LASERWORLD®

RS-200G

User Manual

Please read this manual carefully before use!

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Checking parts

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

Included:

1 x RS-200G Laser
1 x Power cable
1 x 9-pin plug
2 x key
1 x safety cord
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: Don't open the housing!
There are no serviceable parts inside the device. Maintenance and service operations shall only be carried out by authorized dealers. 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.

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.

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.

Operating temperature is 10~35℃ . 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.

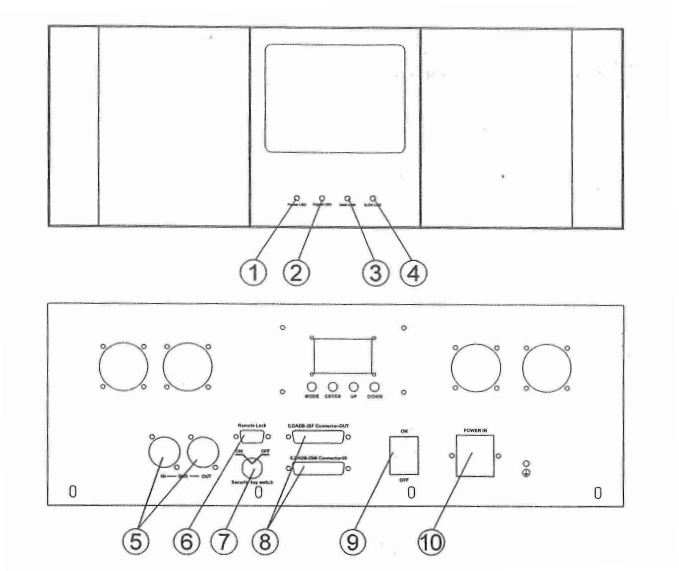
When the laser diode becomes dim or broken, please contact your dealer timely.

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

Maintenance should be performed every 15-day period. Use a sponge with alcohol, rather than wet cloth or other chemical liquid, to clean the mirror.

Using the laser

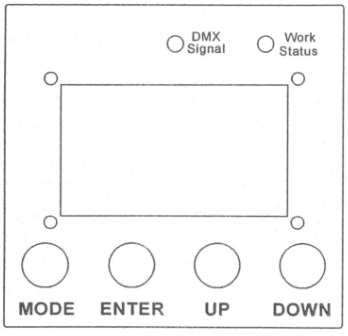
Make sure the correct voltage is used. Connect mains. Connect an emergency switch to the 9-pin conector on the backside (pins 1, 2). If you do not wish to connect an emergency switch, connect the 9-pin plug. Depending on the mode selected (see below), laser light should come out of the opening on the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



1	Operation LED
2	Working LED: controlboard working
3	DMX LED: DMX connected
4	ILDA LED ILDA connected
5	DMX In/Out
6	Remotelock: connect emergency switch. If no emergency switch is connected use the 9 pin plug supplied.
7	Security switch: Laser on/off
8	ILDA connector in/out
9	Power switch: power on/off
10	Power: connect to mains

Control panel

- **MODE:** select mode, or go up in menu
- **ENTER:** confirm changes, or go down in menu
- **UP/ DOWN:** change DMX address



Operating modes:
Automatic mode: built-in patterns are displayed
Music active: laser is controlled from built-in microphone
"DMXAddr": DMX512 mode-. Here you can change the DMX address:
"Open": change address
"Up" & "down": increase/decrease address
"Save": save new address
"LCD display memory function": save settings automatically.

ILDA mode

When an IDLA 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		DMX512 value	Function
1	blue	0~63	Auto-Music Mode (Ch 1&2 valid)
		64~127	Auto-mode (Ch 1&2 valid)
		128~191	Music-edit mode (All channels valid)
		192~255	Manual mode (All channels valid)
2	Colour	0~63	No Beam
		64~127	Single colour laser: Strobe Multicolour: colours
		128~192	Single colour: Fluxion blanking Multicolor: Colour change
		193~255	On
3	Pattern group	0~42	Pattern group 1
		43~85	Pattern group 2
		86~128	Pattern group 3
		129~171	Pattern group 4
		172~214	Pattern group 5
		215~255	Group 6 cartoons
4	Pattern	0~255	32 patterns
5	Speed	0~255	slow to fast
6	Rotation	0~63	No function
		64~127	Rotate horizontally
		128~191	Rotate vertically
		192~255	Rotate h. & v.
7	Dot rotation	0~63	No function
		64~127	Rotating
		192~255	Rotating & Dotting
8	Move	0~63	No function
		64~127	Move horizontally
		128~191	Move vertically
		192~255	Move h. & v.
9	Extend	0~63	No function
		64~127	Extend horizontally
		128~191	Extend vertically
		192~255	Extend h. & v.
10	Zoom	0~85	No function
		86~169	Small to large
		170~255	Large to small
11	Drawing speed	0~255	slow to fast
12	Scan speed	0~255	slow to fast
13	Colour speed	0~255	slow to fast
14	Size	0	Original size
		1~255	Small to large (120 = original)

