

LASER SHOW SYSTEM

BEAM BOX 5W

MANUAL



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1 INTRODUCTION

Thank you for purchasing Beam Box 5W! To optimize the performance of your laser, please read these operating instructions carefully and familiarize yourself with the basic operations of this system. These instructions contain important safety information regarding the use and maintenance of this system as well. Please keep this manual with the unit, for future reference. If you sell this product to another user, be sure that they also receive this document.

Notice

- We are constantly striving to improve the quality of our products. As such, the content of this manual may be changed without notice.
- We have tried our best to guarantee the accuracy of this manual. If you have any questions or find any errors, please contact us directly to help address this.

2 WHAT'S INCLUDED?

NAME	PCS	Remark
Laser projector	1	
Power cord	1	
Keys for projector key switch	2	
Ethernet cable 5 meters	1	
3-pin interlock bypass plug	1	Used on projector when not connecting the E-STOP BOX
User guide	1	

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, then please immediately notify your carrier or local distributor.

4 GENERAL INFORMATION

The following chapters explain important information about lasers in general, basic laser safety and some tips about how to use this device correctly. Please read this information as it contains critical information you must be aware of, prior to using this system.



5 SAFETY NOTES

WARNING! This projector is a Class 4 laser product. It must never be used for audience-scanning applications. The output beam of the projector must always be at least 3 meters above the floor in the audience. See the 'Proper Usage' for further information.

Please read the following notes carefully! They include important safety information about the installation, usage, and maintenance of this product.

- Keep this manual for future consultation. If you sell this product to another user, be sure that they also receive this document.
- Always make sure that the voltage of the outlet to which you are connecting this product is within the range stated on the decal or rear panel of the product.
- This product is not designed for use outdoors 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.
- Make sure to replace the fuse with another of the same type and rating.
- If mounting it overhead, always secure this product to a fastening device using a safety chain or cable.
- In the event of a serious operating problem, stop using the projector immediately. Never try to repair the unit except in a controlled environment under trained supervision. Repairs carried out by unskilled people can lead to damage or malfunction of the unit, as well as exposure to dangerous laser light.
- 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 a product from 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 light from this product.
- Lasers can be hazardous and have unique safety considerations. Permanent eye injury and blindness is possible if lasers are used incorrectly. Pay close attention to each safety REMARK and WARNING statement in this user manual. 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 the audience or other personnel could get direct laser beams or bright reflections into their eyes.
- **No service allowed by customer. There are no user serviceable parts inside the unit. Do not attempt any repairs yourself.**
- **Service is only to be handled by the factory or authorized factory trained technicians.**
- **Product is not to be modified by the customer.**
- **Caution: use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.**



Laser light is different from any other light sources with which you may be familiar. 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 light from any other kind of light source. This concentration of light can cause instant eye injuries, primarily by burning the retina (the light sensitive portion at the back of the eye). Even if you cannot feel “heat” from a laser beam, it can still potentially injure or blind you or your audience. Even very small amounts of laser light are potentially hazardous even at long distances. Laser eye injuries can happen quicker than you can blink. It is incorrect to think that because these laser entertainment products use high speed scanned laser beams, that an individual laser beam is safe for eye exposure. It is also incorrect to assume that because the laser light is moving, it is safe. This is not true.

