



CS-500 RGY



Manual

Read carefully before using this device!

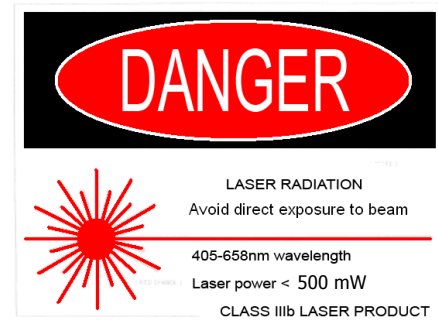
Safety instructions	2
INSTALLATION/OPERATION	2
Using the laser	3
Remote control unit	3
Control panel	3
Operating modes	4
DMX control	4
ILDA mode	4
Maintenance / cleaning	4
Troubleshooting	4
ILDA signal	5
Technical specifications	5
Please note	5



Checking parts

Please check if all listed parts are included, and are not damaged. Included:

- 1 x Laser projector
- 1 x Power cable
- 1 x 9-pin plug
- 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 welltrained 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 accessible 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. When audience scanning is performed, an operator has to be present. An easily accessible emergency switch has to be installed. When setting up the laser, make sure the laser is affixed firmly, to avoid vibrations.

Warning labels on the device

Laser radiation

Avoid exposure

To the beam

Laser class 3b

Caution of radiation

If cover is removed

Indoor use only

At front opening: Avoid exposure – laser radiation is emitted.



Read manual
before use
Operation by qualified
personal only
Never direct laser
Beam at people
Never look directly
into beam

INSTALLATION/OPERATION

Don't remove the warranty/serial number label - removal voids warranty

The operator has to make sure that laser radiation – for laser class 4 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. Use a power socket with earth/ground. **Don't use dimmer, RC, or other electronically switched sockets.** Whenever possible, don't use the laser together with large appliances, especially fog machines, on the same mains!

If the device is used in a flying installation, the mounting brackets and an appropriate safety-rope must be used.

In some countries, the operator must notify the accident 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 shortcircuit, 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, don't put liquid filled containers on the device. 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 50~95°F (10~35°C). 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 10 minutes 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.

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

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

To ensure maximum lifetime of the laser:

Don't overheat the laser:

- Always ensure good ventilation
- Don't have stage lights (especially moving heads) directed towards the laser
- Regularly clean the fans and the interior from dust
- In a new installation check the temperature after 30 minutes of operation

Keep the laser dry

- Make sure fog/hazer fluid doesn't condensate inside the laser - fog has to be in front of the laser – not inside

- A few days after (each new) installation, open the cover to check if fluids condensate inside

- If fluids condensate inside, reposition the laser or fogger/hazer

Turn the device off, when not used. The diode is on, when the device is on. Even if it is not lit.

If the laser is equipped with a remote connector, connect an emergency switch to the Remote lock connector on the backside, the switch has to interrupt the connection between pins 1 and 2 to turn off the laser. If no emergency switch is used, insert the 9 pin dangle instead. If the laser has no remote lock, or the 9 pin dangle is used, use an emergency switch in the mains connection.

Using the laser

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

Rigidly mount projector. Projector can be mounted in any position.

Make sure the correct voltage is used. Connect mains.

Connect an emergency switch or the remote control unit (see below) to the 9-pin connector on the backside (pins 1 and 2).

If you do not wish to connect an emergency switch, connect the 9-pin plug instead (for testing purposes only). Open mechanical shutter (above front window). Depending on the mode selected (see below), laser light should come out of the opening on the front panel – be careful.

Remote control unit

The unit is equipped with a remote control unit. Here you find the following controls:

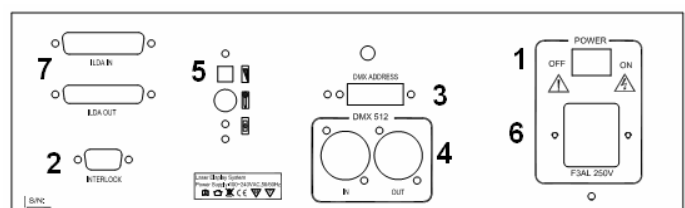
Key switch: key can only be removed in off position.

Emergency switch: Turns off the blanking signals of the lasers. To release, turn clockwise (arrows).