Maintenace / cleaning

Always disconnect from mains before cleaning/opening the laser.Regularly clean the interior from dust, especially ensure operation of the fans. 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

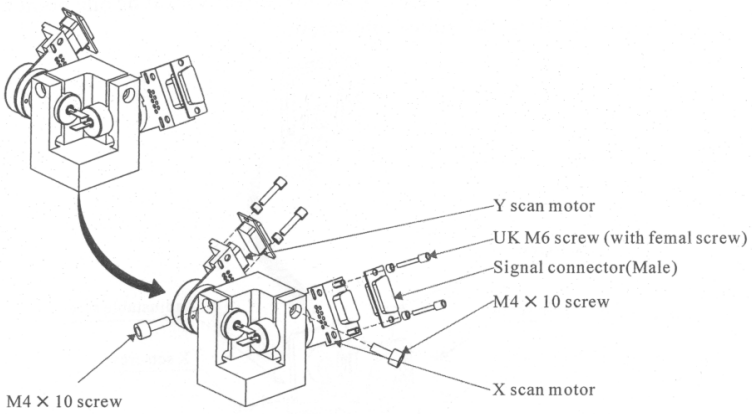
cleaning, when a "halo" is noticeable around the beam, or an unusual high amount of diffuse light can be seen inside the device.

Technical specifications

- **Output power:** ca. 200mW green 532nm
- **Lasersources:** aircooled DPSS laser
- **Laser class:** 3b
- **Modes:** ILDA, DMX 512, auto, music active
- **ILDA:** 25pin ILDA standard Sub-D shaped 25pin connector
- **Galvos:** 50k scanspeed
- **DMX 512:** 14 channels
- **Patterns:** 160
- **Scanangle:** set to ca. 40° optical (60° max)
- **Beam:** ca. 3mm/1mrad
- **Accessories:** power cable, key switch, interlock plug, manual, safety cord
- The laser comes in a flightcase.
- **Input voltage:** AC 100~120V or 200~240V switchable 50/60Hz
- **Power consumption:** 120W
- **Size:** 550 x 320 x 310mm (W x D x H)
- **Weight:** 15kg Laser, **total:** 28kg **(with flightcase)**
- **Operating temperature:** 10°-35°C

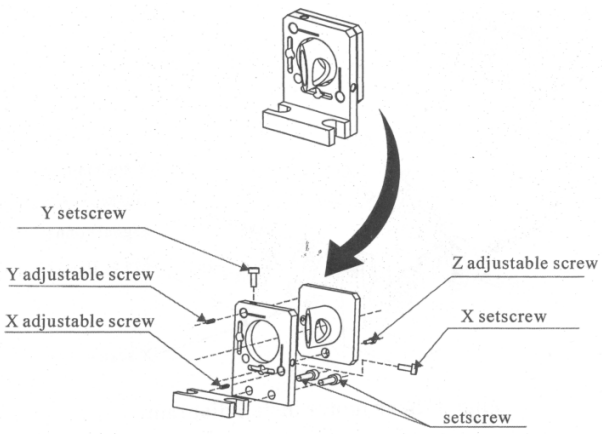
Change scanner

1. Unscrew UK M6 screws and disconnect signal cable.
2. Loosen M4 x 10 screw and remove galvo.
3. Insert galvo, reconnect and fix signal cable.
4. Rotate galvo to center projection. Fix galvo.



Adjustable mirror mounts

1. Loosen setscrews, then adjust with X/Y adjustable screws. Make sure beam is centered on scanner mirrors.
2. Adjust Z-screw simultaneously.
3. Tighten setscrews.
4. When combining beams (RGY/RGB laser), first make sure the beams are (roughly) on the same spot on the mirrors/dichros. Then use a test pattern (e.g. rectangle) to do fine adjustment. For adjustments, always turn output power down (if possible).



Troubleshooting

Problem	Possible reason	Damaged part	Replacement
No power	Fuse blown	Fuse	09-00-3001-01
	Power supply defective	+-24V	16-03-0039-00
Music mode not working	Microphone defective	Microphone	16-03-0001-00
	Control board defective	Control board	26-2A-LT12V2-00
	Potentiometer defective	Potentiometer	04-03-0104-01
	CPU defective	IC	00-89C516RD-00
X and/or Y axis no deflection	Scanner defective	Galvo	15-01-2215-00
	CPU defective	IC	00-89C516RD-00
	Control board defective	Control PCB	26-2A-LT12V2-00
	Power supply defective	+-24V	16-03-0039-00
	Scanner driver board defective	Scanner driver board	26-2A-6800A-00
Laser dark or dim	Lenses / mirrors dirty	Clean with alcohol	
	Laser diode defective	Laser diode	Inquire
	Control board defective	Control board	26-2A-LT12V2-00
	Configuration / wrong mode	Check configuration (see paragraph control panel)	
No output	Configuration / wrong mode	Check configuration (see paragraph control panel)	
	Control board defective	Control PCB	26-2A-LT12V2-00
	Power supply defective	+-24V	16-03-0039-00
	Display board defective	Display	26-2A-YX2012DI-00
	Pins 4 and 17 of the ILDA signal not connected	See below	