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

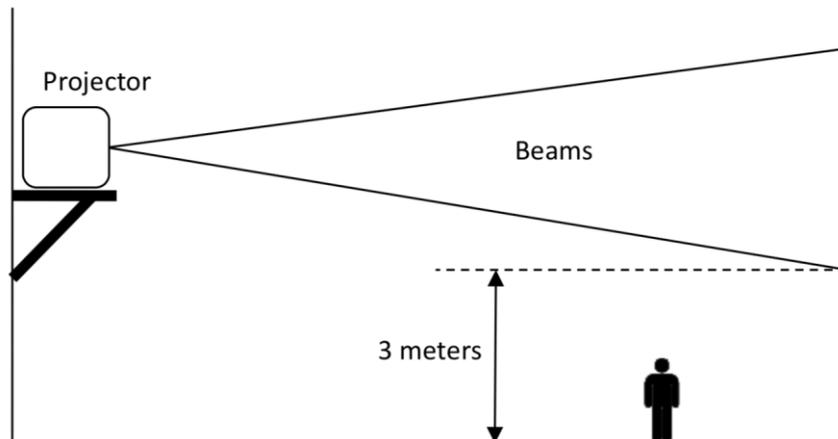
- Do not operate the laser without first reading and understanding all safety and technical data in this manual.
- Always set up and install all laser effects so that all laser light is at least 3 meters (9.8 feet) above the floor on which people can stand. See the “Proper Usage” section later in this manual.
- After set up, and prior to public use, test the laser to ensure proper function. Do not use if any defect is detected.
- 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 in areas where people can potentially be exposed, such as balconies, etc.
- Do not point lasers at highly reflective surfaces, such as windows, mirrors and shiny metal objects. Even laser reflections can be hazardous.
- 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 the optics appear damaged in any way.
- Never leave this device running unattended.
- This product must always be operated by a skilled and well-trained operator who is familiar with the data included in this manual.
- The legal requirements for using laser entertainment products vary from country to country. The user is responsible for the legal requirements at the location/ country of use.
- Always use appropriate lighting safety cables when hanging this projector overhead.
- **Class 4 laser projector - Avoid eye and skin exposure to direct or scattered light!**
- **This laser product is designated as Class 4 during all procedures of operation.**



6 PROPER USAGE

This product is for overhead mounting only. For safety purposes, this projector should be mounted on steady elevated platforms or sturdy overhead supports using suitable hanging clamps. In all cases, you must use safety cables.

International laser safety regulations require that laser products must be operated in the fashion illustrated below, with a minimum of 3 meters (9.8 ft.) of vertical separation between the floor and the lowest laser light vertically. Additionally, 2,5 meters of horizontal separation is required between laser light and audience or other public spaces.



7 RIGGING

- Be sure that the structure onto which you are mounting this product can support its weight.
- Mount the product securely. You can do this with a screw, a nut, and a bolt. You may also use a mounting clamp if rigging this product onto a truss. The U-shaped support bracket has three mounting holes which may be used to secure the clamps to the projector.
- When mounting this product overhead, always use a safety cable.
- Always consider ease of access to the unit before deciding on a location for this product.

Caution: use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This laser product is designated as Class 4 during all procedures of operation.

8 OPERATION

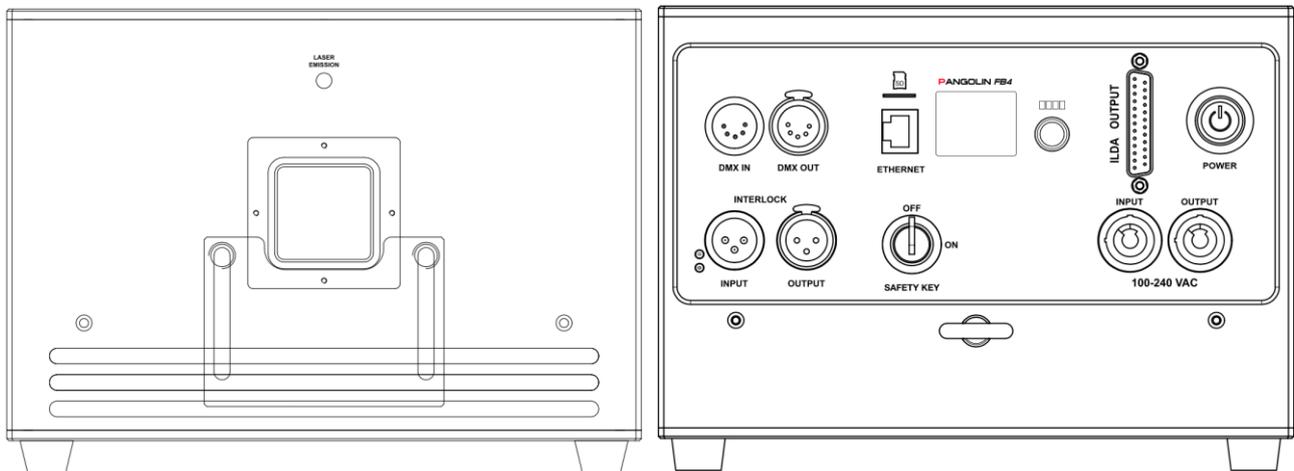
8.1 INSTRUCTIONS FOR POWERING ON THE LASER SYSTEM

