LASERWORLD ®

CS-500RGBV
User Manual

Please read this manual carefully before use!

Contents

Checking parts

Please check if all listed parts are included, and are not damaged. Included:
1 x CS-500RGBV laser
1 x Power cable
1 x 9-pin plug (dongle)
2 x key
1 x manual

SAFETY INSTRUCTIONS

If the device has been exposed to great temperature changes, do not switch it on immediately. Condensation water may damage your device. Leave the device switched off until it has reached room temperature.
The laser must only be used for shows. Any operation has to be attended and supervised by a skilled and well-trained operator.
Never leave this device running unattended and keep it away from children and unauthorized persons.
Keep away from heaters and other heat sources. In order to safeguard sufficient ventilation, leave 50 cm of free space around the device.
Never direct the laser beam to people or animals.
CAUTION LASER DIODE: If you open the device for cleaning, always disconnect from mains!

-**HEALTH HAZARD! Never look directly into the light source, as sensitive persons may suffer an epileptic shock!**

These lasers are considered a definite eye hazard, particularly at the higher power levels, which WILL cause eye damage. So these laser series models supplied with a key switch to prevent unauthorized use, warning labels and aperture labels affixed to the laser.

Installation safety
Prior to installation and operation of the laser, the paths of the beams and effects should be considered, particularly with respect to how they will reach the audience. If direct audience scanning is desired, then the laser energy in the effects needs to be considered to decide if the effects are safe for direct viewing. Always ensure, that the maximum permissible exposure (MPE) is not exceeded in the area accesible to the public. So install the laser in such a way, that minimum distances and heights ensure the MPE is never exceeded in the public area.

OPERATING THE LASER

The operator has to make sure that laser radiation – also reflected laser radiation – higher than the maximum permissible level is avoided by technical or organisational measures. (Especially with respect to the MPE, see above.)
Make sure to use the correct voltage
If the device is used in a flying installation, the mounting brackets and an appropriate safety-rope must be fixed.
In some countries, the operator must notify the accidence insurance and the authority for industrial safety, before operating a laser. For more information, contact the relevant authorities.
Please consider that unauthorized modifications on the device are strictly forbidden due to safety reasons!
If this device will be operated in any way differently than described in this manual, the product may suffer damages and the guarantee becomes void. Furthermore, any other operation may lead to dangers like short-circuit, burns, electric shock, etc.

Keep surrounding dry and clean. This unit should be keep dry, do not use in the rain or damp and dusty environment. Projector should be put in a water-proof housing when operated outside.

Regularly open the device (see "cleaning" further down) to check for dust inside, or if fog fluid condenses in the housing (if so rearrange hazer and/or laser position).

Operating temperature is 10~35℃ . In a new installation, check after some 15-30 minutes whether the outlet air gets too warm. Regularly check the inside for dust deposits, especially around the fans. Let laser cool off 10minutes after 2 hours of operation,to ensure maximum lifetime for the diode.

Distance between laser aperture and projection screen should be not less than 1 meter.

Do not turn device on and immediately off again frequently.

Do not look into the laser beam directly, especially not with optical instruments.

Do not touch the device with wet hands.

When the laser diode becomes dim or broken, please contact your dealer timely.

When returning laser to dealer/manufacturer always use original packaging.

Maintenance should be performed every 15-day period. See "cleaning" further down.

Using the laser

Make sure the correct voltage is used. Connect mains. Connect an emergency switch to the 9-pin connector on the backside (pins 1, 2). If you do not wish to connect an emergency switch, connect the 9-pin plug. Depending on the mode selected (see below), laser light should come out of the opening on the front panel – be careful.

