LPS-BaX

Manual

As of January 2022

LPS-Lasersysteme Siegmund Ruff / CEO Haidschwaerze 18 72131 Ofterdingen Germany
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Foreword

Thank you for purchasing an LPS product.
Before you operate this product the first time, please read this manual carefully.

Our systems are equipped with high sensitive electronics and mechanics.
Strong shocks can cause significant damage to the system.

CAUTION!
Should an error occur due to improper handling or maintenance, there is no warranty.

Contents

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1. Commissioning

1.1 Areas of use

This product must be used for laser shows only.

This device is designed for mobile use and for permanent installations.

1.2 Electrical Connection

This product is approved to be operated only with an alternate current of 100 - 240 V.

1.3 Installation

It is required to mount the device only on a fixed truss or base.
In order to guarantee sufficient ventilation, leave 50 cm free space minimum around the device.

1.4 Operation

Operate the device only when familiar with its functions. Do not permit operation by persons not qualified for operating the device. Most damages are the result of unprofessional operation!

Please consider that unauthorized modifications on the device are forbidden due to safety reasons!

If the device is operated in any way different to the one described in this manual, the product may suffer damages and the guarantee becomes void.

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1.5 Unpack and connect

Check the content of the package of its completeness.

The following parts are included:

- Laser system
- Power plug (1 piece)
- Two keys for the key-interlock
- E-Stop, key for E-Stop, 10m cable

Connect the D/A converter and laser system with the data cable.
Plug in the power supply of the laser system and the D/A converter (power plug).
Make sure that the show laser system is mounted stable and cannot fall down.

Please note:
LPS-Lasersysteme cannot be made liable for damages caused by incorrect installations and unskilled operation!

Certifications:
IEC 60825-1
DIN EN 60825-1
E DIN 56912
Variance Number 91V-0150

CAUTION!

If you use controls or adjustments or if you perform procedures other than those specified here, this might result in hazardous radiation exposure!

The laser exposure of this Laser system is able to ignite flammable materials.
Improper use of the Laser system might harm people.
There is a high risk of eye injuries if the laser power is not well calculated at any audience scanning.

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2. Technical Specifications

Laser source	Laser diode (Pure Diode)
Operating voltage	100 V – 240 VAC
Voltage line frequency	50 Hz / 60 Hz
Operating current	from 1.12 A
Power consumption	from 250 W
Cooling requirements	air-cooled, optimized airflow
Degree of protection	IP 40 / with Raindefender IP54
Protection class	1, protection ground
Operating temperature	5°C - 40° C
Warm-up time	none
Total laser power	<u>LPS-BaX XS:</u> LPS-BaX XS 5K Green 5 W LPS-BaX XS 8K Green 8 W LPS-BaX XS 10K Green 10 W LPS-BaX XS 7K RGB 7 W LPS-BaX XS 10K RGB 10 W LPS-BaX XS 15K RGB 15 W

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	<u>LPS-BaX S:</u> LPS-BaX 20K Green 20 W LPS-BaX 20K RGB 20 W LPS-BaX 24K RGB 24 W LPS-BaX 30K RGB 30 W LPS-BaX 40K RGB 40 W
Modulation	analogue modulation up to 30 kHz
Wavelength	**<u>LPS-BaX XS:</u>** LPS-BaX XS 5K Green 5W green@525nm LPS-BaX XS 8K Green 8W green@525nm LPS-BaX XS 10K Green 10W green@525nm LPS-BaX XS 7K RGB 2W red@638nm, 2W green@525nm, 3W blue@445nm LPS-BaX XS 10K RGB 3W red@638nm, 3W green@525nm, 4W blue@445nm LPS-BaX XS 15K RGB 4W red@638nm, 4W green@525nm, 7W blue@445nm

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	LPS-BaX S: LPS-BaX 20K Green 20W green@525nm LPS-BaX 20K RGB 6W red@638nm, 6W green@525nm, 8W blue@445nm LPS-BaX 24K RGB 6W red@638nm, 8W green@525nm, 10W blue@445nm LPS-BaX 30K RGB 8W red@638nm, 10W green@525nm, 12W blue@445nm LPS-BaX 40K RGB 10W red@638nm, 14W green@525nm, 16W blue@445nm
Scanner	**LPS-BaX XS:** LPS-BaX XS 5K Green 40 kpps scanning LPS-BaX XS 8K Green 40 kpps scanning LPS-BaX XS 10K Green 40 kpps scanning LPS-BaX XS 7K RGB 40 kpps scanning LPS-BaX XS 10K RGB 40 kpps scanning LPS-BaX XS 15K RGB 40 kpps scanning

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	LPS-BaX S: LPS-BaX 20K Green 40 kpps scanning LPS-BaX 20K RGB 40 kpps scanning LPS-BaX 24K RGB 40 kpps scanning LPS-BaX 30K RGB 30 kpps scanning LPS-BaX 40K RGB 30 kpps scanning

Deflection angle	Maximum 60°
Dimension and weight	LPS-Bax XS 28 x 28 x 28 cm (l x b x h) 17kg LPS-Bax 41 x 28 x 39 cm (l x b x h) 25-30kg

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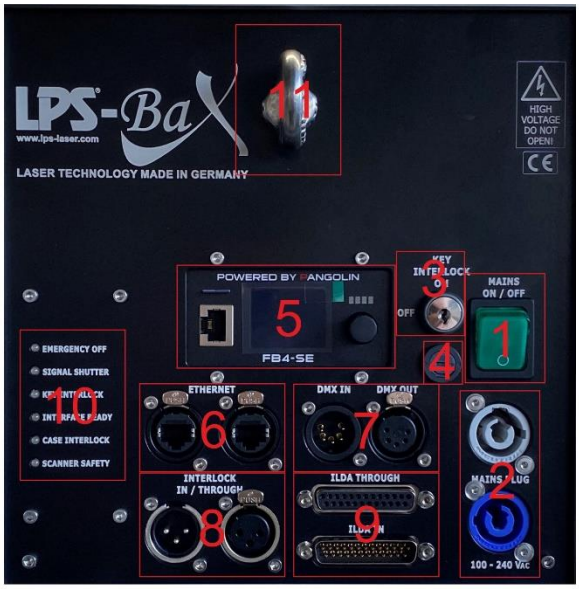
3. Overview

The overview will help you to find a better handle to the functions of the systems.

