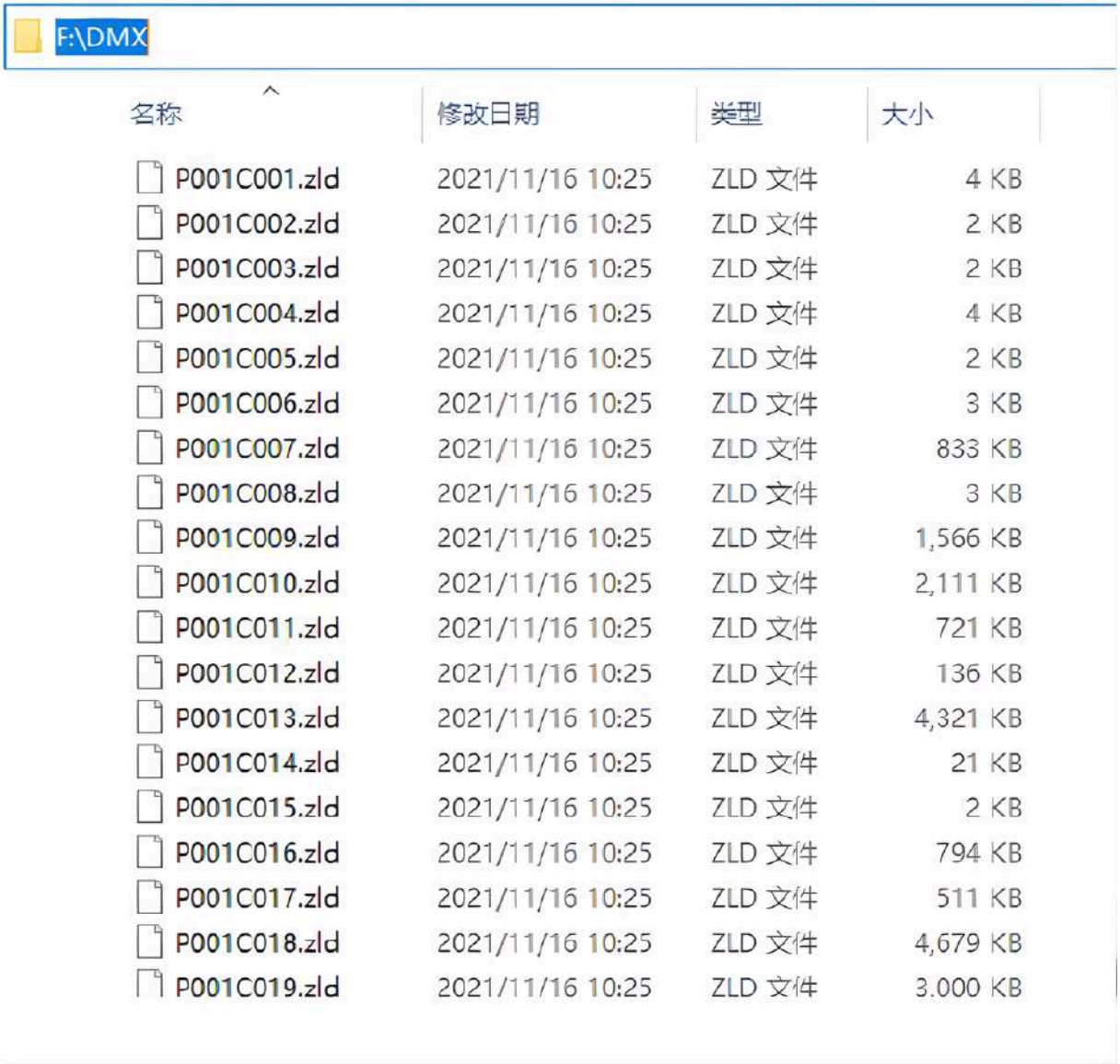
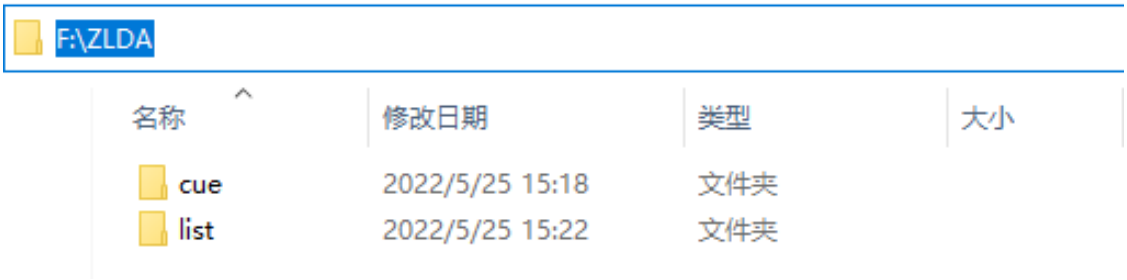
13. DMX and ArtNet file structure

