



HotBeams

OPERATION MANUAL

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Version 1.0 / 19

Operation Manual



**PLEASE READ THIS MANUAL CAREFULLY BEFORE
ATTEMPTING TO USE THIS LASER.**

The manufacturer and the distributor do **NOT** take any responsibility - neither moral nor financial - for damages caused by improper use or misuse of our products. The owner/user is fully responsible for operating these products in accordance with laser safety regulations of the country where they are being used.

The laser is in Class - IV!

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Foreword

Dear Customer,

Welcome to the users of Semiconductor Laser Development Ltd and thank you for purchasing our product. We are pleased to write these lines and provide you with items of information, as they mean that you get the results of a hard work our engineers have done in the last several years in order to satisfy your demands on the highest level. We have developed a new generation of laser equipment, which devices meet all the requirements in connection with their use, whether it is indoor or outdoor.

Our laser devices have been at our customers' disposal for quite a long time and accordingly, with the developments we had very high goals to reach. The task was not less than to develop our laser devices made of primary materials obtained from the most reliable sources even further, as it is our policy to satisfy the ever changing needs of an ever changing market. We are fully committed to design such devices, which can meet the highest requirements of our customers, who need the most up-to-date and sophisticated tools for their precision work. The work was hard, but we enjoyed the challenge and now we are happy to report that the mission has been accomplished - we have created a product which can be used for the realisation of every project.

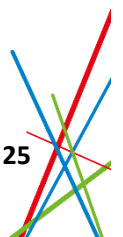
An important part of our business philosophy is that our customers are among the most important members of the team of Semiconductor Laser Development Ltd. You are the ones who use our products and you are the ones to raise new demands in connection with our devices. These expectations are important motives to develop our company and our products. Driven by this force we are proud to provide you with excellent quality equipment made with the use of our quality assurance.

We are wishing you much success in your work with our products:

TEAM Semiconductor Laser Development Ltd

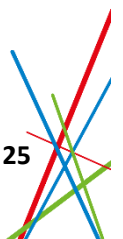
Legal Notice

- 1.) IT IS STRICTLY PROHIBITED and HAZARDOUS to cast the laser light either directly or indirectly to eyes!
- 2.) Having a stationary laser beam among people is NOT ALLOWED and DANGEROUS!
- 3.) As any contact between the laser light and skin may cause burns, it IS STRICTLY PROHIBITED and HAZARDOUS to cast the light to skin!
- 4.) According to the standards EN 60825-1 and IEC 60825-1 these pieces of equipment are in Class IV. In 2001 the standard governing the safety of laser products in Europe (EN) and Internationally (IEC).
- 5.) Class IV laser beams are capable of setting fire to materials onto which they are projected.
- 6.) Only qualified personnel is allowed to operate the device and one must use protective equipment such as safety goggles during its initial adjustments.
- 7.) During operation, those using the equipment must have a clear and full view of the device and the surface which laser beams are projected onto.
- 8.) Before putting the device into operation, information must be obtained about all the applicable rules and provisions of law in force in the country (where the work is done). These rules and provisions of law are to be obeyed in every country!
- 9.) It may be possible that there are several rules and safety regulations in a country or a region (where the device is to be used). In such a case, the stricter ones are to be obeyed!
- 10.) After becoming familiar with the safety requirements of the given country you are advised to ask for installing the right safety equipment, as well.
- 11.) The manufacturer and the distributor do NOT take any responsibility - neither moral nor financial - for damages caused by improper use or hazardous operation. In such cases, the responsibility always lies upon the owner / user.
- 12.) Please note that some optical devices such as cameras, video projectors, and mobile phone cameras can be damaged if exposed to laser radiation.
- 13.) Not reading these items of warning or not giving due attention to them cannot be used as a reason to avoid responsibility.



Pay attention to the following!