Control panel

1	Power switch: power on/off
2	Remotelock: connect emergency switch. If no emergency switch is connected use the 9 pin plug supplied.
3	DIP switch: DMX address/mode selection (see below)
4	DMX 512 in/out
5	Music mode: sensitivity
6	Microphone
7	Safety switch: laser on/off
8	ILDA connector
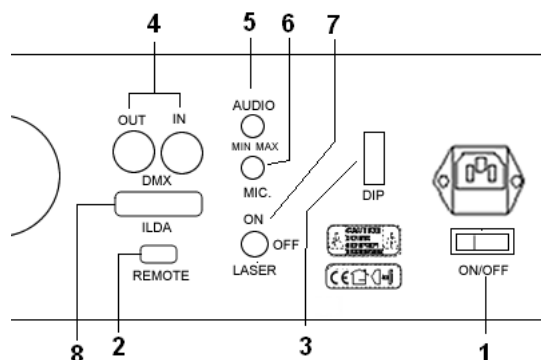
Operating modes

The following operating modes can be selected from the DIP switch on the backside of the device:

DIP switch 1-10	Mode
0,0,0,0,0,0,0,0,0,0	Music activ
1,0,0,0,0,0,0,0,0,0	Automatic mode / beameffects
1,1,0,0,0,0,0,0,0,0	Automatic mode / graphics
x,x,x,x,x,x,x,x,x,1	DMX

"Music activ": patterns are changed/animated to the beat of the music. Sensitivity can be adjusted with the knob on the back of the device.

"Automatic mode": patterns are changed automatically

"DMX": DMX512 Modus-. Use the first 9 switches to select the address:

```
        X    x    x    x    x    x    x    x     x
        1    2    4    8    16   32   64   128   256
```

e.g.   1000 0000 01, DMX mode address 1 (1+0+0+0+0+0+0+0+0+0)

0010 0100 01, DMX mode address 36 (0+0+4+0+0+32+0+0+0)

ILDA mode

When an ILDA compatible interface is connected to the laser, the laser is automatically switched to ILDA mode. Output is then controlled from a PC running software.
The laser uses pins 4 and 17 of the IDLA signal to detect the presence of an ILDA interface. Further information can be found in the software manual.

DMX mode

Channel		Value	Function
1	Mode	0~49	Musik active
		50~99	Automatic mode / beam effects
		100~149	Automatic mode / graphics
		150~255	DMX mode
2	Colour (multicolor models)	0~5	No beam
		6~15, 16~25, 26~35	red, green, yellow (more colours with RGB/V models)
		36~105	Automatic change red/green/yellow Slow to fast
		106~175	Colour change (original pattern colours)
		176~245	Pattern randomly coloured
		246~255	Original pattern colours
3	Pattern	0~255	249 patterns
4	Vertical movement	0~127	Static movement
		128~191	Automatic movement up to down (slow to fast)
		192~255	Automatic movement down to up (slow to fast)
5	Horizontal movement	0~127	Static movement
		128~191	Automatic movement right to left (slow to fast)
		192~255	Automatic movement left to right (slow to fast)
6	Vertical rotation	0~127	Static rotation
		128~255	Automatic rotation (slow to fast)
7	Horizontal rotation	0 ~127	Static rotation
		128~255	Automatic rotation (slow to fast)
8	Rotation	0~127	Static rotation
		128~191	Automatic rotation clockwise (slow to fast)
		192~255	Automatic rotation ccw (slow to fast)
9	Zoom	0~85	Automatic (small to big)
		86~170	Automatic (big to small)
		171~255	Autom. (small to big to small etc.)
10	Size	0~255	Size
11	Pointdraw	0~255	Only points are drawn (slow to fast)
12	Drawing	0~127	Piecewise drawing of the pattern
		128~255	Piecewise drawing/erasing of the pattern

Maintenance / cleaning

Always disconnect from mains before cleaning/opening the laser. Regularly clean the interior from dust, especially ensure operation of the fans. To open the device remove two screws on the top side of one side panel (front/back), bend the side panel slightly outwards, and slide the top cover out. Use a sponge with alcohol, rather than wet cloth or other chemical liquid, to clean the mirrors. Be careful, even light scratches reduce the output power of the laser. Mirrors need cleaning, when a "halo" is noticeable around the beam, or an unusual high amount of diffuse light can be seen inside the device.

