



Scanner Set

USER MANUAL



Please read this manual carefully before you install the scanners!

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Checking Parts

Please make sure the following parts are included:

- 2 x Scanners
- 2 x Driver board
- 1 x Scanner mount
- 1 x power supply (PSU).
- 2 x Cables driver to scanner
- 1 x User manual

The scanning system

The Laserworld Scannerset is a fast scanning system, working on the moving magnet galvanometer principle. The system includes two closed loop drivers, running at +/- 24V. It's maximum speed is ca. 80,000 points per second with the ILDA test pattern, at a scanning angle of ca. 4°.

The system is shipped with an x/y mount, scanners, drivers, a +/-24 V power supply, and the necessary cables. The drivers are preset for standard show laser use, at circa 20° scan angle at 35,000 points per second scanning speed.

Cables

The cables from driver to scanner have separately shielded lines for the lines driving the galvo coils and for the position detector signals.

Power supply

The drivers need +/-24V at 1.2 A (each side). We recommend using the Laserworld power supply

Speed

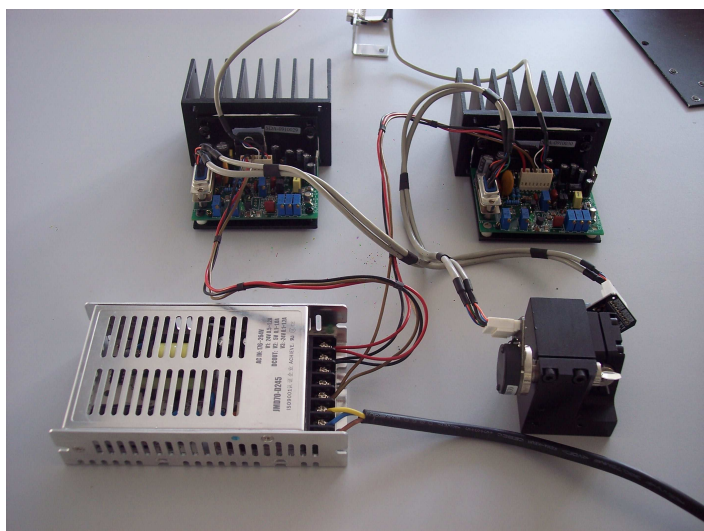
The scanning speeds were measured with Showeditor software, and a laboratory power supply at +24V. Galvos were fixed in the standard mount on a metal base plate, without forced cooling. Mirrors were 6x11x0.7mm

Angle	Speed
~30°	~30,000 pps
~15°	~50,000 pps
~5°	~80,000 pps

Installation

The driver/scanner pairs are adjusted at the factory and marked X and Y respectively, do not exchange.

The picture shows a basic setup :

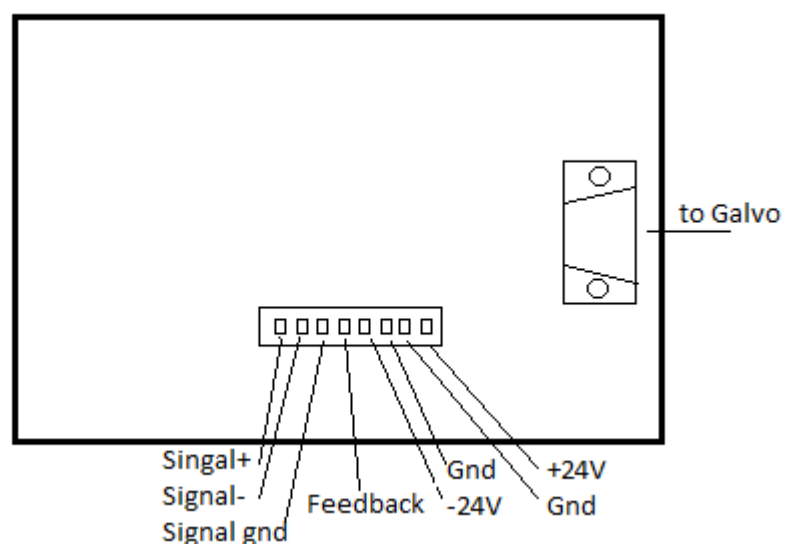


Connectors

Driver board:

The feedback signal is for safety boards. If not used, do not connect.