- 1.) The product has an input to process DMX control signals and it can be operated with the use of a DMX protocol. Any other type of signal sources connected to the DMX input and output terminals can cause permanent damages! It is **STRICTLY PROHIBITED** to connect any other control signal to these terminals!
- 2.) **DO NOT CONNECT** supply voltage to the product different from the specified one, as it can cause permanent damages to the equipment!
- 3.) Using the device without protective grounding is **STRICTLY PROHIBITED** and **HAZARDOUS TO LIFE!**
- 4.) Any static discharge in the inner part of the equipment may cause permanent damage!
- 5.) Strong impacts or vibration may cause damages to the product! Accordingly, it is **STRICTLY PROHIBITED** to expose it to such impacts or vibration of high intensity.
- 6.) Only fasten the device at the points designed for this purpose! In every case safety mounting is to be used.
- 7.) There are apertures required for ventilation and airflow cooling on the top side of the device. It is **PROHIBITED** to obstruct or block any of the apertures preventing the free flow of air, because it may cause damages to the equipment.
- 8.) **WARNING!** Never open any of the modules in the equipment, as it is **NOT ALLOWED!** Opening a module causes the immediate termination of the warranty! The modules are closed in a sterile laboratory and in a pressurized cabin. Accordingly, opening a module may cause an irreparable malfunction of the device.
- 9.) The manufacturer and the distributor do **NOT** take any responsibility - neither moral nor financial - for damages caused by improper use. Furthermore, not obeying any of the above instructions or opening the device **CAUSES THE TERMINATION OF WARRANTY**. Repair is only allowed in professional repair shops



Laser data

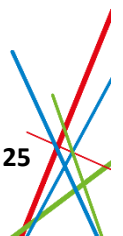
The HotBeams laser projectors represent a One-axis rgb laser bar for standalone use or additional effect next to laser projectors.

It consists of 10 pieces of 300mW RGB modules in a common mechanical chassis and can scan 90° angle horizontally using stepper motors with encoders.

The HotBeams Series are Class-4 equipment. The sign stating it is on front of the laser.



There are 2 other labels on each modules.



This laser entertainment system is rated as a Class 4 laser product and manufactured in accordance to IEC 60825-1:2014. Avoid eye or skin exposure to direct or scattered radiation. Wear protective goggles of suitable optical density if necessary.

If the laser is operated in a situation where health or property injury may occur the operation must be stopped immediately.

Operational requirements

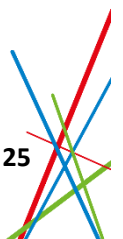
Electrical requirements:

The laser can only be used with the supply voltage of 90-240 V AC, 50/60 Hz. The power required for operation is 2A at the voltage of 220V, but at turning on the device can use a much higher value for a short moment.

WARNING!