1. Connect power cable. Turn on the projector.
2. Turn on the key switch on the rear of the projector.
3. Connect the 3-pin XLR interlock bypass plug to the rear of the projector. (If you use the E-STOP BOX system, then connect the 3-pin interlock cable between the E-STOP BOX and projector, pull up the red mushroom switch and turn on the key switch. Press the start button.)
4. Connect the Ethernet cable(s) to the projector and computer, and then select the pattern on software (using Pangolin Quickshow or Beyond software on computer to control). Notice: please choose "Allow laser output" in software.

8.2 INSTRUCTIONS FOR TURNING OFF THE LASER SYSTEM

1. Turn off the key switch. (We recommend having a professional operator to keep the keys, the 3-pin interlock plug and E-STOP BOX.)
2. Turn off the power to the projector via the power switch.

8.3 FRONT & REAR PANEL



NO.	Name	Function
1	Laser aperture	Laser output, do not look directly into this aperture
2	DMX interface	For FB4 DMX control
3	FB4	FB4 control system, with Ethernet and SD card
4	ILDA out	To transfer FB4 signal output with ILDA interface
5	Power ON/OFF	Power switch
6	3-pin interlock	The 3-pin XLR bridging plug supplied has to be plugged into the interlock socket in order to be able to activate the laser.
7	Key switch	Key switch for laser output
8	Power in and out	AC100~240V power input and output sockets. With output feature you can connect the device to one another using the input and output sockets. They must be the same fixtures. DO NOT mix fixtures!

8.4 PRODUCT SPECIFICATION

Voltage	AC 100~240V, 50/60Hz, T3A
Power rate	250W
Unit dimensions	238*246*163mm (without the bracket)
Net weight	8KG
Total laser output	5W
Laser source	1200mW Red 638nm; 1700mW Green 525nm; 2200mW Blue 455nm
Scanner system	30kpps@ILDA 8
Working temperature	10~40°C
Cooling system	Fan cooling

9 TECHNICAL INFORMATION: MAINTENANCE AND SERVICE

9.1 GENERAL CLEANING INSTRUCTIONS: TO BE DONE BY USER

Due to fog residue, smoke, and dust cleaning the external body of the projector should be carried out periodically to optimize light output. Cleaning frequency depends on the environment in which the fixture operates (smoke, fog residue, dust, dew). In heavy club use we recommend cleaning on a monthly basis. Periodic cleaning will ensure longevity, and crisp output.

- Unplug the product from power.
- Wait until the product is cold.
- Use a soft damp cloth to wipe down the outside projector casing.
- Use compressed air and a brush to wipe down 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.
- Always be sure to dry all parts completely before plugging the unit back in.

9.2 LASER BEAM ALIGNMENT: TO BE DONE BY USER OR MANUFACTURER

	This procedure 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.
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There is all-in-one RGB laser module inside this laser projector. The module is one of each primary colors of red, green and blue. The goal is to have all 3 colors 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 modules.

10 INSTRUCTIONS FOR BEAM ALIGNMENT

1. Stand behind the projector and point the laser towards a large flat safe surface.
2. Remove the top panel 4 hex button bolts.
3. Slowly and carefully remove the top cover and set it aside. It won't be used during this procedure.
4. While standing behind the laser, power up the system as normal.
5. Project a large white circle onto a laser safe surface. Use the least amount of power that enables all the laser modules.
6. Using a hex key, reach down into the laser from above; adjust the alignment hex button screws on the combining optics until all the beams overlay each other perfectly.