Connect +24V, -24V, Gnd (2 connectors) to the corresponding signals on the power supply.



Connecting to ILDA output: connect the signals marked (ILDA) to the following pins of a 25 pin male Sub D connector:

Signal+ of X driver to pin 1, Y driver to pin 2

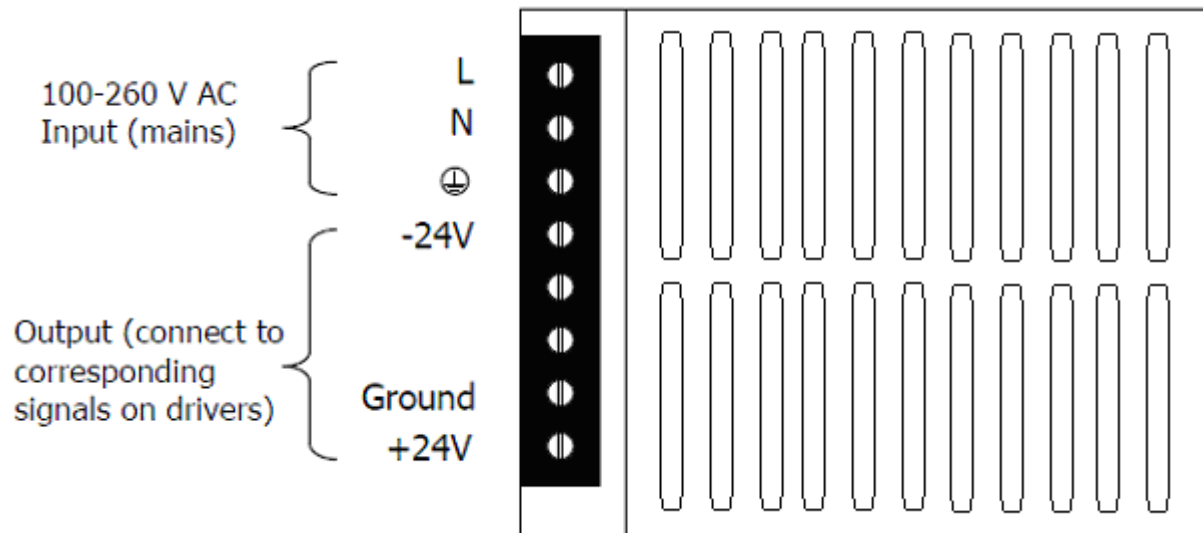
Signal- of X driver to pin 14, Y driver to pin 15

Signal gnd (both drivers) to pin 25

Power supply:

Connect the outputs to the corresponding signals on both driver boards.

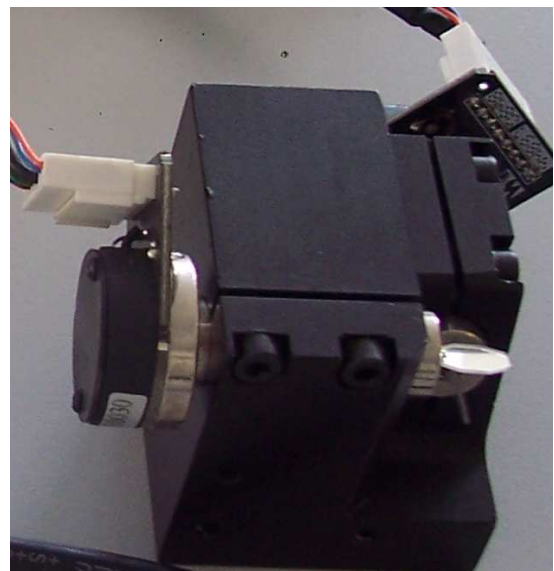
Connect L, N and protective ground to mains.