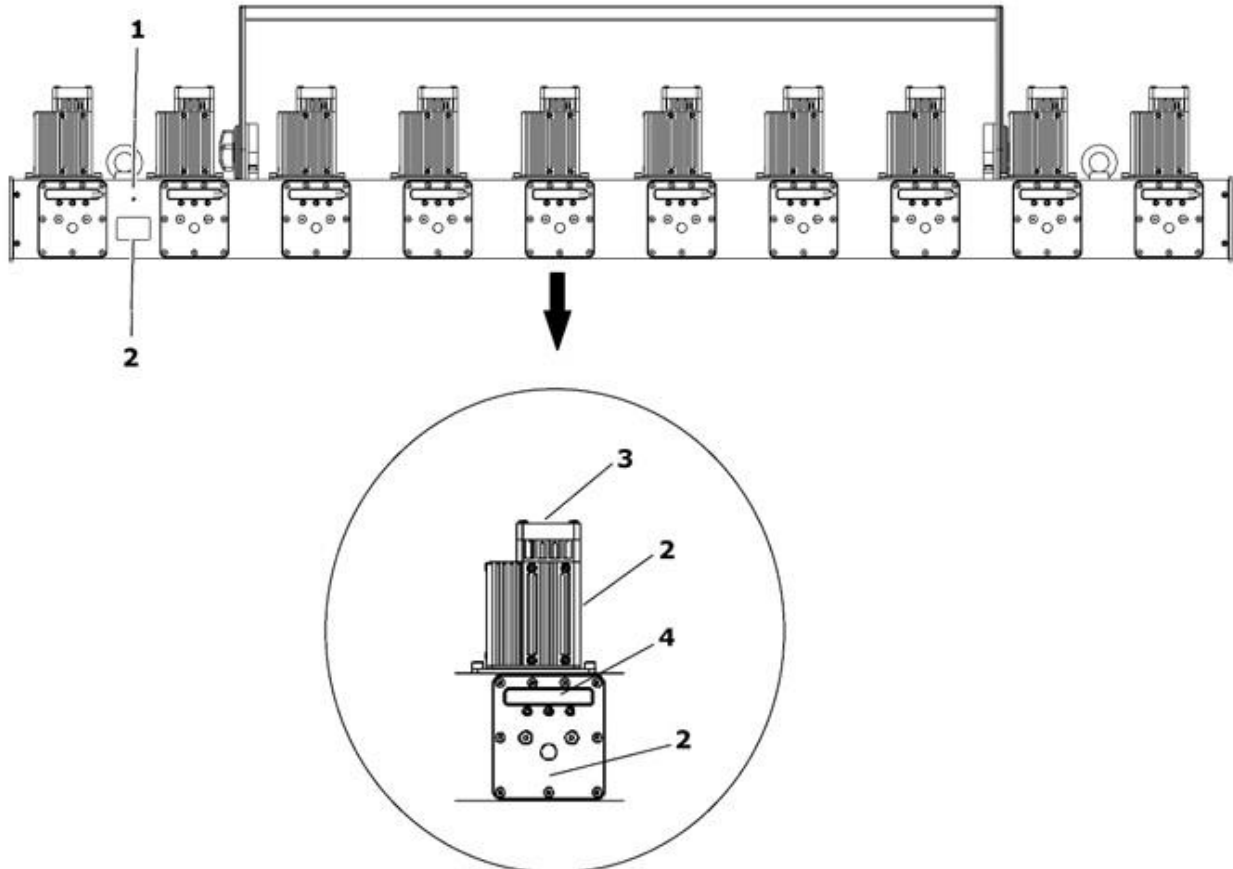
Protection against electrocution: Class of Protection no. I - the connections require grounded conductors! Using the device without grounding is PROHIBITED and HAZARDOUS TO LIFE!

Only remove the cover of the device after turning off electricity and making it free of any voltage!