Control panel

1	Main switch
2	Remote lock, connect emergency switch
3	Dip switch, mode/DMX address selection (see below)
4	DMX 512 in/out
5	Microphone sensitivity
6	Mains connection
7	ILDA in/out



Operating modes

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

Dip switch	Mode	1,0,0,0,0,0,0,0,1	Automatic
0,0,0,0,0,0,0,0,1	Music active	X,X,X,X,X,X,X,X,1	DMX

"Music active": patterns are changed/animated to the beat of the music. Sensitivity can be adjusted at the back panel.

"Automatic mode": patterns are changed automatically

"DMX": DMX512 Mode. 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)

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

DMX control

channel	Function
1	Mode: 0-69 laser off; 70--139 sound mode; 140-209 animated sound mode (see above); 210-255 DMX mode
2	Pattern
3	Effect channel: Strobe
4	Horizontal movement: 0 no effect; 1-167 (fixed) movement; 168-188 animated movement left to right with increasing speed; 189-209 dto. Right to left; 210-255 dto. left to right and back
5	Vertical movement: analogous to hor. movem.
6	Zoom: 0-10 no effect; 11-104 increasing size; 105-154 growing with increasing speed; 155-204 dto. shrinking; 205-255 dto. growing/shrinking
7	Width (rotation about y): 0-150 fixed rotation; 151-255 automatic rotation with incr. speed
8	Height (rot. About X): analogous to width
9	Rotation: 0-180 fixed rotation; 181-217 automatic with incr. speed clockwise; 218-255 do. counter clockwise
10	Blanking: 0-70 no effect; 71-139 points are brighter; 140-209 dashed lines; 210-255 points only
11	Wave
12	Colour: 0-19, 20-39, etc.: 3 colours 139-188 rainbow static; 189-248 rainbow moving; 249-255 colour change

Please note that not all effect channels are available for all patterns. E.g. you can't zoom dynamic patterns, etc. Channel 3 (strobe) is also available when in soundmode (channel 1 70-209).

ILDA mode

When an ILDA compatible interface is connected to the laser, the laser is automatically switched to ILDA mode. Output is then controlled by a PC running laser control software. The scanners are set for ca. 10000 PPS at 20-25° optical. When running faster, reduce image size/scan angle.

Maintenance / cleaning

Always disconnect from the mains when the device is not in use or before cleaning it.

Open the device by removing top cover, remove 4 screws, 2 upper on front and back panel each. Remove any deposits of dust, especially at the fan. Check for condensed fog fluid inside. If so, clean and rearrange the position of laser and or hazer. 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. Clean the mirrors with window cleaner and a paper towel.

Never look directly into the light source. Always disconnect from the mains when the device is not in use or before cleaning it.

Troubleshooting

Problem	Possible cause
No function / fan not working	Check mains connection
Effects don't change to the beat of the music	Adjust sensitivity with the dial on the back. Check if device isn't in DMX or autom. mode
Problems with DMX control	Check DMX address selection
Device not working, but fan working	Turn device off for ca. 1 minute.

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.

ILDA signal

Pin out of the standard ILDA signal:

1 Scanner X+	-5V..+5V	14 X-	+5V..-5V
2 Scanner Y+	-5V..+5V	15 Y-	+5V..-5V
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	

Technical specifications

- **Power supply:** AC 85V-250V
- **Ambient temperature:** 50~95°F (10°C~35°C)
- **Power consumption:** 50 W
- **Operation modes:** DMX 512, automatic, music mode, ILDA
- **Lasersources:** aircooled DPSS laser (green), diode laser (red)
- **Optical power** (at the laser): max 400mW; >80mW 532nm green, >270mW 655nm red
- **Beam:** ca. 3mm/1mrad
- **Laser class:** 3b
- **Scanning system:** Galvo system, 25.000 PPS at 4°
- **Scanangle:** max 40°
- **Weight:** 15.5lbs (7kg)
- **Dimensions:** 13"x12.2"x6.7" (33 x 31 x 17) cm (W x D x H)
- **Loudness:** <70db

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!

This manual is subject to changes without notification, errors and omissions expected. Contact your local dealer for an update, or check our website www.laserworld.com

For service contact your dealer or Laserworld. Use only Laserworld spare parts.

Laserworld (Switzerland) AG

Kreuzlingerstrasse 5
8574 Lengwil-Oberhofen
SWITZERLAND

Authorized person:
Supervisory board Mr Martin Werner

place of business: 8574 Lengwil-Oberhofen / 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