Laser does not switch to ILDA mode:

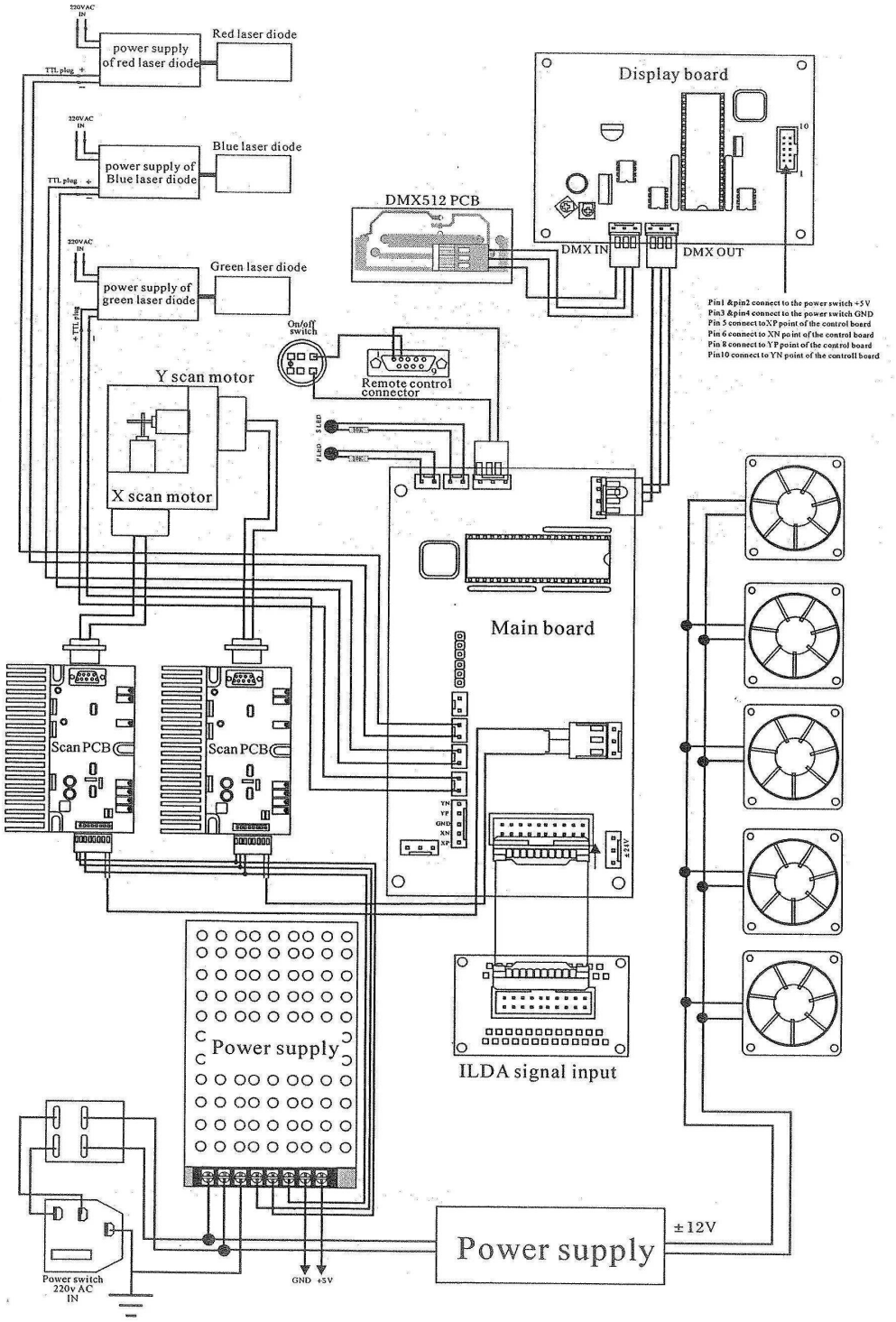
- The interface does not connect pins 4 and 17 (Interlock) of the IDLA signal. See interface manual
- The cable does not connect pins 4 and 17. Use a cable that connects pins 4 and 17.
- Use an adapter, that connects pins 4 and 17.

ILDA signal

Pin out of the standard ILDA signal:

1 Scanner X+	-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	

Technical diagram



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

We hereby confirm that the following device

Laserworld RS-200G

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).
The device has been classified considering the following EU-norms on electromagnetic compatibility:

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

Assessment of compliance of the product with the requirements relating to the Low Voltage Directive (LVD 2006/95/EG) was based on the following standards:

DIN EN 60065 : 2002

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 RS-200G manufacturer

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