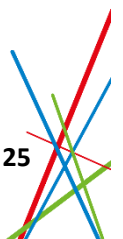


Fixture exterior view

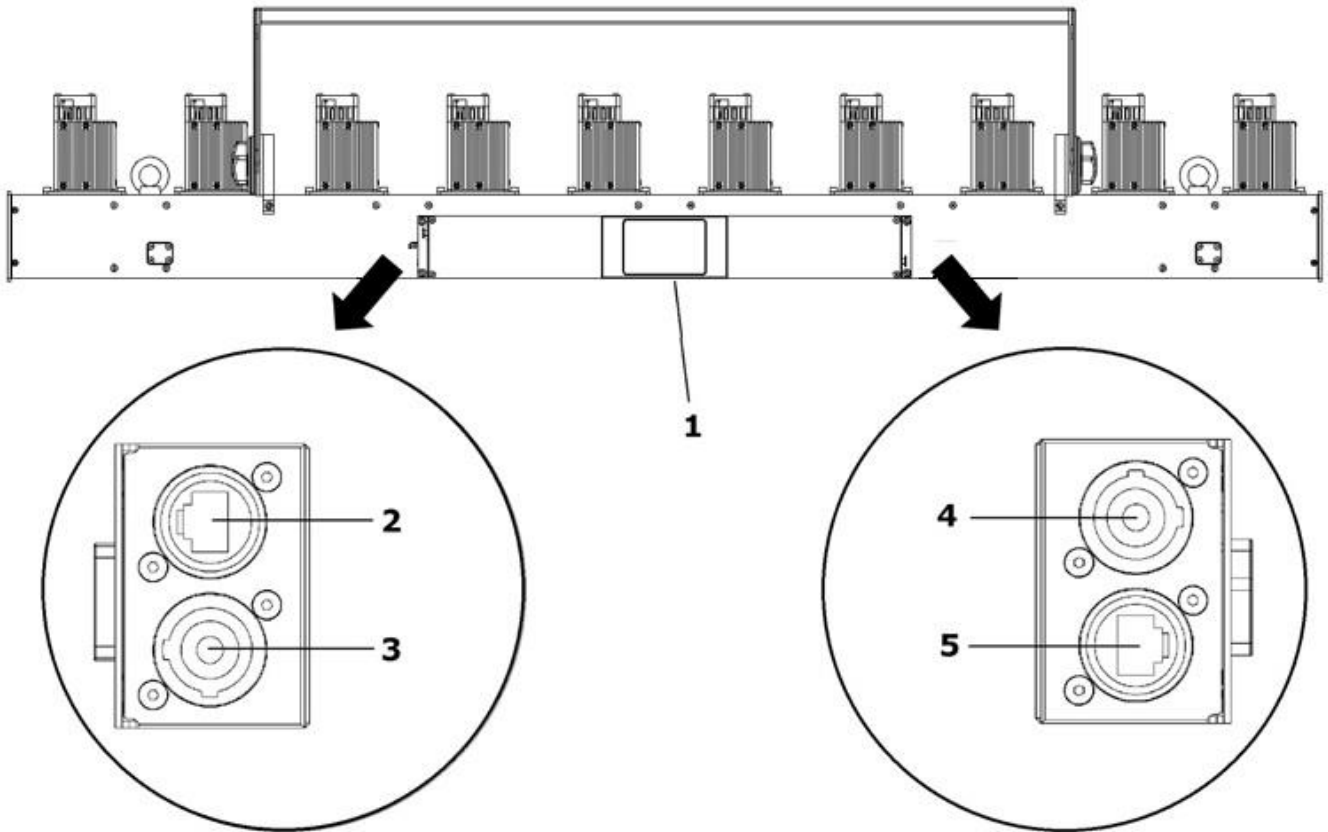
Front view



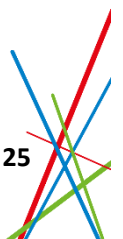
- 1 - Laser emission indicator**
- 2 - Safety labels**
- 3 - Cooling fan**
- 4 - Beam exiting window**



Back view

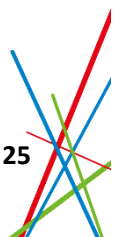
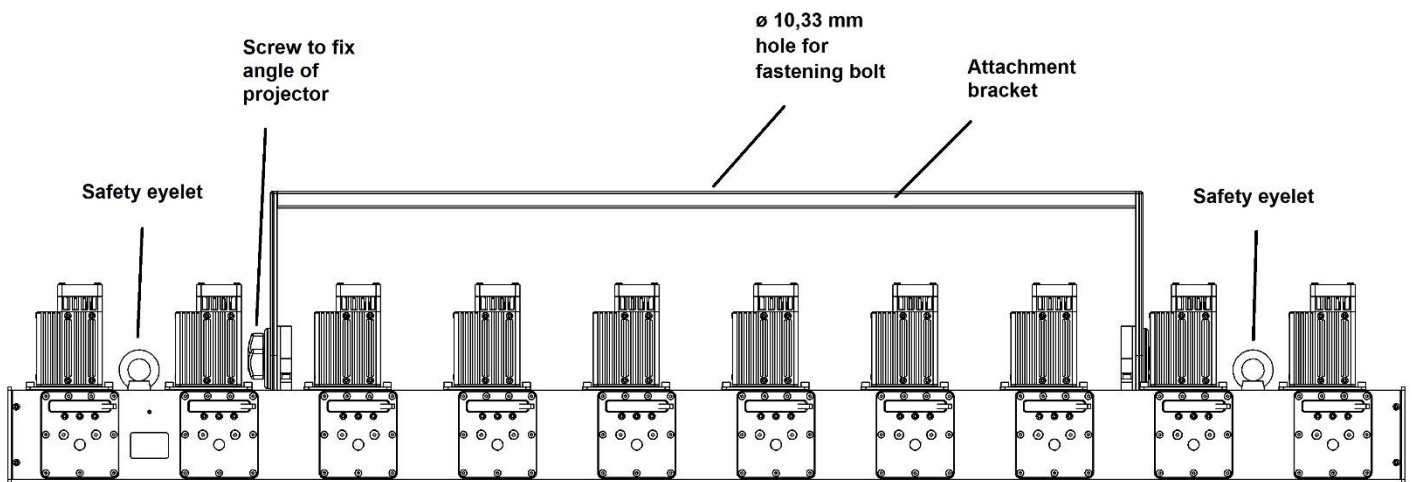