Technical specifications

- **Lasersources:** aircooled DPSS Laser
- **Power (of the diodes):** typical 500mW, minimum 350mW, 50mW 532nm green, 150mW 650nm red, 150mW 410 (+/-5)nm blue
- **Laserclass:** 3b
- **Modes:** ILDA, DMX 512, auto, music active
- **ILDA:** 25pin ILDA standard Sub-D shaped 25pin connector
- **Galvos:** 20k scanspeed
- **DMX 512:** 12 channels
- **Patterns:** 249
- **Scanangle:** ca. 40°
- **Beam:** ca. 3mm/1mrad

- **Accessories:** power cable, key switch, interlock plug, manual
- **Input voltage:** AC 100~240V 50/60Hz
- **Power consumption:** 50W
- **Size:** 300 x 240 x 150mm (W x D x H)
- **Weight:** 3.8kg
- **Operating temperature:** 10°-35°C

ILDA signal

Pin out of the standard ILDA signal:

1 Scanner X+	-10V..+10V	14 X-	+10V..-10V
2 Scanner Y+	-10V..+10V	15 Y-	+10V..-10V
3 Intensity/Blanking+	0V..+2.5V	16 Intensity/Blanking-	0..-2.5V
4 Interlock A		17 Interlock B	
5 Red+	0..2.5V	18 Red-	0..-2.5V
6 Green+	0..2.5V	19 Green-	0..2.5V
7 Blue+	0..2.5V	20 Blue-	0..-2.5V
8 – 12 Not used		23-24 Not used	
13 Shutter +5V, max. 20 mA		25 GND Signal ground	

Trouble shooting

No beam: emergency switch/dongle not connected.
Low output: clean mirrors/window
Musicmode not working: wrong DIP switch setting
      Sensitivity too low
No DMX control: wrong DIP switch setting
      ILDA connected
Laser does not switch to ILDA mode:
- The interface does not connect pins 4 and 17 (Interlock) of the IDLA signal. See interface manual
- The cable does not connect pins 4 and 17. Use a cable that connects pins 4 and 17.
- Use an adapter that connects pins 4 and 17.

Please note

This device has left our premises in absolutely perfect condition. In order to maintain this condition and to ensure a safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this user manual.

Laserworld cannot be made liable for damages caused by incorrect installations and unskilled operation!

EU-declaration of conformity

C€

We hereby confirm that the following device

Laserworld CS-500RGBV

complies with the essential safety requirements, laid down in the regulations of the committee to assimilate the provisions of law of all participating EU states on the electromagnetic compatibility (89/336/EWG) and with the requirements relating to the Low Voltage Directive (LVD 2006/95/EG) was based on the following standards:

DIN EN 61000-3-2:2000 + A2: 2005
DIN EN 61000-3-3:1995 + A1: 2001

Furthermore, the device is verified in correspondence to the laser class regulations DIN EN 60825-1, if properly set up according to the upper mentioned laser safety regulation.
After installing the device, an inspection and official approval is indispensable for the overall setup. The inspection must follow the european guidelines EN 60825-1 and corresponding regulations for the prevention of accidents BGV-B2.

This declaration is executed on behalf of the Laserworld CS-500RGBV manufacture

Laserworld (Switzerland) AG

Oberstrasse 1
8274 Tägerwilen
SWITZERLAND

Authorized person:
Supervisory board Ms Rhea Gössel

place of business: 8274 Tägerwilen / SWITZERLAND
company number: CH-440.3.020.548-6
Commercial Registry Kanton Thurgau

www.laserworld.com
info@laserworld.com

representative according to EMVG:
Cleantech Europe GmbH
Managing Director: Thomas Schulze
Fürkhofstr. 5
81927 München / DE