Mounting the galvos

the picture to the right shows how the galvos are mounted into the galvo mount. (Laserbeam entering from the right of the picture, X galvo mounted from the top, Y galvo from left).

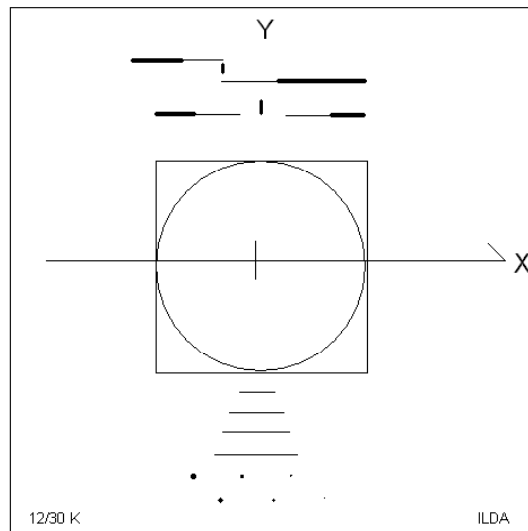
Tighten the screws in the galvo mount, so the galvos can not move.



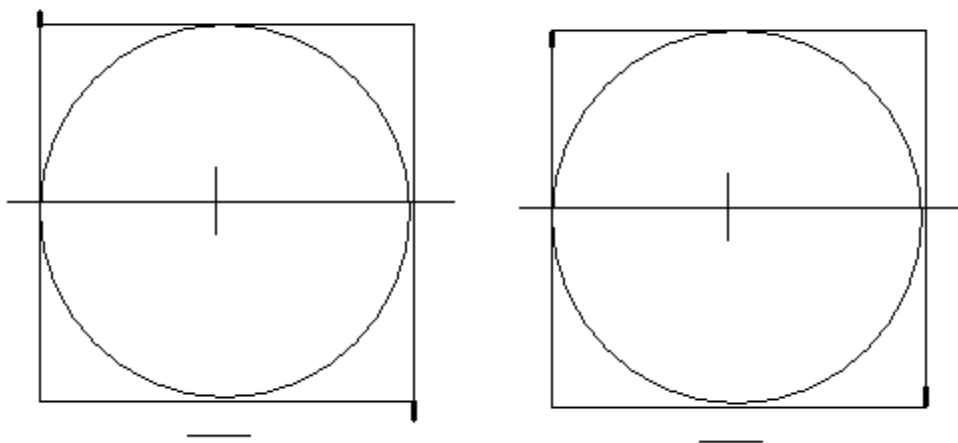
Adjustments

The driver/scanner pairs are adjusted at the factory and marked X and Y respectively, do not exchange.

Adjusting using the ILDA test pattern:



Display the ILDA test pattern at the scanspeed and image size for which you want to adjust your scanning system.



Adjust damping: At the corners of the inner square you can have an overshoot (as in the picture left) or undershoot (as in the picture right) of the laserbeam. Adjust LFD and HFD to minimize this effect.

Adjust servo gain: As long as the top and bottom of the circle lie within the square (regardless of the form, it may be more of an ellipse) you can increase gain. The top/bottom will then move outwards. Increase until the circle/ellipse touches the square.

Repeat these two steps until you get a good result.

Do the same for X, until the circle touches the square at all 4 sides.

You may have to repeatedly adjust both X and Y until the circle is perfectly round.

Scanspeed and image size:

If the circle is bigger than the square you can increase scanspeed, or picture size. Your system is faster than necessary for that size.

If the circle is inside the square you should decrease scanspeed or image size. Your system is not fast enough for that size.

If you have to adjust from scratch (because you replace a single galvo or driver, but not a preset pair) first turn gain/LFD/HFD to zero (counter clock wise), then start increasing gain carefully until the galvos start moving, proceed as above.

Laserworld (Switzerland) AG

Kreuzlingerstrasse 8
8574 Lengwil-Oberhofen
SWITZERLAND



Authorized person:
Supervisory board Mr Martin Werner

place of business: 8574 Lengwil / 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