- 2 - RJ45**
- 3 - Power OUT**
- 4 - Power IN**
- 5 - RJ45**



Putting into operation

Placement and fastening of the equipment



Ethernet/DMX operation

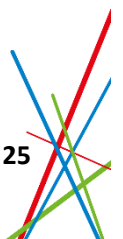
Connect the RJ45 – input of the first fixture in the data chain with the network. Connect the DMX output of this fixture with the input of the next fixture until all fixtures are connected to the DMX chain.

At the last fixture, the DMX chain should be terminated with a terminator.

Remotely controllable functions

Pan

Precise pan movement due to built-in electronic motion stabilizer. The electronic motion stabilizer ensures precise position of the fixture's head during its movement and reduces its swinging when the truss shakes. Pan movement range: 90°.



Control menu

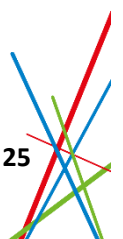
The fixture's menu can be controlled directly by touching the screen.

After switching the fixture on, the touch screen shows the Semiconductor Laser Development and the HotBeams logo:



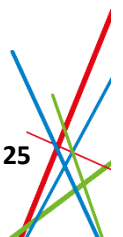
Touch any part of the screen for 3 seconds to get into the HotBeams menu

Tap the DMX to setup directly the DMX Address.



Full mode

| Module | Channel | Function | DMX value | Feature | Type of the control |
|-----------|---------|---|-----------|-------------------------|---------------------|
| 1 | 1 | Pan | 0-255 | 0-90° | Proportional |
| | 2 | Pan-fine | 0-255 | 16- bit resolution | Proportional |
| | 3 | Dimmer | 0-255 | 0-100% brightness | Proportional |
| | 4 | Red | 0-255 | 0-100% Red brightness | Proportional |
| | 5 | Green | 0-255 | 0-100% Green brightness | Proportional |
| | 6 | Blue | 0-255 | 0-100% Blue brightness | Proportional |
| 2 | 7-12 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |
| 3 | 13-18 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |
| 4 | 19-24 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |
| 5 | 25-30 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |
| 6 | 31-36 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |
| 7 | 37-42 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |
| 8 | 43-48 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |
| 9 | 48-54 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |
| 10 | 55-60 | (Pan, Pan-fine, Dimmer, Red, Green, Blue) | | | |

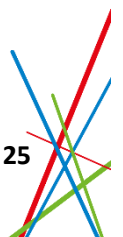


Light mode

| Module | Channel | Function | DMX value | Feature | Type of the control |
|-----------|---------|-------------------------|-----------|-------------------------|---------------------|
| 1 | 1 | Pan | 0-255 | 0-90° | Proportional |
| | 2 | Red | 0-255 | 0-100% Red brightness | Proportional |
| | 3 | Green | 0-255 | 0-100% Green brightness | Proportional |
| | 4 | Blue | 0-255 | 0-100% Blue brightness | Proportional |
| 2 | 5-8 | (Pan, Red, Green, Blue) | | | |
| 3 | 9-12 | (Pan, Red, Green, Blue) | | | |
| 4 | 13-16 | (Pan, Red, Green, Blue) | | | |
| 5 | 17-20 | (Pan, Red, Green, Blue) | | | |
| 6 | 21-24 | (Pan, Red, Green, Blue) | | | |
| 7 | 25-28 | (Pan, Red, Green, Blue) | | | |
| 8 | 29-32 | (Pan, Red, Green, Blue) | | | |
| 9 | 33-36 | (Pan, Red, Green, Blue) | | | |
| 10 | 37-40 | (Pan, Red, Green, Blue) | | | |

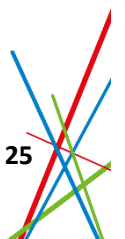
Ultralight mode

| Module | Channel | Function | DMX value | Feature | Type of the control |
|-------------|---------|----------|-----------|-------------------------|---------------------|
| 1-10 | 1 | Pan | 0-255 | 0-90° | Proportional |
| | 2 | Red | 0-255 | 0-100% Red brightness | Proportional |
| | 3 | Green | 0-255 | 0-100% Green brightness | Proportional |
| | 4 | Blue | 0-255 | 0-100% Blue brightness | Proportional |

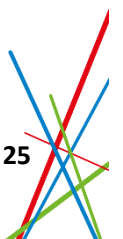




Press OK after you give the DMX address and you will send back to the opening screen.