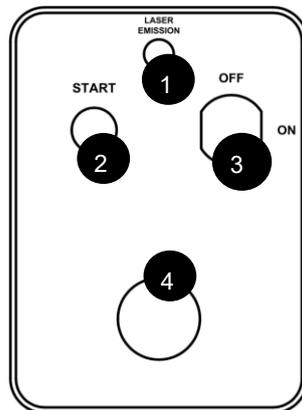
	Take extra care to avoid interrupting the laser beam with any tools. Class 4 laser reflections could result.
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7. Once the alignment is satisfactory then power down the system.
8. Replace the top panel and replace the hex button bolts.

11 INSTRUCTIONS FOR USING E-STOP SYSTEM

The E-STOP BOX is used to switch off any connected effect lasers directly in the event of a hazard. Once there is an emergency issue, laser can be shut down immediately by pushing the mushroom switch, or turn off the KEY switch on the E-STOP BOX.

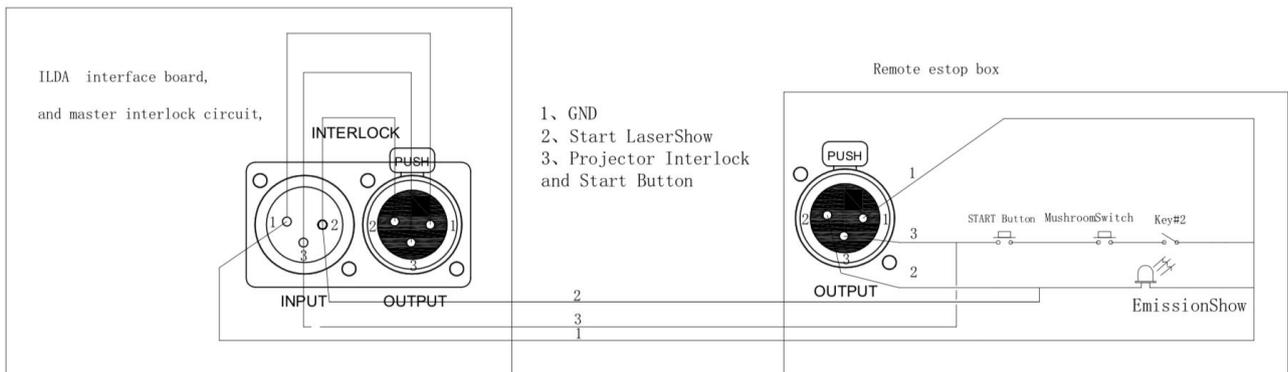
Connect the E-STOP BOX to the 3-pin interlock connector on the rear of the laser projector using a 3-pin XLR cable.



NO.	Name	Function
1	Laser emission LED	After pressing START button, this LED will keep flashing. It takes about 10 seconds for activating laser output. The LED indicator will stay steady ON as soon as the laser beam is emitted.
2	START	VERY IMPORTANT! Every time the laser is shut down, it will be required to press this START button again, to restart laser emitted.
3	Key switch	Key switch for laser on and off.
4	Mushroom switch	Push to shut off laser. Release to have laser on.

The diagram below outlines the pinout configuration for the 3-pin connection from E-STOP BOX to the rear of the projector.





The interlock uses pins 1, 2 and 3.

1. Pins 1 and 3 are the interlock signal. Breaking the connection on pins 1 and 3 will shut down the projector.
 - * For example, push the mushroom switch on the E-STOP BOX, or turn off the KEY switch on the E-STOP BOX will shut down the projector. The projector will then need to be restarted by START button on the E-STOP BOX.
 - * It is to be noted that ANY break in an interlock circuit or E-STOP circuit will require a projector restart from the momentary START button on the E-STOP BOX.
2. Pins 1 and 3 pass restart signal and should be passed as uninterrupted from the E-STOP BOX.
3. Pins 1 and 2 pass bicolor LED and should be passed to projector as uninterrupted from the E-STOP BOX.

12 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 us directly or your local distributor, who will help you with a repair or replacement. We will not accept any liability for any resulting damages caused by the non-observance of this manual or any unauthorized modification to this unit.