3.1 Case back view

Depending on the arrangement you choosed, you will have the following connectors on the back:



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1	**ON / OFF switch**
2	**Mains connection (PowerCon)**
3	**Key-Switch Interlock**
4	**Fuse**
5	**FB4 Interface**
6	**Ethernet connection**
7	**DMX IN/OUT**
8	**XLR E-Stop IN / OUT**
9	**ILDA In / Through**
10	**System Status Display**
11	**Safety eyelet**

3.2 Power switch

By using the power switch you turn on the laser system.
When the laser system is turned on the power switch glows.

3.3 Key switch

Use the key switch to activate or deactivate the laser system.
Only the lasers will be switched on and off in this process. All other components, which are integrated in the laser system, will still work.

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4. Emergency Off

4.1 Emergency In

Connect the emergency-off switch to the 3 pole socket (male).

Pin Assignment:

Pin No.	Name	Note
Pin 1	GND	GND
Pin 2	Vcc out	4.3 V output voltage
Pin 3	Return	connected voltage (return line)

4.2 Emergency through

Connect the next laser system at this 3 pole socket (female). You only need one emergency-off switch to switch off several laser systems at the same time.

Pin Assignment:

Pin No.	Name	Note
Pin 1	GND	GND
Pin 2	Vcc out	4.3 V output voltage
Pin 3	Return	connected voltage (return line)

5. ILDA In / Through

This socket is an ILDA compatible D-sub socket. Therefore, any ILDA-compatible laser software can be used for this laser system.
Connect your controller with the ILDA In by an ILDA-cable.
If you want to use the same signal on another laser system, use the ILDA Through socket for that.
To get the best results of signal transmission, only shielded and twisted-pair cables should be used.

6. Safety Arrangements

LED Emergency Off

The LED is lighting up green when the emergency-off switch is not pressed.
When this LED is glowing red, the emergency-off switch is pressed or the cable is damaged.
The laser modules are deactivated now and a laser output is not possible.

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LED Shutter

The D/A converter is activated while the LED is glowing green.
If the LED is glowing red, the D/A converter is deactivated.
The laser modules are deactivated and a laser output is not possible.

LED Scanner Safety

If the LED is glowing green, there is no scanning error.
When the LED is lighting up red, a scanning error is found.
The laser modules are deactivated and the laser output is not possible.

A scanning error is recognized if:

User's error:
The picture is drawn too small
The picture is scanned to slow
There is no software output at all

Hardware error:
One or both of the galvanometers are damaged
One or both of the scanner-drivers are damaged
The signal transmission is interrupted

LED Interlock Key

If the LED is glowing green, the laser system is activated.
If this LED is glowing red, the laser system is deactivated.

LED Interlock ILDA

If an ILDA transmitter is connected to the laser system, the LED is glowing green.
If this LED is lighting up red, the laser system is not connected to the ILDA transmitter.
The ILDA input is switched high resistive and the laser modules are deactivated.
The signal is still connected to ILDA through. Please check if your signal cable is plugged in correctly and or if it is damaged in some way.

LED Laser emission

This LED on the front of your laser system is glowing yellow if all safety interlocks are in good conditions.
It displays that the laser output is possible now.
If this LED is not lighting up, one of the safety interlocks has deactivated the laser modules.
Please check which errors occurred and correct them.

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7. Maintenance

Dust, fog fluid, etc. cause deposits on mirrors, which might evoke a substantial decrease in laser power.
Therefore a professional and periodic cleaning is essential!
LPS-Lasersysteme recommends a regular service, which should be implemented at least once a year.
Benefits:

- A complete professional check of the system by an expert can prevent minimum technical errors and / or attrition with large consequences.

- Due to inadequate cleaning of the fan and the heatsink, overheating and electronic defects may occur.

- By its completely closed optical area, a pollution is hardly possible, but still not excluded. Therefore, it should be checked during the regular cleaning of the electronics sector, whether and how dirty the optical area is.

- For cleaning the electronic area, please remove the front and the back plate of the laser system and remove all dust particles.

- For cleaning the optical and the laser area, please remove the top and the front of the laser system.

- For cleaning, only manufacturer's recommended products should be used, because wrong cleaning supplies can damage the components and warranty voids.

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7.1 Beam Adjustment

For the adjustment of the single colours there is a mechanic either on the back (up to 15W) or on the side (from 20W) of your laser system:

Adjusting the colours:

1. Move the red beam by turning the brass-screws, until it is aligned on the green beam at the projection zone.
   Hint: Dim the blue laser module to zero for that.
2. Move the blue beam by turning the brass-screws, until it is aligned on the green beam at the projection zone.
   Hint: Dim the red laser module to zero while you are moving the blue beam.

Now your colours should be aligned on each other.

Main Beam:

The position of the Main Beam (green) is only to be changed, if the beam is not aligned on the scanner unit correctly!

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