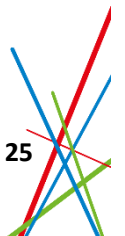
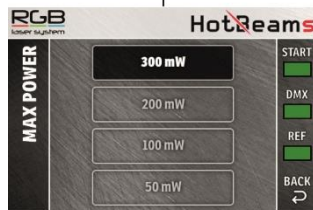


In the HotBeams menu you can see 3 setup option (Laser, Moving, Control) and the Information tab:



Laser setup:

In this tab, you can setup the modules maximum output power:



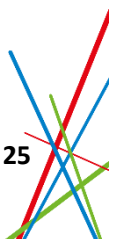
Moving setup:

In this tab, you can configure the direction, the max angle and the center of pan

Direction



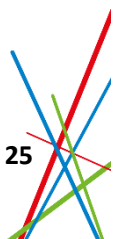
If you tap ALL MODULES, you can mirror each modules instead of individually.



Max angle



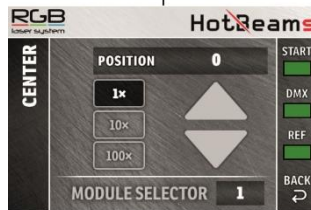
Here you can setup the max angle.



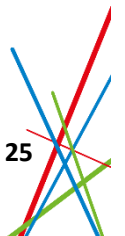
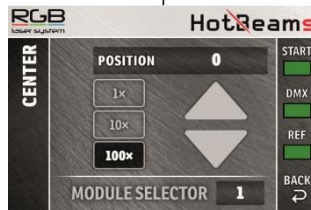
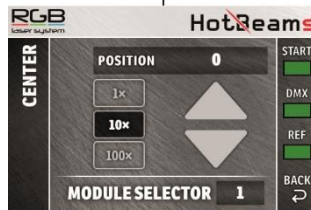
Center



If you tap the ALL button, you can setting the center individually on each modules instead of all.



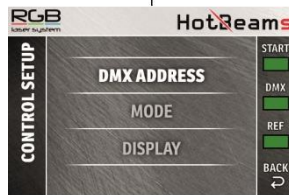
You can give the value one by one if you tap the 1x button. If you tap the 10x button, the value changes upon tenfold. If you tap the 100x button, the value changes upon hundredfold.



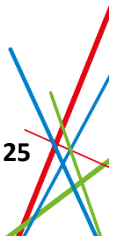
Control setup:

In this tab, you can configure the DMX Address, the Mode and the Display.

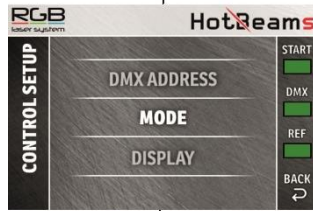
DMX Address



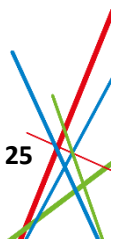
If you tap the clear button, it will clear all values.



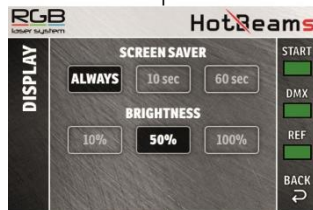
Mode



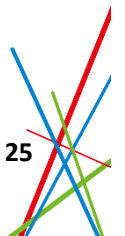
Under this option you can choose which mode do you want to use.



Display



Tap ALWAYS if you not want the screen to shut down. You can also setup the brightness of the screen.



Operating environment

The laser can only be used when the following conditions of the environment are given:

- Ambient temperature between +10C° and +40C°,
- Relative humidity max: 93% (at + 25 C°),
- Below +10C° light intensity may decrease,
- Above +40C° operation may become unstable.

Storage: above +50C° permanent damage is likely to the device! (e.g.: do not leave it in your car in the summer, because in closed vehicles temperature may easily reach or exceed the maximum permitted level.)