- DMX and ArtNet playback both use files in the":/DMX/' directory. The file names range from Po01Co01.zld toP255C255.zld. Here,"P" represents Page and "C" represents Cue.
- For the 16-channel DMX command, the Page index and Cue Index correspond to P001Co01.zld to P009CO048.zld,supporting a total of 432 files.
- For the 39-channel DMX command, the Pages and Cues correspond to Po01Co001.zld to P255C255.zld,supporting a total of 65,025 files.
- During DMX and ArtNet playback, if the corresponding Pages and Cues files cannot be found, the laser outputwill be turned off.



14. ZLDA file structure

ZLDA playback is divided into two scenarios, one is [cue], another is [list], corresponds the filesin":/ZLDA/CUE/"and":/ZLDA/LlST/"directory.



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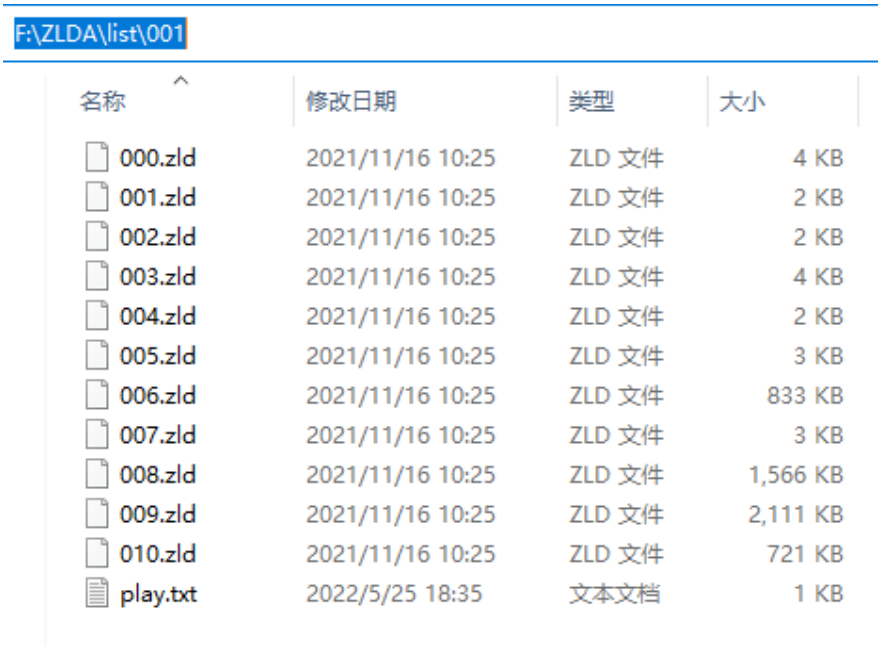
a. Cue mode

- In the":/ZLDA/CUE/" directory, the file names range from 001.zld to 999.zld, and the fle names correspondto the menu option [File ilndex]. A total of 999 files are supported. In ZLDA cue mode playback, if thecorresponding file is not found, the laser output will be turned off.

b. List mode

In the":/ZLDA/LlST/" directory, it is possible to create 999 directories numbered from 001 to 999.
Each directory serves as a list corresponding to the file name selected in the [File Index] menu option.
In the":/ZLDA/LlST/001/'directory, the file names range from 001.zld to 999.zld.
Additionally, a play.txt file is required to indicate the playback order.



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15.MAINTENANCE AND SERVICE

GENERAL CLEANING INSTRUCTIONS — TO BE DONE BY USER

=Due to fog residue, smoke, and dust, the external body of the projector should be cleaned periodically to optimize light output. Cleaning frequency depends on the environment in which the fixture operates (e.g., smoke, fog residue, dust, dew). For heavy club use, monthly cleaning is recommended.

Periodic cleaning will help ensure long product life and crisp output.

Cleaning steps:

- Unplug the product from power.
- Wait until the product is cold.
- Use a soft, damp cloth to wipe down the outside of the projector casing.
- Use compressed air and a brush to clean the cooling vents and fan grill(s).
- Clean the glass panel (laser aperture) with glass cleaner and a soft cloth when dirty.
- Gently polish the glass surface until it is free of haze and lint.
- Make sure all parts are completely dry before plugging the unit back in.