Handling precautions

This laser system is a precision device that contains some sensitive opto-electronics components.

DO NOT drop it or subject it to physical shock.

This laser system is not waterproof or dust-proof. Make sure to use an appropriate cover or enclosure if it is used in the rain, snow or similar severe environment conditions.

Do not leave the laser system in excessive heat such as in a car whilst in direct sunlight.

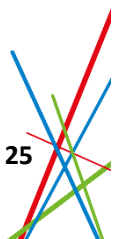
High temperatures could cause some serious damage to the system.

The laser system contains precision electronic circuitry. Never attempt to disassemble the laser yourself.

If the laser is suddenly brought in from the cold into a warm room, condensation may form on the laser and internal parts

If condensation forms on the laser body, do not use the laser as this may damage the laser system.

If there is condensation, wait until it has evaporated before using.



Maintenance

Cleaning

Aperture Window

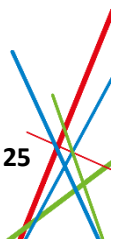
To clean the aperture output window use a soft cloth and medical grade isopropyl alcohol.

Cooling Fans

Use compressed air for cleaning the bottom part of the laser system. There are cooling fans located at the bottom of the heat sink and they are vital for correct operation of the laser system. Please always ensure that they are spinning freely. You should perform this service every 2 months if the laser is used regularly or even more often if it is used in dusty conditions.

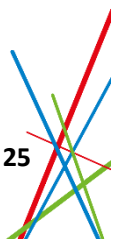
Internal Optics

The cleaning of the internal optical components should be performed by an authorized technician only. Incorrect techniques or wrong choice of chemicals used for cleaning could cause serious damage to the laser system. Due to the fact that the optical compartment is split and sealed from the rest of the laser system it shouldn't be necessary to perform this procedure more often than once a year.

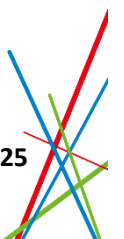


Technical parameters

| | | | |
|----------------------------------|----------------------|----------|----------|
| Output Power | 100 mW | 90 mW | 100 mW |
| Wavelength | 638 nm | 520 nm | 450 nm |
| Wavelength tolerance | +/- 5 nm | +/- 5 nm | +/- 5 nm |
| Beam mode | Single | | |
| Beam diameter | 3.3x2.3mm | | |
| Full beam size @90% output power | 20 mm | | |
| Beam divergence (full) | 0.5 mRad | | |
| Pan movement | 90° | | |
| Pan resolution | 16bit | | |
| Speed | 0,5 sec/full angle | | |
| Accuracy | 2 mRad | | |
| Power consumption | Continuous max. 250W | | |
| Control | DMX | | |
| Temperature of operation | 10-35 Celsius | | |
| Life of operation | 5000 hours | | |
| Supply voltage | 90-240 V | | |
| Size | Height | Width | Depth |
| | 452,7mm | 1200mm | 97mm |
| Weight | 9,2 kg | | |



List of parts



Warranty

We offer a warranty period of 12 months for the products starting from the date of delivery. This warranty is only valid if the system is used in conformity with the purpose it is designed for. The following are considered as improper use:

- Any type of usage different from the instructions in the operation manual.
- Opening the laser module.
- Exposing the product to adverse ambient conditions.
- Any strong mechanic impact.
- Any damage caused by a static discharge (in normal cases it must not happen).
- Use in a much polluted environment.

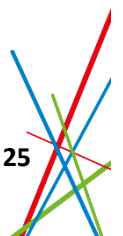
We reserve the right to decide if operation has not been proper and not in conformity with the conditions of warranty after the evaluation of the actual causes of the problem.

During the warranty period the obligation of Semiconductor Laser Development Ltd is restricted to the repair or replacement of the equipment returned to the maker with faults accepted by the maker (ones not caused by external reasons).

If any repair is done in the warranty period the time of warranty is not started again, but it continues from the date of delivery until the original date of expiry.

We are asking you to take warranty conditions into consideration and keep these documents available at a safe place. In case of needs copies are available from our records.

Semiconductor Laser Development Ltd





Made by: Semiconductor Laser Development Ltd

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