16.Laser Colour Alignments

!	**These procedures should be conducted only in a controlled environment and with extreme caution. When aligning the beams it is recommended to wear sufficient laser safety protection and to avoid accidental exposure to Class 4 laser radiation.**

There is one only laser module inside this laser projector. The module contains the primary colours Red, greenand blue.
The goal is to have all 3primary colours overlay each other as perfectly as possible.
The easiest way to test and achieve alignment is to project a large circle onto a suitable surface (fire-safe surface).
It is recommended to have as much distance between the projector and the terminating wall as possible.
It is also recommended to perform the alignment using the least amount of power that enables all the laser output.

STEP-BY-STEP INSTRUCTIONS FOR BEAM ALIGNMENT

1. Slowly and carefully remove the 6 bolts on the small side cover plate. Set the cover aside. It will not be usedduring this procedure.
2. Stand behind the projector and point the laser towards a large flat safe surface.

3. While standing behind the laser, power up the system as normal.
4. Proiect a large white circle onto a laser safe surface. Use the least amount of power that enables allthe laser modules.
5. Using a hex kev, reach down into the laser from above; adiust the alignment hex button screws onthe combining optics until all the beams overlay each other perfectly.

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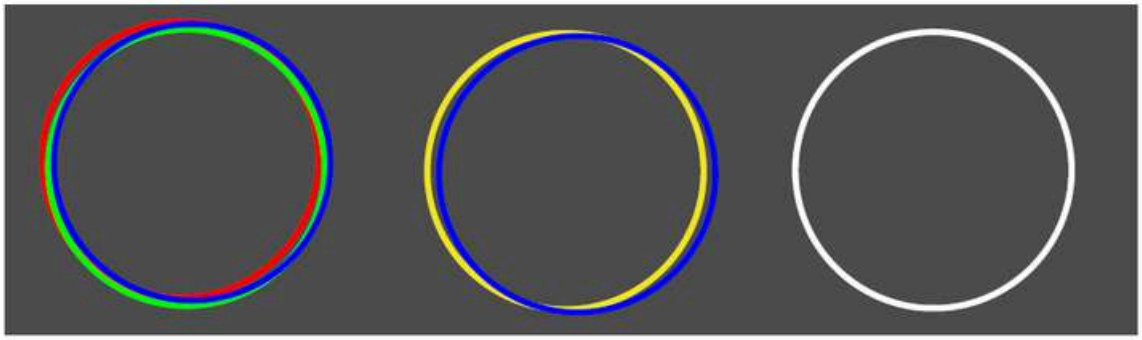
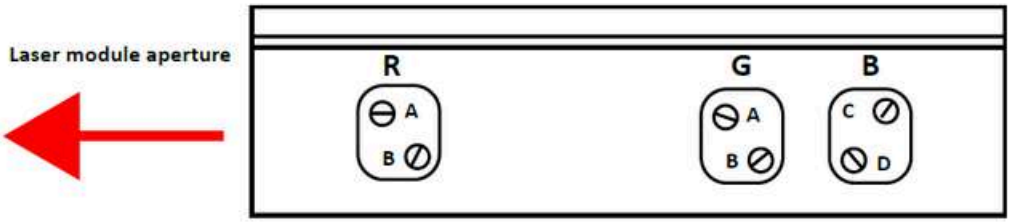
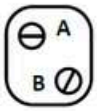
!	Take extra care to avoid interrupting the laser beam with any tools. Class 4 laser reflections could result.

!	Danger – after defeating the interlock system and having the housing of the laser open, certain laser reflections happen that can cause skin burns or damage your eyes. Wear safety goggles and avoid skin exposure while adjusting the modules alignment.



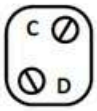


How does the alignment mechanism work?



Rotate the **A** thumb screw to tune the Red/Green's beam position from "up or down"

Rotate the **B** thumb screw to tune the Red/Green's beam position from "left or right"



Rotate the **C** thumb screw to tune the blue beam's position from "up or down"

Rotate the **D** thumb screw to tune the blue beam's position from "left or right"

17.SERVICE

There are no user serviceable parts inside this unit. Do not attempt any repairs yourself; doing so will void your manufactures warranty. In the unlikely event your unit may require service please contact usdirectly or your local distributor, who will help you with a repair or replacement.We will not accept anyliability for any resulting damages caused by the non-observance of this manual or any unauthorizedmodification to this unit.

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